



## LONG ISLAND LIGHTING COMPANY

SHOREHAM NUCLEAR POWER STATION

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Direct Dial Number

April 14, 1983

SNRC-863

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Requirements for Emergency Response  
Capability - Implementation Schedule  
Shoreham Nuclear Power Station - Unit 1  
Docket No. 50-322

Reference: Supplement 1 to NUREG-0737, Requirements for  
Emergency Response Capability (Generic Letter  
82-33, dated December 7, 1982)

Dear Mr. Denton:

Enclosed is LILCO's response to the reference letter and its enclosure. This response provides LILCO's current schedules and a description of our plans for implementation of NRC requirements for Emergency Response Capability (ERC) as outlined in the above referenced letter. This information was required to be submitted to the NRC by April 15, 1983. The following items constitute the submittal package:

- Attachment A - Safety Parameter Display System (SPDS)
- Attachment B - Detailed Control Room Design Review (DCRDR)
- Attachment C - Regulatory Guide 1.97 Rev. 2 (RG 1.97) -  
Application to Emergency Response Facilities  
(includes a report describing Shoreham's  
compliance with RG 1.97)
- Attachment D - Upgrade Emergency Operating Procedures (EOPs)
- Attachment E - Emergency Response Facilities
- Attachment F - Integrated Schedule for Emergency Response  
Capability
- Attachment G - Shoreham Regulatory Change Planning Schedule

Attachment G has been included based on discussions held between the NRC and LILCO at a meeting on March 23, 1983. This attachment delineates LILCO's plans for implementing regulatory-required post-fuel load modifications and identifies

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ADD:  
W. Paulson

regulatory required modification activities beyond the ERC scope in order that your review of Shoreham's schedule may take into account work loads involving other areas.

LILCO plans to integrate the design of the SPDS, implementation of RG 1.97, DCRDR, plant specific EOP's, and operator staff training using a common, event-based analysis technique.

In accordance with the recommendations of NUREG-0737, Supplement 1, LILCO will conduct a task analysis of the emergency operating procedures that will simultaneously serve to drive:

- o final, plant specific EOP validation
- o DCRDR
- o verification of SPDS parameters
- o integration of Reg. Guide 1.97 changes
- o design of training and staffing

By simultaneously referencing each of the above items to the plant specific emergency event base, the integration required in par. 3.1 of NUREG 0737, Supplement 1, will be achieved.

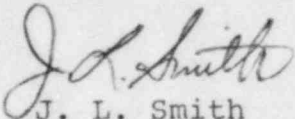
Generally speaking, the DCRDR/EOP/RG 1.97 integration will be based upon an analysis of workstation and manning requirements. This analysis will make reference to real plant response time information that has been generated by the development of plant specific EOP's, as discussed in Attachment D. The development of training requirements will be driven by the same, real-time event base.

The analyses that will be conducted to achieve the desired integration will, where feasible, be conducted in parallel. This approach will allow the various items (DCRDR, EOP's, SPDS, training and staffing) to be iterated against each other. The result of such iteration will be the optimum resolution of human engineering issues within the limitations which are inherent in control room design.

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LILCO is proceeding based on the information and schedules noted above, and trusts that this information satisfies NRC requirements. Should you have any questions, please contact this office.

Very truly yours,



J. L. Smith  
Manager, Special Projects

RWG/spg

Attachment

cc: J. Higgins

All Parties Listed in Attachment 1

ATTACHMENT 1

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## ATTACHMENT A

### SAFETY PARAMETER DISPLAY SYSTEM

In accordance with our previous submittal regarding this issue (Ref. letter SNRC-820), LILCO is presenting herein our implementation schedule for SPDS "Phase II" (Attachments F and G). To enable ready interpretation of the schedule, the ensuing paragraphs will provide clarification, methodology, status, and justification.

Shoreham Phase I SPDS is completed for its intended "Interim Only" function, as referenced above, and will not be further detailed herein. Shoreham Phase II SPDS is therefore the basis for the submittal on Generic Letter 82-33. The Phase II SPDS, hereafter identified as SPDS, has been designed in accordance with NUREG-0696, and, as such, is an elaborate computer-based system with a material cost in excess of 5 million dollars. In order to address the implementation of SPDS in a logical manner, it is necessary to understand the magnitude of the SPDS, the construction impact of the SPDS, and the method of supporting completion at an NTOL/OL facility.

The SPDS for the main control room will be of seismic design for the computers (two) and CRT displays (two). Power supply will also be seismic via uninterruptible power supplies (two). This seismic design represents a substantial upgrading beyond regulatory requirements. The SPDS will be displayed in the TSC (3 CRTs, 1 printer) and also the EOF (3 CRTs, 1 printer). The TSC/EOF displays will be driven via non-seismic computers (two) and powered via one uninterruptible power supply. The existing data base consists of approximately eight hundred inputs selected from Regulatory Guide 1.97, Regulatory Guide 1.23, and other Shoreham systems as necessary. The SPDS will be displayed in three levels (I-Preventive, II-Diagnostic, III-Mitigative) consisting of thirty-one displays, total. The computer software is currently undergoing vigorous verification and validation processes to ensure the accuracy of module development and integration. The entire computer system (hardware and software) will undergo testing at the factory, and again after installation at the site. Inputs for these two testing sequences will be via micro-computer simulation. Subsequent to computer system integration with the multiplexing system and the field sensor inputs, the system will be final tested by the Startup organization using actual plant parameters.

To enhance a plant's design and capability by use of this system, as described above, entails a tremendous construction/testing impact. To obtain signals in support of system design requires (in addition to that already completed) approximately 144,000 feet of cable, 15,000 feet of conduit, 30,000 man-hours of design, and 55,000 man-hours of installation followed by

associated testing. The above numbers are representative of the defined post-fuel load work, some of which has been initiated prior to fuel load. Various degrees of difficulty are experienced in such an endeavor and, comparatively speaking, may be classified as follows:

CP	-	Easy
NTOL	-	Difficult
OL	-	Extremely Difficult

Progress has been made to date regarding field work for parameter inputs; however, much work remains. Work had proceeded during the CP phase but was halted in the latter part of the NTOL phase as necessitated by plant testing and fuel load programs. This was cited during LILCO's presentation on November 19, 1982. (Refer to letter SNRC-820, dated January 17, 1983).

Currently, Shoreham is developing an intensive post-fuel load modification program. This program will allow issuance of detailed, comprehensive design implementation packages for each of the numerous modifications currently identified. This "package concept" will allow modification work to proceed during operation, with the added benefit that when unscheduled outages of sufficient duration occur, packages will be ready for installation. This technique is both desirable and necessary as certain inputs cannot be added to the SPDS data base while at power operation. For example, one cannot dismantle the neutron monitoring system while at power to modify switches and circuitry necessary to provide the inputs to SPDS. Such work can only be done during an outage of sufficient duration; hence, full SPDS operation is scheduled after the anticipated completion date of the first refueling outage. Schedule for incremental implementation of SPDS, following fuel load, is included in Attachment G.

It must be understood that LILCO fully intends to schedule work so that final completion of SPDS is possible upon return from the first refueling outage. However, should currently unforeseeable conditions surface to delay the implementation of some inputs by the completion of the first refueling outage, LILCO is committed to provide an SPDS that is in a state of "near completion" such that it could be declared operational without these remaining inputs.

The information requested on page 44 of the NRC "Agenda Package" given to participants at the regional workshop on February 22, 1983 requested two dates and a decision pertaining to NRC review. As shown in Attachment F, a Safety Analysis is scheduled to be completed by January 1984, and the SPDS is scheduled to be declared operational by June 1986 (end of currently planned first refueling outage) and declared complete no later than December 1986. A pre-implementation review by the NRC is not requested.

ATTACHMENT A \_ Page three

When Shoreham's SPDS is completed, it will, as a minimum, be in accordance with the requirements of Section 4.1 of Supplement 1 to NUREG-0737.

## ATTACHMENT B

### Detailed Control Room Design Review (DCRDR)

A preliminary human factors control room review was performed on the Shoreham Control Room following the guidance given in NUREG/CR-1850 in March 1981. This review complies with the requirements of NUREG-0700, Chapter 6.

Since the 1580/ Chapter 6 review, the Human Engineering Discrepancies (HED's) generated therein have been under resolution by LILCO and the NRC Human Factors Branch. Many of the HED's identified in that review and in a similar review conducted at the site by the NRC are pending resolution on the basis of whether or not they are included in the emergency-event based review required by NUREG-0737, Supplement 1.

In accordance with par. 5.1 of NUREG-0737, Supplement 1, a "dynamic" or event based analysis will be conducted using a task analysis (both workstation and cognitive analysis) based upon the Shoreham specific EOP's, discussed in Attachment D, "Upgrade Emergency Operating Procedures".

Shoreham will conduct this final portion of the DCRDR in accordance with the general outline found in NUREG/CR-1270, par. 3.6.1:

- o Identification of all system functions (completed by EWR Owners' Group (BWROG))
- o Allocation of those functions to man or machine (completed by BWROG)
- o Definition of operator tasks (completed by BWROG)
- o Task analysis in terms of information requirements, decision requirements and action requirements
- o (Task) analysis (in terms) of workstation and manning requirements
- o Preliminary (re)design
- o Design evaluation using as-found control room
- o Review and revision of design using evaluation data
- o Final design
- o Test and evaluation

ATTACHMENT B - Page two

There are certain DCRDR activities which will require access to the control room and/or its operators. Since Shoreham is an NTOL plant and, in order to minimize distraction to the operators during the critical power ascension phase, LILCO has decided to defer activities requiring operator and control room interface until after power ascension testing is completed. This approach will enable some "operating experience" to be developed with the specifics of the Shoreham Control Room while at power operation.

A draft program plan similar in scope to that suggested by NUREG-0700 will be submitted to the NRC by July 15, 1983.



REGULATORY GUIDE 1.97 - APPLICATION  
TO EMERGENCY RESPONSE FACILITIES

This Attachment presents information regarding the Shoreham status for the BWR variables listed in Regulatory Guide 1.97, Rev. 2 (RG 1.97). This Attachment includes:

- Table I, which lists the RG 1.97 BWR variables and their Shoreham status;
- Table II, which lists individual Shoreham valve position indicators, an expansion of the B-10 and D-24 entries on Table I;
- Table III, which lists various sensors and associated circuit components for Table I items, as applicable;
- Legend for the codes used on Tables I and II;
- Notes referenced on Tables I and II.

Tables I and II indicate whether the variable sensors, if located in a potentially harsh, accident-generated environment, have been determined to be environmentally qualified. The notations used to give compliance status are taken from the Environmental Qualification Report (Revision 4 was submitted via SNRC-768 dated November 3, 1982) and apply to the sensors. The definition of the notations is also provided in the Legend in this Attachment.

The Shoreham commitment regarding environmental and seismic qualification for RG 1.97 BWR variables is as follows. Where LILCO has not taken specific exception in Tables I or II to the implementation of a RG 1.97 BWR variable or its qualification criteria, it is LILCO's intent to achieve seismic qualification of necessary channel components and environmental qualification of those sensors which are located in potentially harsh accident-generated environments. This qualification, in conformance to RG 1.97 categories for qualification criteria, will be achieved by start-up after the first refueling outage, which is currently estimated to be June, 1986.

The variables for which LILCO is taking exception to the RG 1.97 qualification criteria are the following item numbers in Table I: A-1; B-1,4,5 and 8; C-1,3,6,14 and 15; D-3,5,8,11,12,13,14,15,16,17 and 18; and E-2,3,4,7,8,9,11,12,13 and 14. The nature of the exceptions are as noted in the Table.

All the variables shown on Table I as being displayed in the Main Control Room (MCR) will also be displayed in the Technical Support Center (TSC) and Emergency Operations Facility (EOF) upon full implementation of the Safety Parameters Display System (SPDS), as discussed in Attachment A.



Table 1

Item No.	Variable	Indicating Device	SNPS-I Range	Indicating Device Location	W/REG 1.97 Envir. Qual. Guidelines	LILCO QA Category	Sensor Location	Power Supply	Schedule
A-1	Coolant Level in Reactor	Fuel Zone: 1B21-LR007 (B21-R615) 1B21-LI007 (B21-R610) Wide Range: 1B21-XR004A,B (B21-R623A,B)	-308 to -108 inches	MCR (H11-P601) MCR (H11-P601) MCR (H11-P601)	(RG1) RR RR (RG1) FT/LJ	I  I I	RBS73' (H21-P09) (P10) (H21-P09) (P10) RBS78'	RPSBUS A & C  RPSBUS A & C RPSBUS A & C	Installed  Await generic resolution of ICC Detection issue prior to taking any further actions. Refer to the settlement of Shoreham OL hearing contention SC3/SOC8 for further information on the issue.
A-2	Reactor Coolant System Pressure	1B21-XR004A,B (B21-R623A,B)	0 to 1,500 Psig	MCR (H11-P601)	(RG1) RR	I	RBS78': (H21-P04) (P05)	IE	Installed
A-3	Drywell Pressure	1Z93*PR501A,B	-5 to 150 Psig	MCR (H11-PCM)	(RG1) EQ	I	RBS78'	IE	Installed
A-4	Sump Level in Spaces of Equipment Required for Safety	1G11*LTS645A,B	0 to 37 in.	MCR (AC1/AC2)	(RG1) TA/LJ	I	RBS8'	IE	Installed
A-5	Suppression Pool Water Level	1Z93*LR001A,B	-90 in./0/+60 in.	MCR (H11-PCM)	(RG1) MR	I	RBS8'	IE	Installed. High range indicator calibrated, low range indicator not yet calibrated
A-6	Drywell and Suppression Chamber Oxygen Concentration	1T48*02R125A,B	0 to 10%/ 0 to 30%	MCR (ACH)	(RG1) EQ	I	RBS112'	IE	Installed
A-7	Suppression Pool Water Temperature	1Z93*TRS500A,B (1 foot Below Normal Water Level)	50 to 250F	MCR (H11-PCM)	(RG1) EQ	I	Supp Pool	RPSBUS A & B	Installed

Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance	LILCO QA Category	Sensor Location	Power Supply	Table 1	
					W/REG 1.97 Envir. Qual. Guidelines				Schedule	
B-1	Neutron Flux	1C51*XR802 (C51-R602) [SRM] (C51-R600A,B, C,D) [IRM] 1C51*R803A,B, C,D (C51-R603A,B, C,D) [APRM]	10 <sup>-1</sup> to 10 <sup>6</sup> Cis	MCR (H11-P603)	N/A	I	Incore	Non-IE	Installed equipment is satisfactory for the interim period. System modifications will be completed by no later than the time of turn to power after the second refueling outage assuming timely generic resolution of this issue. See Note A - Issue 2. and Note N.	
				MCR (H11-P603)	N/A	I	Incore	Non-IE		
				MCR (H11-P603)	(RG1)	I	Incore	Non-IE		
						I				
B-2	Control Rod Position	No unique Mark Number	Full in or not Full in	MCR (H11-P603)	(RG3)	II	RBP-85' (CRD Mechanism)	Non-IE	Installed	
B-3	RCS Soluble Boron Concentration (Sample)	1Z96-XZ025	100 to 1,100 PPM	PASF	(RG3) N/A	II	PASF-40'	Non-IE	Installed	
B-4	Coolant Level in Reactor	Fuel Zone: 1B21-LR007 (B21-R615) 1B21-LI007 (B21-R610) Wide Range: 1B21-XR004A,B (B21-R623A,B)	-308 to -108 inches	MCR (H11-P601)	(RG1)	RR	I	RBS78': (H21-P09) (P10)	RPSBUS A & C	See comment under Item No. A-1
				MCR (H11-P601)		RR	I	(H21-P09) (P10)	RPSBUS A & C	
					(RG1)		I			
					(RG1)	FT/LJ		RPS78'	RPSBUS A & C	
B-5	BWR Core Thermocouples	Not Provided on Shoreham	-	N/A	N/A	N/A	N/A	N/A	On hold by NRC in accordance with Supplement 1 to NUREG-C737.	
B-6	RCS Pressure	1B21-XR004A,B (B21-523A,B)	0-1,500 Psig	MCR (H11-P601)	(RG1)	RR	I	RBS78': (H21-P04) (P05)	IE	Installed
B-7	Drywell	1Z93*PR501A,B	-5 to 150	MCR	(RG1)	EQ	I	RBS78'	IE	Installed

Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance		LILCO QA Category	Sensor Location	Power Supply	Table 1
					W/REG 1.97	Envir. Qual. Guidelines				Schedule
B-8	Drywell Sump Level	1G11-LR505X	0 to 48 in.	MCR (H11-P602)	N/A		II	G11-TK57	Non-IE	Installed equipment is permanently acceptable as is. See Note A - Issue 4
B-9	Primary Containment Pressure	1Z93*PR501A,B	-5 to 150 Psig	MCR (H11-PCM)	(RG1)	EQ	I	RBS78'	IE	Installed
B-10	Primary Containment Isolation Valve Position (excluding Check Valve)	Various- (See Note F)	N/A	MCR	(RG1)	(Note F)	(Note F)	Note F	Note D	Installed
C-1	Radioactivity Concentration or Radiation Level in Circulating Primary Coolant	Not Provided on Shoreham	-	N/A	N/A		N/A	N/A	N/A	This parameter will not be implemented; alternate instrumentation is available. See Note A - Issue 5
C-2	Analysis of Primary Coolant (Gamma Spectrum)	(Canberra- Multi-Channel Analyzer)	-	PASF 40'	(RG3)		II	PASF 40'	Non-IE	To be installed prior to fuel load
C-3	BWR Core Thermocouples	Not Provided on Shoreham	-	N/A	N/A		N/A	N/A	N/A	On hold by NRC in accordance with Supplement 1 to NUREG-0737
C-4	RCS Pressure	1B21-XR004A,B (B21-R623A,B)	0 to 1,500 Psig	MCR (H11-P601)	(RG1)	RR	I	RBS78': (H21-P04) (P05)	IE	Installed

Table 1

Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance W/REG 1.97 Envir. Qual. Guidelines	LILCO QA Category	Sensor Location	Power Supply	Schedule
C-5	Primary Containment Area Radiation	ID21*RE085A,B	1 R/HR to 10 <sup>7</sup> R/HR	MCR	(RG1) TA/IJ	I	RBP78'	IE	Installed
C-6	Drywell Drain Sumps Level (Identified and Unidentified Leakage)	IG11-LR505X	0-48 inches	MCR (H11-P602)	N/A	II	G11-TK57	Non-IE	See comments under Item No. B-8.
C-7	Suppression Pool Water Level	IZ93*LR001A,B	-90 in./0/+60 in.	MCR (H11-PCM)	(RG1) MR	I	RBS8'	IE	Installed. High range indicator calibrated, Low range indicator not yet calibrated.
C-8	Drywell Pressure	IZ93*PR501A,B	-5 to 150 Psig	MCR (H11-PCM)	(RG1) EQ	I	RBS78'	IE	Installed
C-9	RCS Pressure	1B21-XR004A,B	0 to 1500 Psig	MCR (H11-P601)	(RG1) RR	I	RBS78': (H21-PO4) (PO5)	IE	Installed
C-10	Primary Containment Pressure	IZ93*PR501A,B	-5 to 150 Psig	MCR (H11-PCM)	(RG1) EQ	I	RBS78'	IE	Installed
C-11	Containment and Drywell Hydrogen Concentration	1T48*H <sub>2</sub> R114A,B	0 to 10%/0 to 30%	MCR (ACH)	(RG1) EQ	I	RBS112'	IE	Installed
C-12	Containment and Drywell Oxygen Concentration (for inerted Containment Plant)	1T48*O <sub>2</sub> R125A,B	0 to 10%/0 to 30%	MCR (ACH)	(RG1) EQ	I	RBS112'	IE	Installed

Table 1									
Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance W/REG 1.97 Envir. Qual. Guidelines	LILCO QA Category	Sensor Location	Power Supply	Schedule
C-13	Containment Effluent Radioactivity Noble Gases (From Identified Release Points Including Standby Gas Treatment System Vent)	ID11*RE021A	$10^{-6}$ $\mu$ Ci/cc to	MCR	(RG3) N/A	I	HV63'	IE*	Installed
		ID11*RE022A	$10^{-1}$ $\mu$ Ci/cc	MCR	(RG3) N/A	I	HV63'	IE*	*Power to heat tracing is non-IE
		ID11*PNL134	$10^{-2}$ $\mu$ Ci/cc to $10^{-4}$ $\mu$ Ci/cc	MCR	(RG2) Mild	I	TB113'	IE	
C-14	Radiation Exposure Rate (Inside Building or Areas, EG. Auxiliary Building, Fuel Handling, Building, Containment, Which are in Direct Contact with Primary Containment Where Penetrations and Hatches are Located)	Not Provided on Shoreham	-	N/A	N/A	N/A	N/A	N/A	This parameter will not be implemented; alternate instrumentation is available. See Note A - Issue 6.
C-15	Effluent Radioactivity-Noble Gases (from Buildings as Noted Above)	ID11*PNL134	$10^{-2}$ $\mu$ Ci/cc	MCR	(RG2) Mild	I	TB113'	IE	Installed
		ID11*PNL126	$10^{-4}$ $\mu$ Ci/cc	MCR	(RG2) Mild	I	TB63'	IE	See Note B
		ID11*RE021A,	$1 \times 10^{-6}$ $\mu$ Ci/cc	MCR	(RG2) Mild	I	HV63'	IE*	*Power to heat tracing
		ID11*RE022A,	to $10^{-1}$ $\mu$ Ci/cc	MCR	(RG2) Mild	I	HV63'	IE*	is non-IE
		ID11-RE042	$1 \times 10^{-6}$ $\mu$ Ci/cc to $10^{-1}$ $\mu$ Ci/cc	MCR	(RG2) NA	II	RBS175'	Non-IE	

Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	W/REG 1.97	LILCO QA Category	Sensor Location	Power Supply	Table 1
					Envir. Qual. Guidelines				Schedule
D-1	Main Feed-water Flow	IC32-FR020 (C32-R607)	0-12x10 <sup>6</sup> LBS/HR	MCR (H11-P603)	(RG3) N/A	II	TB-37'	Non-1E	Installed
D-2	Condensate Storage Tank Level	IP11-LI002	1 to 50 feet		(RG3) N/A	II	Local	Non-1E	Installed
D-3	Suppression Chamber Spray Flow	Not Provided on Shoreham	--	N/A	N/A	N/A	N/A	N/A	This parameter will not be implemented, alternate instrumentation is available. See Note A - Issue 7.
D-4	Drywell Pressure	IZ93-PI140 IZ93-PR501A,B	-5 to 150 Psia	MCR (H11-P601) MCR (H11-PCM)	(RG2) EQ (RG2) EQ	II I	RBS78' RBS78'	Non-1E 1E	Installed
D-5	Suppression Pool Water Level (Weir)	Not Applicable to Shoreham	--	N/A	N/A	N/A	N/A	N/A	Not Applicable to Shoreham
D-6	Suppression Pool Water Temperature	IZ93*TRS500A,B (1 Foot Below NWL)	50 to 250F	MCR (H11-PCM)	(RG2) EQ	I	Supp Pool	1E	Installed
D-7	Drywell Atmosphere Temperature	Computer Points A8405 Thru A8415	40 to 440F	MCR (Main Process computer CRT)	(RG2) EQ	II	RBS Various elev.	Non-1E	Installed
D-8	Drywell Spray Flow	Not Provided on Shoreham	--	N/A	N/A	N/A	N/A	N/A	See comments under Item No. B.8.
D-9	Main Steam-line Isolation Valves Leakage Control System Pressure	1E32-PI031A,B, C, D	0-25 Psig	MCR: (H11-P654)	(RG2) FT/IJ	I	RBS 63': (H21-P74)	1E	Installed
		1E32-PI032A,B, C, D	0-100 Psig	(H11-P655)	(RG2) FT/IJ	I	(H21-P74)	1E	
		1E32-PI033	0-100 Psig	(H11-P655)	(RG2) FT/IJ	I	(H21-P73)	1E	
		1E32-PI034	0-25 Psig	(H11-P655)	(RG2) FT/IJ	I	(H21-P73)	1E	
		1E32-PI034	0-100" H <sub>2</sub> O	(H11-P655)	(RG2) FT/IJ	I	(H21-P73)	1E	
		1E32-PDI038	0-100" L <sub>2</sub> O	(H11-P654)	(RG2) FT/IJ	I	(H21-P74)	1E	



Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance	LILCO QA Category	Sensor Location	Power Supply	Table 1
					W/REG 1.97 Envir. Qual. Guidelines				Schedule
D-10	Primary System Safety Relief Valve Positions, Including ADS or Flow Through Pressure in Valve Lines	1B21*PMU501	0 to 100 Psig	MCR (H11-P602)	(RG2) EQ	I	RBS 8' (F21-P37) RBS 40' (H21-P38)	1E	Installed
D-11	Isolation Condenser System Valve Position	Not Applicable to Shoreham	--	N/A	N/A	N/A	N/A	N/A	Not Applicable to Shoreham
D-12	Isolation Condenser System Valve Position	Not Applicable	--	N/A	N/A	N/A	N/A	N/A	Not Applicable to Shoreham
D-13	RLIC Flow	1E51-FI003 (E51-R600-1)	0-500 GPM	MCR (H11-P602)	(RG2) FT/IJ	I	RBS 8' (H21-P17)	1E	Installed See Note A- Issue 9
D-14	HPCI Flow	1E41-FI003	0-5,000 GPM	MCR (H11-P601)	(RG2) FT/IJ	I	RBS 8' (H21-P14)	1E	Installed See Note A- Issue 9
D-15	Core Spray System Flow	1E21-FI002A,B (E21-R601A,B)		MCR (H11-P601)	(RG2) FT/IJ	I	RBS 8' (H21-P01)	1E	Installed See Note A- Issue 9
D-16	LPCI System Flow	1E11*FR001 (E11-R608)	0 to 20,000 GPM	MCR (H11-P601)	(RG2) FT/IJ	I	RBS 8' (H21-P18) (P21)	1E	See Note A- Issue 9
D-17	SLCS Flow	Not Provided on Shoreham	--	N/A	N/A	N/A	N/A	N/A	This parameter will not be implemented; alternate instrumentation is available. See Note A - Issue 9.

Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance	LILCO QA Category	Sensor Location	Power Supply	Schedule
					W/REG 1.97 Envir. Qual. Guidelines				
D-18	SLCS Storage	1C41-LT001 (C41-R601)	0 to 5,000	MCR (H11-P603)	N/A	II	RBS 113' (H21-P11)	Non-1E	Installed equipment is permanently acceptable as is. See Note A - Issue 10.
D-19	RHR System Flow	1E11*FR001 (E11-R608)	0 to 20,000 GPM	MCR (H11-P601)	(RG2) FT/IJ	I	RBS 8' (H21-P18) (P21)	1E	Installed
D-20	RHR Heat Exchanger Outlet Temperature	1E41-TR100 (E41-R605)	40 to 400F	MCR (H11-P614)	(RG2) SQ	I	RBS40'	Non-1E	Installed
D-21	Cooling Water Tem- perature to ESF System Components	1E41-TR100 (E41-R605)	40 to 320F	MCR (H11-P614)	(RG2) EQ	I	RBS8'	Non-1E	Installed
D-22	Cooling Water Flow to ESF System Components	1E11*FI006A,B (E11-R602A,B)	0 to 12,000 GPM	MCR (H11-P601)	(RG2) FT/IJ	I	RBS8'	1E	Installed
D-23	High-Level Radioactive Liquid Tank Level	1G11-LI026A,B	0 to 25,000 Gal	Radwaste Bldg: (1G11-PNL 047)	(RG1) N/A	II	RW17'	Non-1E1	Installed
		1G11-LI005A,B		(1G11-PNL 047)	(RG3) N/A	II	RW17'	Non-1E	
		1G11-LI027A,B		(1G11-PNL 047)	(RG3) N/A	II	RW17'	Non-1E	
		1G11-LI169A,B		(1G11-PNL 047)	(RG3) N/A	II	RW17'	Non-1E	
		1G11-LI175A,B		(1G11-PNL 047)	(RG3) N/A	II	RW17'	Non-1E	
D-24	Emergency Ventilation Damper Position	Various - (See Note G)	Open-Closed	MCR (H11-P601)	(RG2) Note G	I	Lim SW on Dampers	1E	Installed

Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance	LILCO QA Category	Sensor Location	Power Supply	Table 1
					W/REG 1.97 Envir. Qual. Guidelines				Schedule
D-25	Status of Standby Power and Other Energy Sources Important to Safety (Hydraulic, Pneumatic)	Emergency Buses 1P50-P1116A,B	Voltages and Currents 0 to 150 Psig	Note E MCR (MXP)	(RG2) Note H (RG2) MR	I I	Note E RBS151'	1E 1E	Installed
E-1	Primary Containment Area Radiation High Ranges	1D21*RE085A,B	1 to 10 <sup>7</sup> R/HR MCR		(RG1) TA/IJ	I	RBP 78'	1E	Installed
E-2	Reactor Building or Secondary Containment Area Radiation	Not Provided on Shoreham	--	N/A	N/A	N/A	N/A	N/A	This parameter will not be implemented; alternate instrumentation is available. See Note A - Issue 12.
E-3	Radiation Exposure Rates (Inside Buildings or Areas Where Access is Required to Service Equipment Important to Safety)	Not Provided on Shoreham	--	N/A	N/A	N/A	N/A	N/A	See Note A - Issue 13

Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance	LILCO QA Category	Sensor Location	Power Supply	Table 1
					W/REG 1.97 Envir. Qual. Guidelines				Schedule
E-4	Noble Gases and Vent Flow Rate: Drywell Purge, Standby Gas Treatment System Purge (for Mark I and II Plants)	Not Applicable to Shoreham	-	N/A	N/A	N/A	N/A	N/A	Separate radiation monitor not needed since effluent discharges through common plant vent.
E-5	Noble Gases and Vent Flow Rate: Drywell Purge, Standby Gas Treatment System Purge (for Marks I, II and III Plants)	ID11*PNL-134	$10^{-2}$ $\mu$ Ci/cc	MCR	(RG2) Mild	I	TB113'	1E*	Installed
		ID11*PNL-021,	to $10^{-6}$ $\mu$ Ci/cc	MCR	(RG2) Mild	I	HV63'	1E*	*Power to heat
		-022	$10^{-1}$ $\mu$ Ci/cc	MCR	(RG2) Mild	I	HV63'	1E*	tracing is non-1E.
E-6	Noble Gases and Vent Flow Rate: Secondary Containment (Reactor Shield Building Annulus, if in Design)	Refer to E-5	-	See E-5	See E-5	See E-5	See E-5	See E-5	Installed

Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance	LILCO QA Category	Sensor Location	Power Supply	Table 1
					W/REG 1.97 Envir. Qual. Guidelines				Schedule
E-7	Noble Gases and Vent Flow Rate Auxiliary Building (Including any Building Containing Primary Gases E.G. Waste Gas Decay Tank)	Not Applicable to Shoreham	-	N/A	N/A	N/A	N/A	N/A	Separate radiation monitor not needed since effluent discharges through common plant vent.
E-8	Noble Gases and Vent Flow Rate: Common Plant Vent or Multipurpose Vent Discharging Any of Above Releases (If Drywell or SGTS Purge is included)	ID11-RE042 ID11*PNL126 IU41-FT085 ID11*FT069	$10^{-6}$ to $10^{-1}$ $\mu$ Ci/cc $10^{-2}$ to $10^0$ $\mu$ Ci/cc 0 to 401,011 CFM	MCR MCR RBS175' TB63'	(RG2) N/A (RG2) Mild (RG2) Mild (RG2) Mild	II I II I	RBS175' (D11-P41) TB63' TB134' TB99'	Non-IE IE Non-IE IE	Installed See Note C
E-9	Noble Gases and Vent Flow Rate: All Other Identified Release Points	Not Applicable to Shoreham	-	N/A	N/A	N/A	N/A	N/A	Separate radiation monitor not needed since effluent discharges through common plant vent.

Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance	LILCO QA Category	Sensor Location	Power Supply	Schedule
					W/REG 1.97 Envir. Qual. Guidelines				
E-10	Particulates and Halo gens: All identified Plant Release Points. Sampling with Onsite Analysis Capability	1T46*FRC004A,B	0-2,000 CFM	MCR(H11-PVC2)	(RG3) N/A	I	RBS151'	1E	Installed
		ID11*FT069	0-401,011 CFM	TB63'	(RG3) N/A	I	TB99'	1E	
		1U41-FT035	0-401,011 CFM	RBS175'	(RG3) N/A	II	TB134'	Non-1E	
		ID11-RE041	10 <sup>-10</sup> to 10 <sup>-5</sup> $\mu$ Ci/cc	MCR	(RG3) N/A	II	RBS175'	Non-1E	
E-11	Radiation Exposure Meters (Continuous Indication at Fixed Locations)	Not Provided on Shoreham	-	N/A	N/A	N/A	N/A	N/A	On Hold Based On July 1981 Errata to Reg. Guide 1.97, Rev. 2
E-12	Airborne Radio-Halogen and Particulates (Portable Sampling with Onsite Analysis Capability)	Mark Numbers not Applicable to Portable Equipment	-	N/A	N/A	N/A	N/A	N/A	Portable equipment with specified range procured.
E-13	Plant and Environs Radiation (Portable Instrumentation)	Mark Numbers not Applicable to Portable Equipment	-	N/A	N/A	N/A	N/A	N/A	Portable equipment with specified range procured.



Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance	LILCO QA Category	Sensor Location	Power Supply	Table 1
					W/REG 1.97 Envir. Qual. Guidelines				Schedule
E-14	Plant and Environs Radioactivity (Portable Instrumentation)	Mark Numbers not Applicable to Portable Equipment	-	N/A	N/A	N/A	N/A	N/A	Portable equipment with specified range procured.
E-15	Wind Direction	P64-XR501	0-540°	MCR (P64-EMP)	(RG3) N/A	II	Meteor. Tower	Non-1E	Permanent Installation underway.
E-16	Wind Speed	P64-XR503	0 to 45 MPS (0 to 100 MPH)	MCR (P64-EMP)	(RG3) N/A	II	Meteor. Tower	Non-1E	Permanent installation underway.
E-17	Estimation of Atmospheric Stability	P64-XR502	-10 to 20F (33 and 50 ft. Interval)	MCR (P64-EMP)	(RG3) N/A	II	Meteor. Tower	Non-1E	Permanent installation underway.
E-18	Accident Sampling Capability	-	-	-	(RG3) N/A	-	-	Non-1E	Installed
	Primary Coolant and Sump:								
	-Gross Activity	IZ 96-RM-011, 012, 013	8 Decades 0.1 $\mu$ R/hr to $1 \times 10^7$ mR/hr	IZ 96-PNL-PASF	(RG3) N/A	II	PASF -40'	Non-1E	Installed
	-Gamma Spectrum	See C-2	-	-	(RG3) N/A	II	-	-	To be Installed Prior to Fuel Load
	-Boron Content	IZ 96-PA 025	100 to 1,100 FPM	PASF	(RG3) N/A	II	PASF -40'	Non-1E	Installed

Item No.	Variable	Indicating Device	SNPS-1 Range	Indicating Device Location	Compliance		Sensor Location	Power Supply	Table 1 Schedule
					W/REG 1.97	LILCO QA			
					Envir. Qual. Guidelines	Category			
E-18 (Cont'd)									
	-Chloride Content	IZ 96-CLZ 014	0.1 to 100PPM	PASF	(RG3) N/A	II	PASF-40'	Non-1E	See Note M
		IZ 96-XZ 152	0 to 20 PPM	PASF	(RG3) N/A	II	PASF-40'	Non-1E	Installed
	-Dissolved Hydrogen Total Gas	By Analytical Calculation	0 to 2,000 $\frac{cc(STP)}{Kg}$	PASF	(RG3) N/A	II	PASF-40'	Non-1E	Installed
	-Dissolved Oxygen	IZ 96-0ZZ-147	0 to 19.99 PPM	PASF	-	II	PASF-40'	Non-1E	Installed
	-pH	IZ 96-XZ-025	1 to 13	PASF	-	II	PASF-40'	Non-1E	Installed
E-19	Accident Sampling Capability			-	(RG3) N/A	-	-	Non-1E	Installed
	Containment Air:								
	-Hydrogen Content	1T48*H <sub>2</sub> R114A,B	0 to 10%/ 0 to 30%	MCR (ACH)	-	I	RBS112'	1E	Installed
	-Oxygen Content	1T48*O <sub>2</sub> R125A,B	0 to 10%/ 0 to 30%	MCR (ACH)	-	I	RBS112'	1E	Installed
	-Gamma Spectrum	See C-2	-	-	-	-		Non-1E	To be Installed Prior to Fuel Load

TABLE II

ITEM D24: EMERGENCY VENT DAMPER POSITION\*

<u>Limit Switch Mark No.</u>	<u>Indicator Location</u>	<u>Compliance w/REG 1.97 Envir. Qual. Guidelines</u>	<u>LILCO QA Category</u>	<u>Location of Limit Switch &amp; Valve</u>	<u>Power Supply</u>
IT46*PNS034A,B	VC2	RR	I	RBS-182'	1E
IT46*PNS035A,B	VC2	EQ	I	RBS-112'	1E
IT46*PNS037A,B	VC2	EQ	I	RBS-95'	1E

\*For schedule status, see Item D24 on Table I.

Note: All indicators are located in the main control room (MCR).

TABLE II (continued)

## ITEM B10: CONTAIN ISOL VALVE POS INDICATION\*\*

<u>Limit Switch Mark No.</u> (Note L)	<u>Indicator Location</u>	<u>Compliance w/REG 1.97 Envir. Qual. Guidelines</u>	<u>LILCO QA Category</u>	<u>Location of Limit Switch &amp; Valve</u>	<u>Power Supply</u>
1B21*MOV062	H11P601	EQ	I	RBS-78'	1E
1B21*MOV063	H11P601	EQ	I	RBS-78'	1E
1B21*MOV064	H11P601	EQ	I	RBS-78'	1E
1B21*PNS036A,B	H11P602	RR	I	ST-87'	1E
1B21*PNS081A-D	H11P602	RR	I	RBP-82'	1E
1B21*PNS082A-D	H11P601	RR	I	ST-82'	1E
1B21*SOV313A,B	AC1	EQ	I	RBS-78'	1E
1B31*PNS081	H11P602	RR	I	RBD-133'	1E
1B31*PNS082	H11P601	RR	I	RBS-155'	1E
1C41*EV010A,B	H11P603	N/A (Note J)	I	N/A (Note J)	1E
1C51*SOV028	MXP	EQ	I	RBS-78'	1E
1C51*EV801A-D	H11P601 (Note K)	N/A (Note K)	I	N/A (Note K)	Non-1E
1D11*MOV032A,B	MXP	EQ	I	RBD-101'/ RBS-63'	1E
1D11*MOV033A,B	MXP	EQ	I	RBD-101'/ RBS-63'	1E
1E11*PNS031A-D	H11P601	EQ	I	RBS-24'	1E
1E11*PNS037A,B	H11P601	EQ	I	RBS-72'	1E
1E11*MOV038A,B	H11P601	EQ	I	RBS-103'	1E
1E11*MOV039A,B	H11P601	EQ	I	RBS-103'	1E
1E11*PNS040A,B	H11P601	EQ	I	RBS-72'	1E
1E11*MOV041A,B	H11P601	EQ	I	RBS-51'/40'	1E
1E11*MOV042A,B	H11P601	EQ	I	RBS-29'	1E
1E11*MOV044A,B	H11P601	EQ	I	RBS-17'	1E
1E11*MOV045A,B	H11P601	EQ	I	RBS-17'	1E
1E11*PNS047	H11P602	EQ	I	RBD-84'	1E
1E11*PNS048	H11P601	EQ	I	RBS-63'	1E
1E11*MOV053	H11P601	EQ	I	RBS-103'	1E
1E11*MOV054	H11P602	EQ	I	RBD-104'	1E
1E11*MOV055A,B	H11P601	EQ	I	RBS-45'	1E
1E11*MOV056A,B	H11P601	EQ	I	RBS-45'	1E
1E11*MOV081A,B	H11P601	EQ	I	RBD-81'	1E

\*\*For schedule status, see Item B10 on Table I.

Note: All indicators located in the main control room (MCR).

TABLE II (continued)

## ITEM B10\*\*

<u>Limit Switch Mark No.</u>	<u>Indicator Location</u>	<u>Compliance w/REG 1.97 Envir. Qual. Guidelines</u>	<u>LILCO QA Category</u>	<u>Location of Limit Switch &amp; Valve</u>	<u>Power Supply</u>
1E11*PNS081A,B	H11P601	RR	I	RBP-79'	1E
1E21*MOV033A,B	H11P601	EQ	I	RBS-104'	1E
1E21*MOV034A,B	H11P601	EQ	I	RBS-15'	1E
1E21*MOV031A,B	H11P601	EQ	I	RBS-24'	1E
1E21*MOV035A,B	H11P601	EQ	I	RBS-53'	1E
1E21*MOV081A,B	H11P601	EQ	I	RBD-128'	1E
1E21*PNS081A,B	H11P601	RR	I	RBP-126'	1E
1E41*MOV032	H11P601	EQ	I	RBS-24'	1E
1E41*MOV036	H11P601	EQ	I	RBS-20'	1E
1E41*MOV041	H11P601	EQ	I	RBD-66'	1E
1E41*MOV042	H11P601	EQ	I	RBS-63'	1E
1E41*MOV044	H11P601	EQ	I	RBS-30'	1E
1E41*MOV047	H11P601	EQ	I	RBD-66'	1E
1E41*MOV048	H11P601	EQ	I	RBS-64'	1E
1E41*MOV049	H11P601	EQ	I	RBS-34'	1E
1E51*MOV032	H11P602	EQ	I	RBS-24'	1E
1E51*MOV036	H11P602	EQ	I	RBS-18'	1E
1E51*MOV041	H11P602	EQ	I	RBD-88'	1E
1E51*MOV042	H11P602	EQ	I	RBD-88'	1E
1E51*MOV047	H11P602	EQ	I	RBD-88'	1E
1B21*MOV031	H11P602	EQ	I	RBD-79'	1E
1B21*MOV032	H11P601	EQ	I	RBS-79'	1E
1B21*MOV061	H11P601	EQ	I	RBS-78'	1E
1E51*MOV048	H11P602	EQ	I	RBS-88'	1E
1E51*MOV049	H11P602	EQ	I	RBS-34'	1E
1E51*MOV045	H11P602	EQ	I	RBS-31'	1E
1E51*MOV046	H11P602	EQ	I	RBS-29'	1E
1G11*MOV246	H11P602	EQ	I	RBS-40'	1E
1G11*MOV247	H11P601	EQ	I	RBS-40'	1E
1G11*MOV248	H11P602	EQ	I	RBS-40'	1E
1G11*MOV249	H11P601	EQ	I	RBS-40'	1E
1G11*MOV639C	PCM	EQ	I	RBS-20'	1E
1G33*MOV033	H11P602	EQ	I	RBD-121'	1E

\*\*For schedule status, see Item B10 on Table I.

Note: All indicators located in the main control room (MCR).

TABLE II (continued)

## ITEM B10\*\*

<u>Limit Switch Mark No.</u>	<u>Indicator Location</u>	<u>Compliance w/REG 1.97 Envir. Qual. Guidelines</u>	<u>LILCO QA Category</u>	<u>Location of Limit Switch &amp; Valve</u>	<u>Power Supply</u>
1G33*MOV034	H11P601	EQ	I	KBS-121'	1E
1G41*MOV033A,B	MXP	EQ	I	RBS-46'	1E
1G41*MOV034A,B	MXP	EQ	I	RBS-30'	1E
1P42*MOV035	MXP	EQ	I	RBS-67'	1E
1P42*MOV036	MXP	EQ	I	RBS-67'	1E
1P42*MOV047	MXP	EQ	I	RBS-68'	1E
1P42*MOV048	MXP	EQ	I	RBS-68'	1E
1P42*MOV147	MXP	EQ	I	RBD-74'	1E
1P42*MOV148	MXP	EQ	I	RBD-74'	1E
1P42*MOV231	MXP	EQ	I	RBS-66'	1E
1P42*MOV232	MXP	EQ	I	RBS-67'	1E
1P42*MOV233	MXP	EQ	I	RBS-68'	1E
1P42*MOV234	MXP	EQ	I	RBS-69'	1E
1P42*MOV235	MXP	EQ	I	RBS-70'	1E
1P42*MOV236	MXP	EQ	I	RBS-66'	1E
1P42*MOV237	MXP	EQ	I	RBS-67'	1E
1P42*MOV238	MXP	EQ	I	RBS-68'	1E
1P42*MOV239	MXP	EQ	I	RBS-69'	1E
1P42*MOV240	MXP	EQ	I	RBS-70'	1E
1P50*MOV103A,B	MXP	EQ	I	RBS-78'	1E
1P50*MOV104	MXP	EQ	I	RBS-20'	1E
1P50*MOV106	MXP	EQ	I	RBS-20'	1E
1T23*MOV031A,B	MXP	EQ	I	RBS-40'	1E
1T24*PNS001A,B	ACH	RR	I	RBS-40'	1E
1T24*PNS004A,B	ACH	RR	I	RBS-40'	1E
1T46*PNS038A-D	VC2	EQ	I	RBP-78'	1E
1T46*PNS039A-D	VC2	EQ	I	RBP-112'/RBS-40'	1E
1T46*PNS078A,B	ACH	RR	I	RBS-90'/96'	1E
1T46*PNS079A,B	ACH	EQ	I	RBS-63'	1E
1T48*MOV031A,B	ACH	EQ	I	RBS-67'/73'	1E

\*\*For schedule status, see Item B10 on Table I.

Note: All indicators located in the main control room (MCR).



TABLE II (continued)

ITEM B10\*\*

<u>Limit Switch Mark No.</u>	<u>Indicator Location</u>	<u>Compliance w/REG 1.97 Envir. Qual. Guidelines</u>	<u>LILCO QA Category</u>	<u>Location of Limit Switch &amp; Valve</u>	<u>Power Supply</u>
1T48*MOV032A,B	ACH	EQ	I	RBD-71'	IE
1T48*MOV033A,B	ACH	EQ	I	RBS-51'	IE
1T48*MOV034A,B	ACH	EQ	I	RBS-51'	IE
1T48*MOV035A,B	ACH	EQ	I	RBS-68'/73'	IE
1T48*MOV037A,B	ACH	EQ	I	RBS-73'/72'	IE
1T48*MOV038A,B	ACH	EQ	I	RBS-51'	IE
1T48*MOV040A,B	ACH	EQ	I	RBS-51'	IE
1T48*SOV126A,B	AC1/AC2	EQ	I	RBS-63'	IE
1T48*SOV127A,B	AC1/AC2	EQ	I	RBS-40'	IE
1T48*SOV128A,R	AC1/AC2	EQ	I	RBS-78'	IE
1T48*SOV129A,B	AC1/AC2	EQ	I	RBS-40'	IE
1T48*SOV130	AC1	EQ	I	RBS-63'	IE
1T48*SOV131	AC2	EQ	I	RBS-63'	IE
1E32*MOV021A-D	H11P654	EQ	I	RBS-78'	IE
1E11*SOV168	AC1	EQ	I	RBS-8'	IE
1E11*SOV169	AC2	EQ	I	RBS-8'	IE
1C51*SOV801A-D	H11P601 (Note K)	IJ	I	RBS-78'	Non-IE

\*\*For schedule status, see Item B10 on Table I.

Note: All indicators located in the main control room (MCR).

TABLE III

<u>Item No.</u>	<u>Sensors and Associated Components</u>
A-1	1B21*LIT007A,B 1B21*LT155A,C
A-2	1B21*PT004A,B
A-3	1Z93*PT003A,B 1R41*E/S506A,B
A-4	1G11*LE645A,B 1G11*LIS645A,B 1G11*LAH 1R41*E/S506A,B
A-5	1Z93*LT001A,B 1Z93*LT012A,B 1R41*E/S506A,B
A-6	1T48*02IT123A,B 1T48*02Z123A,B 1T48*02I123AX,AY 1T48*02I123BX,BY 1T48-02AH 1T48*02IT124A,B 1T48*02Z124A,B 1T48*02I124AX,AY 1T48*02I124BX,BY 1T48*PNL068A,B 1T48*PNL069A,B
A-7	1Z93*TE110-113W,X,Y,Z 1Z93*TIS110W,X,Y,Z 1R41*E/S507W,X,Y,Z 1Z93-TAH
B-1	Various
B-4	1B21*LIT007A,B 1B21*LT155A,C
B-6	1B21*PT004A,B
B-7	1Z93*PT003A,B 1R41*E/S506A,B

TABLE III

<u>Item No.</u>	<u>Sensors and Associated Components</u>
B-8	1G11-LT210 1G11-LR505 1R41*E/S509
B-9	1Z93*PT003A,B 1R41*E/S506A,B
C-4	1B21*PT004A,B
C-6	1G11-LT210 1G11-LR505 1R41*E/S509
C-7	1Z93*LT001A,B 1Z93*LT012A,B 1R41*E/S506A,B
C-8	1Z93*PT003A,B 1R41*E/S506A,B
C-9	1B21*PT004A,B
C-10	1Z93*PT003A,B 1R41*E/S506A,B
C-11	1T48*H <sub>2</sub> Z115A,B 1T48*H <sub>2</sub> IT115A,B 1T48*H <sub>2</sub> I115AX,BX 1T48H <sub>2</sub> I115AY,BY 1T48*PNL68A,B H <sub>2</sub> Alarms(High) 1T48*H <sub>2</sub> Z116A,B 1T48*H <sub>2</sub> IT116A,B 1T48*H <sub>2</sub> I116AX,BX 1T48*H <sub>2</sub> I116AY,BY 1T48*PNL069A,B
C-12	See Item No. A-6
C-15	1D11*RTS021 1D11*RIS021A,B,C 1D11*PHL021A,B 1D11*RTS022 1D11*RIS022A,B,C 1D11*PHL022A,B 1D11-RTS041

TABLE III

<u>Item No.</u>	<u>Sensors and Associated Components</u>
C-15 (Cont'd)	1D11-RIS042 1D11-PNL041 1D11*RR106 1D11*RR107 1D11-RR101 RAH's (Radiation Alarm High)
D-4	1Z93*PT003A,B 1R41*E/S506A,B 1Z93-PT140 1Z93-PS140 Pressure Alarm High
D-6	See Item No. A-7
D-7	1T47-TE027A-L
D-9	1E32*PT031A-D 1E32*PS031A-D 1E32*PT032A-D 1E32*PS032A-D 1E32*PT033 1E32*PS033 1E32*PT034 1E32*PS034 1E32*PDT035 1E32*PDS035 1E32-PAL 1E32*PDT038 1E32*PDS038 1E32-SRU2,3,4,5
D-10	1B21*PT153A-L 1B21*PIS153A-L 1B21-PAH
D-13	1E51*FT003 1E51*FE003 1E51*FS003 1E51*FIC003 1E51*FK003 1E51-FAL
D-14	1E41*FT003 1E41*FE003 1E41*FS003 1E41*FK003 1E41*FIC003 1E41-FAL

TABLE III

<u>Item No.</u>	<u>Sensors and Associated Components</u>
D-15	1E21*FT002A,B 1E21*FE002A,B 1E21*FIS002A,B
D-19	1E11*FT001A,B 1E11*FE001A,B 1E11*FI001A,B 1E11*PDS001A,B 1E11*FK001A,B 1E11-SRU1A,B
D-20	1E11-TE012A,B
D-21	1E11*TE013A,B
D-22	1E11*FT006A,B 1E11*FE006A,B SRU1A SRU1B
D-25	1P50*PT116A,B 1P50*PS116A,B PAH/L (Pressure Alarm High/Low) 1R41*E/S60
E-1	1D21*RIS085A,B 1D11*RR502 1D11*RR503
E-5	1D11*RTS021 1D11*RE021A,B 1D11*RIS021A,B,C 1D11*RTS022 1D11*RE022A,B 1D11*RIS022A,B,C 1D11*RR106 1D11*RR107 RAH's (Radiation Alarm High)
E-6	See Item No. E-5
E-8	1U41-FE085 1D11-RTS041 1D11-RR101 1D11-RIS042 1D11-PHLO41 1D11*PHLO69 1D11-RAH



## LEGEND FOR TABLES I AND II OF ATTACHMENT C

### Key to Symbols Used in Tables I and II, Attachment C to SHRC-863

#### NRC Regulatory Guide 1.97 Qualification Criteria

(RG1) - Category 1 Environmental Qualification Criteria

(RG2) - Category 2 Environmental Qualification Criteria

(RG3) - Category 3 Environmental Qualification Criteria

#### Environmental Qualification Status

EQ - Environmental Qualification Complete

FT/IT - Further Testing or Analysis Needed; a Justification for Interim Operation Pending Completion is Provided in the Environmental Qualification Report for Class 1E Equipment - Shoreham Nuclear Power Station

MR - Modification Recommended and Will be Implemented Prior to Fuel Load, Thus Completing Environmental Qualification

RR - Replacement Recommended and Will be Implemented Prior to Fuel Load, Thus Completing Environmental Qualification

TA/IT - Testing and/or Analysis Program Has Been Initiated; a Justification for Interim Operation Pending Completion is Provided in the Environmental Qualification Report for Class 1E Equipment - Shoreham Nuclear Power Station

Mild - Location of Sensor is Not in a Potentially Harsh, Accident-Generated Environment

N/A - Not Applicable

#### Locations

HV - Heating and Ventilation Equipment Room

MCR - Main Control Room

PASF - Post-Accident Sampling Facility

RBD - Reactor Building Drywell

RBP - Reactor Building Primary Containment

Locations (Cont'd.)

RBS - Reactor Building Secondary Containment

RW - Radioactive Waste Building

ST - Steam Tunnel

TB - Turbine Building

NOTES FOR TABLES I AND II OF ATTACHMENT C

NOTE A - The BWR Owners' Group has investigated the recommendations of Regulatory Guide 1.97 Rev. 2 as they relate to the BWR and has issued a report entitled, "BWR Owners' Group Position on NRC Regulatory Guide 1.97 Rev.2" dated July 1982, to the utilities and the NRC. This report was formally transmitted to the NRC on April 6, 1983.

There are a number of generic issues in which deviation from the Reg. Guide recommendation is proposed and justified. These issues are referred to by number, as appropriate, throughout the table.

NOTE B - The low-range normal station vent monitor (1D11-RE042) channel will not be qualified seismically or for harsh environment. This equipment is covered under Reg. Guide 1.97 note 9 whereby "(e)xisting equipment may be used to monitor any portion of the stated range within the equipment design rating."

NOTE C - The low-range normal station vent monitor (1D11-RE042 and 1U41-FT085) channel will not be qualified seismically or for harsh environment. This equipment is covered under Reg. Guide 1.97 note 9 cited above in Note B.

NOTE D - (Item B10): All power supplies are Class 1E except for TIP Ball valves (C51\*S0V801A-D) and shear valves (C51\*EV801A-D).

NOTE E - (Item D25): All Class 1E motor control centers are monitored for voltage by a relay in the secondary side of each Class 1E circuit. In addition, the diesel generators are monitored for voltage and current output when in operation.

NOTE F - (Item B10): See Table II for containment isolation valve position indication.

NOTE G - (Item D24): See Table II for emergency damper position indication.

NOTE H: See the latest revision to the Environmental Qualification Report for Class 1E Equipment - Shoreham Nuclear Power Station for the environmental qualification status of those Class 1E MCC's which are located in potentially harsh, accident-generated environments.

NOTE J - These explosive squib valves are normally closed (NC); they explode to open; position indication consists of a local meter and indicator lights in the Main Control Room, indicating continuity in explosive circuit and implying valves are still closed (safe position for containment isolation).

NOTE K - The TIP Ball (SOV801) and shear (EV801) valve position indication consists of an annunciator window which shows either "all valves closed" or "any valves open." The Ball valve limit switches do not have separate mark numbers. The shear valve position is detected by continuity of its explosive circuit corresponding the normally open condition.

NOTE L - Where the limit switch is integral to the MOV/SOV, no separate limit switch mark number is shown; item is referenced to the MOV/SOV mark number.

NOTE M - Chloride Analyzer from Orion Research is still under development and will be installed as a post-fuel load modification if the manufacturer can provide a working instrument. An ion chromatograph (XZ152) has been installed to measure chlorides since the Orion equipment was not available.

NOTE N - Parts of this loop will be replaced for signal compatibility with SPDS computer system.

## ATTACHMENT D

### Upgrade Emergency Operating Procedures

#### I. Current Status of Emergency Operating Procedures (EOP)

Shoreham Nuclear Power Station has already implemented emergency procedures based on the BWR Owners Group Emergency Procedure guidelines. The following is a brief synopsis of the emergency procedure upgrade development to date.

In a letter dated October 21, 1980 from D. G. Eisenhut (NRC) to S. T. Rogers, the NRC indicated that the generic emergency procedure guidelines prepared by General Electric and the BWR Owners Group were acceptable for trial implementation at Shoreham. Based on this letter, LILCO developed procedures that are based on Revision 1B of the GE generic emergency procedure guidelines and submitted them to the NRC in July, 1981.

On September 16, 1981, LILCO met with the NRC staff and Battelle Pacific Northwest Laboratories (Battelle) to discuss their comments on these procedures. The general comments included human factors considerations on the use of standard logic format, interaction with non-emergency procedures, and the adequacy of the graphs that were included in the procedures.

On October 16, 1981, the emergency procedures were run for the NRC staff and Battelle on the Limerick Simulator. The plant operators used the emergency operating procedures to respond to simulated transients which required the concurrent use of the procedures and which varied from transients of minor nature to transients involving multiple system failures. On October 17, 1981, the LILCO Plant Staff walked through the emergency operating procedures for the NRC staff and Battelle in the Control Room of Shoreham Nuclear Power Station. The interaction between the operators, the procedures and the control panels was evaluated at that time.

Additional comments were generated by the NRC staff and Battelle based on the simulator demonstration and the Control Room walk-through.

LILCO then revised the emergency procedure to incorporate the additional comments. The procedures were also revised to include a two column format in accordance with NUREG-0799, the left hand column being used for action statements and the right hand column for notes and explanations. The emergency procedures were then submitted to General Electric for review and comment. LILCO received



ATTACHMENT D - Page two

comments from General Electric, dispositioned the comments and forwarded the comments and the disposition of the same to the NRC on 1/22/83. The Safety Evaluation Report dated February, 1983, NUREG 0420, Supplement No. 3, considered item I.c.8g of NUREG 0660 complete for issuance of an operating license.

II. Procedure Generation Package

In response to the integration requirements of NUREG 0737, Supplement 1, the EOPs will be subjected to a final validation as part of the plant specific event-based analysis associated with the DCRDR. Furthermore, it is now anticipated that a procedure generation package will be submitted approximately 6 months prior to the first refueling outage. This package will describe the method used to develop emergency operating procedures from the generic guidelines and also justify any deviations from the generic technical guidelines. In addition, a plant specific writers guide which details specific human factors used in preparing emergency operating procedures, a description of the verification/validation program and a description of the training program will be provided. The schedule for the submittal of the procedures generation package, as well as the updating of the EOPs, training and implementation to the most current version of the EOPs, is depicted in Attachment F.

## Attachment E

### Emergency Response Facilities

This attachment provides information on the extent to which the Shoreham Technical Support Center (TSC), Operational Support Center (OSC), and Emergency Operations Facility (EOF) comply with the requirements of Generic Letter 82-33. At Shoreham these facilities are scheduled to be operational at fuel load. The paragraphs below are numbered to be consistent with those of the generic letter.

#### Responses - 8.2 Technical Support Center (TSC)

- 8.2.1.a The TSC when activated is staffed by predesignated technical, engineering, management and other licensee personnel. Dedicated office space has been provided for use by NRC personnel.

The TSC will be activated upon the declaration of Alert, Site Area or General Emergency. The TSC will operate uninterrupted to provide plant management and technical support to plant operations personnel, and to relieve the reactor operators of peripheral duties and communications not directly related to reactor system manipulations.

The TSC will perform all EOF functions until that facility is operational and a transfer of responsibility has taken place.

- 8.2.1.b The onsite Technical Support Center is located within the protected area in the Office and Service Building Annex and connected to the Office and Service Building by an overpass. The TSC is within two minutes walking distance from the control room. Due to its location and communication capabilities, the TSC is capable of providing the necessary interaction with the control room, OSC, EOF, and other emergency personnel.
- 8.2.1.c The TSC is a two story structure with a total floor area of approximately 9,000 square feet. Adequate working space and conference facilities are available for a minimum of 45 people (25 on the second floor and 20 on the first floor). In addition, a separate computer room is provided for the ERF and SPDS computers as well as storage areas for TSC equipment, plant documents and historical data.

- 8.2.1.d The TSC structure is designed as a Seismic Category I structure. Additionally, the TSC structure has been designed for winds associated with the design basis tornado and wave forces associated with the probable maximum hurricane.
- 8.2.1.e The TSC has been equipped with HVAC systems to control air temperature and humidity for personal comfort and equipment performance. These systems maintain a positive pressure within the TSC to prevent infiltration of outside air during emergencies. In addition, the TSC HVAC system is capable of circulating both outside air and recirculating inside air through a special filter train containing charcoal during emergency operation.
- 8.2.1.f The TSC meets the radiological habitability criteria, as follows:
1. Eighteen inches of concrete shielding is provided to protect TSC personnel from post accident radiation sources outside the TSC.
  2. The TSC atmosphere is filtered through a charcoal-HEPA filter. A 99 percent efficiency credit is taken for filtration based upon adherence to the guidelines established in Table 2 of Regulatory Guide 1.52 follows:
  3. A portable, dedicated continuous airborne monitor, with an iodine cartridge and a particulate filter is provided within the TSC to monitor airborne activity levels. This monitor includes variable setpoints with audible and visual alarms to alert personnel to increasing airborne activity. This monitor is sensitive to radioiodine concentrations as low as  $10^{-7}$   $\mu\text{Ci/cc}$ . In addition, two portable, dedicated area monitors are provided within the TSC to provide continuous measuring of direct radiation levels. These monitors also include variable setpoints with audible and visual alarms.
- 8.2.1.g The TSC is equipped with reliable primary and backup communications systems consisting of hotlines, NAWAS dedicated lines commercial telephone, emergency card dialer telephone, private automatic exchange, public address and party lines, sound powered telephones and two-way radio. These communications systems are used for intraplant communications, communications with outside agencies and for communications to other ERF locations.

- 8.2.1.h Shoreham will use the current Phase I data system for fuel load and thereafter until the Phase II system (see Attachment A) becomes operational.
- 8.2.1.i The TSC will have on file accurate and up to date plant documents essential for evaluation of the plant under accident conditions. For a listing, refer to letter SNRC-643 dated December 12, 1981.
- 8.2.1.j The TSC is staffed with sufficient licensee designated technical engineering and licensee management personnel to provide the necessary support to the control room during emergency conditions. The activation of the TSC is accomplished within 60 minutes of the declaration of an Alert, Site Area, or General Emergency. Upon activation, the TSC succeeds the control room as the emergency response command post and functions in this capacity until the EOF is appropriately staffed and activated.
- 8.2.1.k The TSC design in itself is an example of the use of human factors engineering principals. This is exemplified by its layout, adequate work areas, storage space and ease of movement throughout the facility.

Responses - 8.3 Operational Support Center (OSC)

- 8.3.1.a The Operational Support Center is located in the Office and Service Building, located north-northwest of the Reactor Building, adjacent to the Turbine Building. An alternate OSC will be located in the basement of the TSC. The OSC will provide a location where support personnel can assemble and where plant logistic support can be coordinated. Both locations are within two minutes walking distance of the TSC and control room.

The OSC coordinator will coordinate the arrival and dispatch of technicians and interface with the TSC on corrective action related matters.

- 8.3.1.b OSC support personnel will report to the OSC when activated at the Alert classification. These personnel include: Instrumentation & Control Technicians, Mechanics, Electricians, Radiation Protection Technicians, Inplant Radiation Monitoring Technicians, Onsite/Offsite Radiation Monitoring Personnel and Radio-chemistry Technicians. The above personnel are capable of supporting those tasks and functions assigned by the OSC coordinator.

- 8.3.1.c The OSC is connected to both the TSC and control room by dedicated telephone. In addition, commercial telephone is also available to facilitate onsite and offsite communications. The OSC is also equipped with portable radio units which are tuned to the inplant radio frequencies. These frequencies are also accessible in the TSC and control room, thus providing back up to the dedicated telephone lines.



Response - 8.4 Emergency Operations Facility (EOF)

- 8.4.1.a The EOF is a licensee controlled and operated offsite support center. The EOF has facilities for and provides management of overall licensee emergency response, coordination of radiological and environmental assessment, determination of recommended public protective actions, and coordination of emergency response activities with Federal, State and local agencies.

When the EOF is activated, it shall be staffed by licensee, Federal, State, local and other emergency personnel designated by the Emergency Plan to perform these functions. A designated senior licensee official shall manage licensee activities in the EOF to support the designated official in the TSC and the senior reactor operator designated as the shift supervisor in the control room.

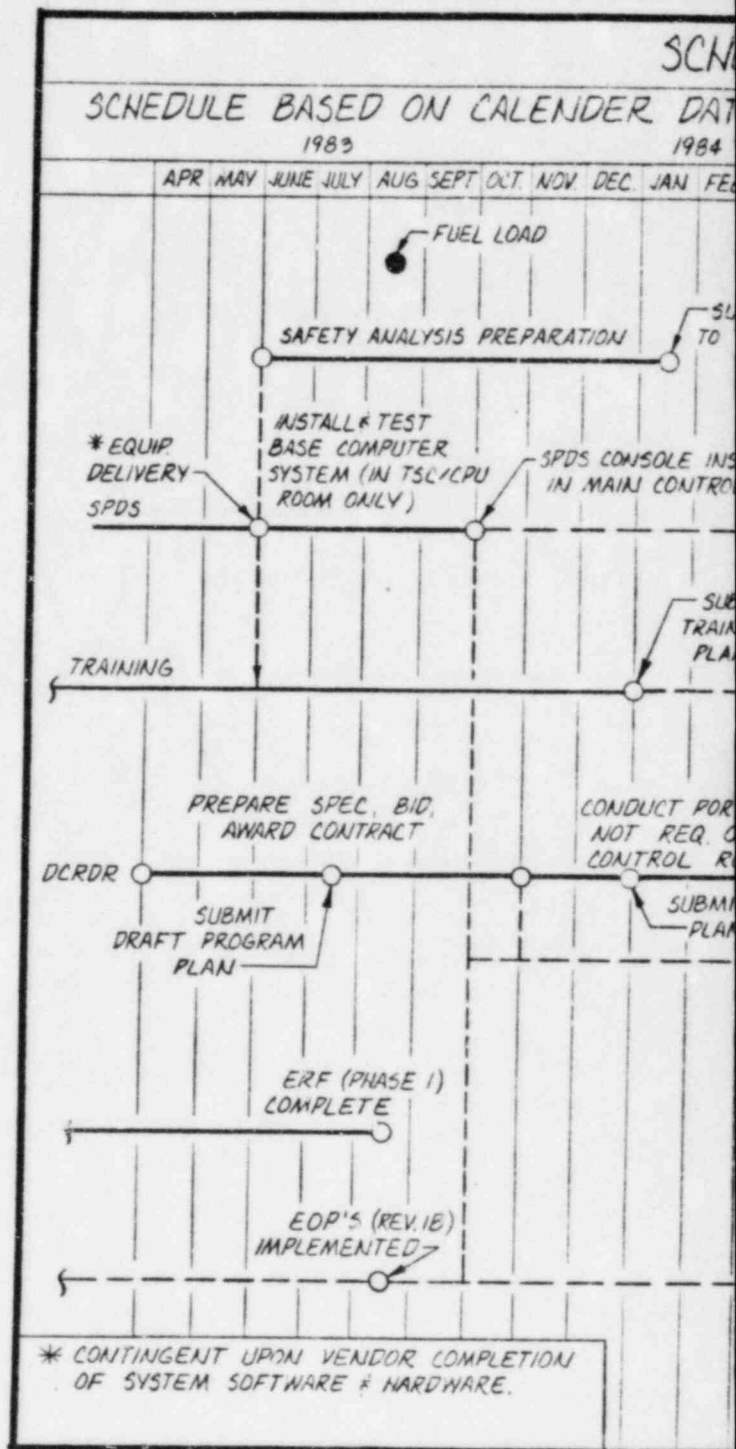
Facilities shall be provided in the EOF for the acquisition, display, and evaluation of all radiological, meteorological, and plant system data pertinent to determine offsite protection measures. These facilities will be used to evaluate the magnitude and effects of actual or potential radioactive releases from the plant and to determine offsite dose projections.

- 8.4.1.b The EOF is located approximately 19 miles from the Shoreham Nuclear Power Station. No special radiation protection features or radiological monitoring equipment are required, in accordance with Table 1 of Supplement 1 to NUREG 0737.

The distance of 19 miles between the EOF and the Shoreham site assures EOF habitability and virtually precludes the possibility of significant airborne radioactivity concentrations. Field survey teams, operating from the EOF, will detect and track any airborne activity which could reach the EOF well before it would be picked up by an EOF airborne monitor.

- 8.4.1.c Sufficient facilities have been provided, in the EOF when activated, to accommodate and support Federal, State and licensee predesignated personnel, equipment and documentation in the EOF.

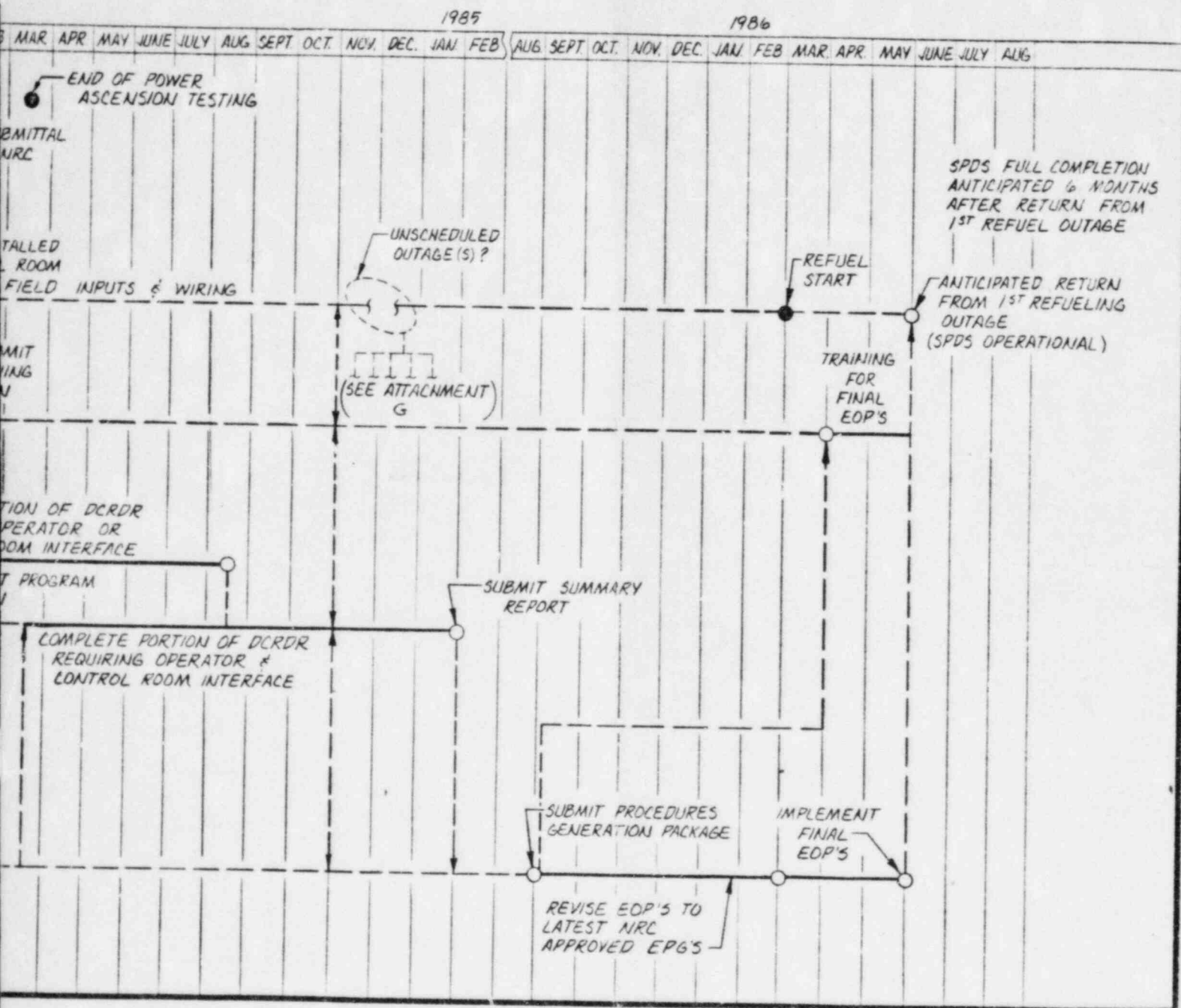
- 8.4.1.d The EOF which serves as the LILCO Training Center under normal (non-emergency) conditions has been built in accordance with the New York State Building Code.
- 8.4.1.e The EOF is sufficiently equipped to provide controlled humidity and temperature for personal comfort and equipment performance.
- 8.4.1.f The EOF is equipped with reliable primary and backup communications systems consisting of hotlines, dedicated lines, NAWAS commercial telephone, private automatic exchange and two-way radios to appropriate plant locations, outside agencies and other ERF locations.
- 8.4.1.g Shoreham will use the current Phase I data system for fuel load and thereafter until the Phase II system (see Attachment A) becomes operational.
- 8.4.1.h The EOF will have on file accurate and up to date plant documents essential for evaluation of the plant under accident conditions. For a listing, refer to letter SNRC-643 dated December 12, 1981.
- 8.4.1.i The EOF shall be staffed to provide the overall management of licensee resources and the continuous evaluation and coordination of licensee activities during and after an accident. Upon EOF activation, designated personnel shall report directly to the EOF to achieve full functional operation within 1 hour. The EOF staff shall include personnel to manage the licensee's onsite and offsite radiological monitoring, to perform radiological evaluations, and to interface with offsite officials.
- 8.4.1.j Security at the EOF, when activated, is provided by LILCO security personnel under the direction of LILCO corporate security. Under normal operating conditions the EOF functions as a training center and is secured with standard commercial alarm systems.
- 8.4.1.k The layout of the EOF was accomplished taking into account good human factors engineering principles similar to those described in section 8.2.1.k.



# SCHEDULE FOR EMERGENCY RESPONSE CAPABILITY

ATTACHMENT F

ES



## ATTACHMENT G

### SHOREHAM REGULATORY CHANGE PLANNING SCHEDULE

This schedule delineates LILCO's plans for implementing regulatory-required post-fuel load modifications. Non-regulatory based (LILCO initiated) modifications as presently defined will not conflict with this schedule. Proposed plant modifications are presently documented by Change Control Forms (CCFs). A tabulation providing a brief description of each regulatory-required post-fuel load CCF is included in the following pages.

Regulatory-required, post-fuel load CCFs are divided into three categories as follows:

1. Phase I - Modifications which do not impact Plant operations.
2. Phase II - Modifications which impact Plant operations or require a shutdown of approximately two weeks.
3. Phase III - Modifications which are extensive or complicated and require a shutdown greater than two weeks.

On the attached schedule, Phase I CCFs have been shown with targeted completion dates. Phase II and III CCFs are denoted with rectangular shaped symbols which are indicative of the magnitude (duration) required for installation of that particular modification. As shown on the schedule, the right end of the rectangle depicts the date at which the engineering and material support activities (design output packages) are scheduled to be completed and installation can proceed contingent upon plant operating conditions and/or expected outages. Phase II modification design output packages have been scheduled for completion such that these modifications can be installed in a currently defined, preferred sequence as plant operations and unexpected outages of sufficient duration allow. Phase III CCFs constitute a significant scope of work; they have been scheduled to have design output packages completed no earlier than approximately nine months prior to the start of the first refueling outage. This lead time is considered sufficient to allow completion of non-plant operations impacting pre-work and proper outage planning.

This schedule was developed based on best available information and predicated upon an August 1983 fuel load date. It should be recognized, however, that Shoreham is not an operating plant having a fixed outage schedule. Furthermore, other factors exist beyond LILCO's control (e.g. emergency planning) which may affect the ultimate schedule. Due to this uncertainty, it may be necessary to re-evaluate this schedule. We anticipate issuing an updated schedule by January 1984 and periodically thereafter as required.



DESCRIPTION OF POST FUEL LOAD CHANGE CONTROL FORMS (CCFs)

<u>CCF Number</u>	<u>Description</u>
PM-4A	Emergency Response Facility (ERF) TSC, Computer Complex
PM-4B	Neutron Flux Data Points
PM-4C	Control Rod Position Data Point
PM-4F	Containment Isolation Valve Position Data Points
PM-4V	Radiological Parameter Data Points
PM-4W	Meteorological Parameter Data Points
PM-4X	Nuclear Boiler Data Points
PM-4Y	Core Flow Data Points
PM-4Z	Recirculation Suction Temperature Data Points
PM-6A	Residual Heat Removal Heat Exchanger Strainer
PM-12	High Radiation Auto Closure of AOVs
PM-15	Hydrogen Recombiner Component and Rewiring
PM-16	Remote Shutdown Panel Addition of Loss of Power Alarm and Computer Points
PM-20	Reactor Building Standby Ventilation TCVs Actuator Rewiring as Modified by T46/12
PM-21	Same as Above Except T46/13
PM-26	Addition of Circuit Breaker to 1R35*PNL-R2
PM-27A	Reactor Protection System Data Points
PM-27B	ERF Computer Data Points
PM-27C	ERF Uninterruptible Power Data Points
PM-27D	Residual Heat Removal Data Set
PM-27E	Recirculation Discharge MOV Position Data Points
PM-27F	Recombiner Discharge H <sub>2</sub> and O <sub>2</sub> Data Points
PM-27G	High Pressure Cooling Injection Data Points



ATTACHMENT G - Page three

PM-27H	Reactor Core Isolation Cooling Data Points
PM-27I	Seismic Power Supplies for TSC
PM-28	Reactor Building Standby Ventilation Charcoal Filter Trains Wiring and Component Modification
PM-29	Remote Shutdown Panel Alternate Shutdown Method
PM-30	Recirculation Pump Discharge Valve Actuator Replacement
PM-32	Replace Barton Level Transmitters
PM-33	Replace Bailey Pressure Transmitters
PM-36	Replace MCC Overload Devices
PM-43	Scram Discharge Volume Modifications
PM-49	Core Spray Low Pressure Permissive Interlock
PM-50	MSIV and Mainsteam Drain Valve Set Point Change
PM-A*	Replace Capacitors in Beck Actuators
PM-B*	Add Series Breakers to RMS Equipment
PM-G*	Relocate HPCI Control Panel to Mild Environment

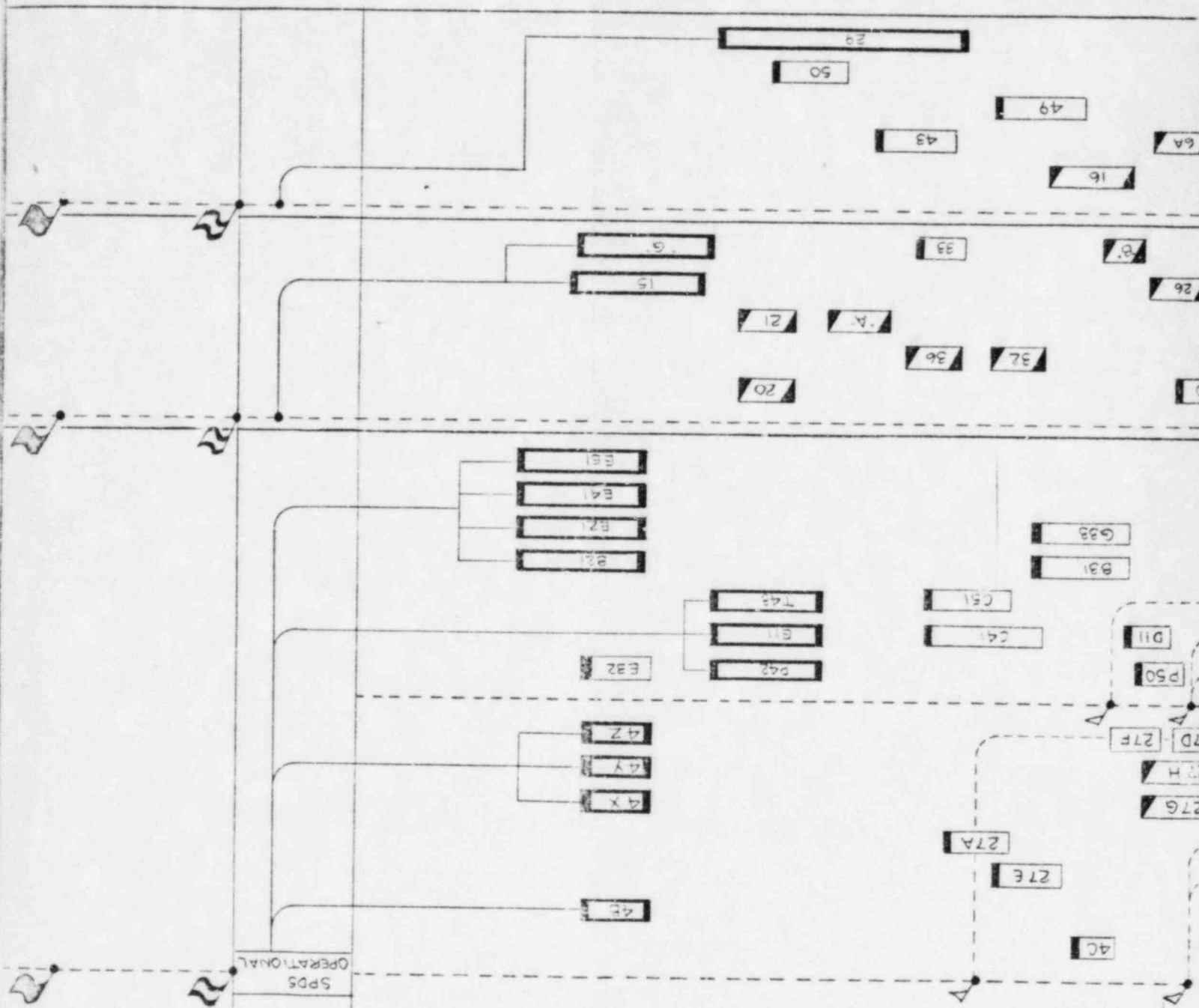
\*Note: The scope of these CCFs have not yet been fully defined. Thus, they have not yet been assigned official numbers. To facilitate identification, they are, in the interim, being assigned a letter designation.

6-84	9-84	12-84	3-85	6-85	9-85	12-85	3-86	6-86	9-86	12-86
OPERATIONAL							REFUELING OUTAGE	OPERATIONAL		

6-34	9-84	12-84	3-85	6-85	9-85	12-85	3-86	6-86	9-86	12-86
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6-84	9-84	12-84	3-85	6-85	9-85	12-85	3-86	6-86	9-86	12-86
OPERATIONAL					OUTAGE		OPERATIONAL			

6-34	9-84	12-84	3-85	6-85	9-85	12-85	3-86	6-86	9-86	12-86
------	------	-------	------	------	------	-------	------	------	------	-------



- DATE S.
- LILCO TARGET COMPLETION DATE.
  - COMPLETION OF FIRST REFUELING DATE.
  - MANDATORY COMPLETION DATE.
- DOWN
- INDICATES DATE WHEN MODIFICATION WILL BE READY TO SCHEDULE FOR INSTALLATION.

INDICATES DATE WHEN MODIFICATION WILL BE READY TO SCHEDULE FOR INSTALLATION.

INDICATES RELATIVE MAGNITUDE OF EACH POST FUEL LOAD GCF AS PRESENTLY DEFINED.

INDICATES RELATIVE MAGNITUDE OF EACH POST-FUEL LOAD CCF AS PRESENTLY DEFINED.

# POST FUEL LOAD CCF'S

PHASE I <input type="checkbox"/> II <input checked="" type="checkbox"/> III <input checked="" type="checkbox"/>			FUEL LOAD	POWER ASCENSION	
NUREG - 0737 ERF, SPDS, 1.97			6-83	8-83	10-83 12-83 2-84
4A, 27I-SPDS			4A, 27I		
27B	4C			27B	
27C		4B		27C	
4V	27E			4V	
4W	27A			4W	
	27G	4X			
	27H	4Y			
27D, 27F		4Z			
4F-CONTAINMENT ISOLATION VALVES BY SYSTEM					
G11	E32, P50	P42		G11	
T23	C41, D11	E11		T23	
T24	C51	T48		T24	
	B31	B21			
	G33	E21			
		E41			
		E51			
NUREG -0568 ENVIRONMENTAL QUALIFICATION					
	20, 30				
	28, 36, 32				
	"A", 21				
	26	15			
	33 "B"	"G"			
SER, ASLB, ALARA, I & E, ECT					
12	16		12		
	43, 6A				
	49				
	50	29			
<b>LEGEND</b> <input type="checkbox"/> - MODIFICATIONS WHICH DO NOT IMPACT PLANT OPERATION HAVE TARGET COMPLETION DATE <input checked="" type="checkbox"/> - MODIFICATIONS WHICH IMPACT PLANT OPERATIONS. <input type="checkbox"/> - MODIFICATIONS WHICH REQUIRE A SHUTDOWN OF APPROXIMATELY TWO WEEKS. <input checked="" type="checkbox"/> - MODIFICATIONS WHICH ARE EXTENSIVE OR COMPLICATED AND REQUIRE A SHUTDOWN OF APPROXIMATELY TWO WEEKS OR GREATER.					