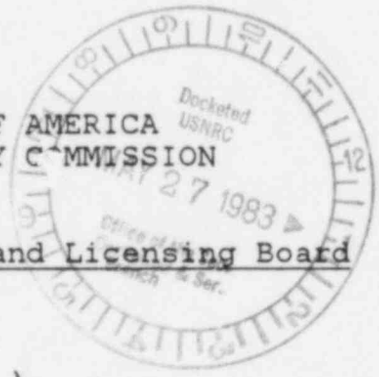

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of	)	
	)	
LONG ISLAND LIGHTING COMPANY	)	Docket No. 50-322 (OL)
	)	
(Shoreham Nuclear Power Station, Unit 1)	)	

LILCO'S REPLY TO THE PROPOSED OPINIONS, FINDINGS AND CONCLUSIONS OF SUFFOLK COUNTY AND THE STAFF

February 22, 1983

May 24, 1983 (Revised)

Hunton & Williams
P. O. Box 1535
Richmond, Virginia 23212

VOLUME TWO OF THREE:
SAFETY CLASSIFICATION AND SYSTEMS INTERACTION

DS03

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VOLUME TWO OF THREE:
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INTRODUCTION

This volume continues the briefing of issues litigated in the Shoreham operating license proceeding. The Long Island Lighting Company has previously served:

> LILCO's Proposed Opinion, Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision, Volumes One to Three (January 17, 1983),
>
> LILCO's Reply to the Proposed Opinion, Findings and Conclusions of Suffolk County and the Staff, Volumes One and Two (February 22, 1983),
>
> LILCO's QA/QC and EQ Supplement to its Proposed Opinion, Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision, Volumes One and Two (March 28, 1983),
>
> LILCO's Reply to the Proposed QA/QC and EQ Opinions, Findings and Conclusions of Suffolk County and the Staff, Volume One of One (April 25, 1983), and
>
> LILCO's Proposed Opinion, Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision, Volume Two of Three (May 2, 1983 (Revised).

The present documents are the tenth and eleventh in the series just described. They revise and replace LILCO's Reply to the Proposed Opinions, Findings and Conclusions of Suffolk County and the Staff, Volume Two of Two, filed on February 22, 1983, to incorporate replies to the County and Staff submittals filed on May 9 and May 16, respectively, concerning the reopened portion of the SC/SOC Contention 7B record.

Pursuant to the Board's request that LILCO make clear all revisions to LILCO's Reply to the Proposed Opinion, Findings and Conclusions of Suffolk County and the Staff, filed February 22, 1983, the same conventions used in LILCO's revised opinion and findings on SC/SOC 7B have been adopted:

1. If a finding or a paragraph in the reply consists of material which is totally new, an asterisk appears at the beginning of that paragraph or finding, e.g., * RB-4A.

2. If a finding or a paragraph in the opinion is modified, two asterisks appear at the beginning of that paragraph or finding. In addition, any new material is underlined and a line is drawn through any material which has been deleted.

In particular, LILCO invites the Board's attention to three sections in LILCO's reply, II.B.3, II.D.4.a. and III.A. The first is a new section inserted in the reply; the other two are new sections which replace corresponding sections in LILCO's initial reply.

For the reasons set out below and in LILCO's filing of May 2, 1983, the Company renews its request that the Board adopt the SC/SOC 7B partial initial decision as proposed by LILCO and modified in this reply.

Respectfully submitted,

Anthony F. Earley, Jr.

Anthony F. Earley, Jr.
One of LILCO's counsel

Hunton & Williams
P. O. Box 1535
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DATED: May 24, 1983

VOLUME TWO
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(This volume contains the material designated as II.B. in the Table of Contents for Volume One.)

SAFETY CLASSIFICATION AND SYSTEMS INTERACTION

1. PRELIMINARY STATEMENT

This portion of LILCO's reply deals with SC/SOC Contention 7B, Safety Classification and Systems Interaction, and the related SOC Contention 19(b), Regulatory Guides 1.26 and 1.29. The reply is organized in four sections: Section I is a preliminary statement; Sections II and III deal with the Suffolk County Proposed Opinion and the NRC Staff Opinion respectively; and Section IV contains LILCO's reply findings of fact. In the Company's initial findings on safety classification and systems interaction, LILCO labeled each finding with a "B," followed by a sequential number designation. These reply findings continue that basic form except that an "R" is inserted prior to the "B" for ease in distinguishing initial from reply findings. Following that designation, many reply findings also have parentheses containing a Suffolk County or NRC Staff proposed finding number. When such parentheses are present, the reply finding is a direct response to the referenced County or Staff finding.

One point needs emphasis at the threshold. In many instances, Suffolk County has disregarded the evidentiary record. Throughout this proceeding, it has been the County which has insisted on extensive cross-examination of LILCO and Staff

witnesses, asserting that the public interest would so be served. Yet, now, much of the record is ignored by Suffolk County. Most disconcerting is the number of times the County has proposed findings that do not accurately reflect the record. In some instances the record cited to support the asserted fact says the exact opposite of what is claimed. See, e.g., Reply Findings RB-41 (SC 7B:77), RB-44 (SC 7B:83), RB-174 (SC 7B:303), RB-176 (SC 7B:305). Frequently, the misuse of the record is more subtle, but no less inexcusable. Cross-examination testimony is ignored. See, e.g., Reply Findings RB-7 (SC 7B:18), RB-8 (SC 7B:19), RB-62 (SC 7B:104), RB-66 (SC 7B:110), RB-219. Statements are taken out of context. See, e.g., RB-24 (SC 7B:36, 7B:37), RB-52 (SC 7B:93), RB-56 (SC 7B:97), RB-162 (SC 7B:287, 7B:288). And significant facts important to understanding the issues are omitted. See, e.g., Reply Findings RB-42 (SC 7B:80), RB-70 (SC 7B:122), RB-72 (SC 7B:124), RB-166 (SC 7B:293), RB-231 (SC 7B:402). On still other occasions, conclusions are reached with no citation to the record whatsoever. See, e.g., Reply Findings RB-176 (SC 7B:305), RB-183 (SC 7B:314). Finally, the County's frequent reference in its opinion to large blocks of findings, many of which are unrelated to the proposed conclusions, makes it difficult to evaluate the validity of the assertions.

Such misuse of the record violates the NRC's Rules of Practice, which require:

> Proposed findings of fact shall be clearly and concisely set forth in numbered paragraphs and shall be confined to the material issues of fact presented on the record, with exact citations to the transcript of record and exhibits in support of each proposed finding.

10 CFR § 2.754(c) (emphasis added). Moreover, such misuse, if tolerated, would make pointless the weeks of exhaustive cross-examination. To the extent Suffolk County has ignored the evidence in the record, and that extent is significant, the County's "factual" assertions can be accorded no weight. Similarly, the County's proposed conclusions based on such assertions are unsupported and entitled to no weight.

II. REPLY TO SUFFOLK COUNTY

Suffolk County's proposed opinion on SC/SOC 7B urges the Board to adopt four major conclusions:1/

1/ The County asserts that its SC/SOC 7B proposed conclusions are sufficient to resolve SOC 19(b). That is not so. For example, LILCO's compliance with Regulatory Guides 1.26 and 1.29 (SOC 19(b)(1) and (2)) is not squarely addressed. Nor are there SC findings on why SOC 19(b)(3) or (4) fall within the scope of Regulatory Guides 1.26 and 1.29, and there are no proposed findings on the substance of SOC 19(b)(3). As a practical matter, the County failed to submit proposed findings and conclusions on SOC 19(b). Accordingly the County is in default on that contention.

(1) That LILCO has misinterpreted the NRC's regulations by equating "safety related" with "important to safety";

(2) That LILCO has failed to establish and implement a quality assurance program for all structures, systems and components important to safety;

(3) That LILCO's classification methodology, including its design basis accident approach, is inadequate; and

(4) That LILCO's methodology for considering systems interaction, including the Shoreham PRA, is inadequate.

See SC Proposed Opinion at 3-5.

None of these claims is valid. As will be shown below:

(1) Suffolk County's conclusion that important to safety is broader than safety related is wrong because (a) the County's analysis of NRC practice with respect to the interpretation of important to safety ignores the substantial and persuasive evidence in the record to the contrary; and (b) LILCO's analysis of the regulatory history of the use of important to safety, which the County failed to engage, shows that it was intended to be synonymous with safety related.

(2) Suffolk County's conclusion with respect to LILCO's quality assurance program for non-safety related structures, systems and components is unsupported by the record even if LILCO has misinterpreted the NRC's regulations. The County would have the Board ignore the evidence showing that LILCO, Stone & Webster and General Electric apply appropriate quality measures to non-safety related structures, systems and components.

(3) Suffolk County's conclusions about LILCO's classification methodology are unfounded because: (a) they reflect a misunderstanding of LILCO's classification

methodology and the role of the design basis approach; (b) they amount to an impermissible challenge to the NRC's regulations; and (c) they are based on factual assertions not supported by the record.

(4) Suffolk County's conclusions about LILCO's methodology for the consideration of systems interactions are without basis primarily because the findings upon which these conclusions are based misrepresent and omit portions of the record.

A. Important to Safety

1. Suffolk County Inaccurately Analyzed the Meaning of Important to Safety

** Suffolk County's principal argument in support of its interpretation of important to safety is that its interpretation is consistent with long-standing NRC practice. See SC Proposed Opinion at ~~19-24~~. 21-26. This long-standing practice, according to the County, is evidenced by the adoption of the Denton Memorandum definitions by the NRC Staff, an Atomic Safety and Licensing Board and the Commission. The County is wrong.

a. The Denton Memorandum

In the County's view, the Denton Memorandum is evidence that the NRC Staff has consistently construed and applied important to safety in the manner urged by the County. The

record belies this assertion. First, while the Denton Memorandum may reflect NRR's current interpretation of important to safety, it is telling that the memorandum has never been embodied in a Regulatory Guide or any other formal guidance document. LILCO Finding B-166. Quite to the contrary, some regulatory guides explicitly define important to safety as the safety related set. LILCO Finding B-167; Reply Finding RB-12 (SC 7B:27). Moreover, the memorandum has never been issued for public comment. And it has not even been issued to all offices of the NRC Staff. LILCO Finding B-190. Consequently, the weight accorded the memorandum must be tempered by its informal nature.

** Quite apart from the informality of the memorandum, the record reflects no basis for concluding the County's interpretation accurately reflects either the intent of the regulations or their long-standing interpretation by the Staff in actual practice. The County never engaged either question, relying instead on Mr. Conran's assertions that the memorandum received "extensive Staff analysis" and "extensive discussion with industry," and thus must have been in accord with regulatory intent and practice. See SC Proposed Opinion at ~~19~~. 21. But while the Denton Memorandum did receive some attention at the NRC, this attention cannot be characterized as "extensive Staff analysis." Reply Finding RB-7 (SC 7B:18). The

suggestion that the memorandum received "extensive" industry attention without adverse comment is also quite misleading. LILCO Finding B-163; Reply Finding RB-8 (SC 7B:19).

** With respect to Staff practice, the Denton Memorandum itself contains evidence that it was not a statement of existing practice, but rather a new interpretation. Thus the memorandum acknowledged that the Staff had used "safety related" and "important to safety" interchangeably. SC Proposed Opinion at ~~24~~; 26; see also Reply Finding RB-10 (SC 7B:24); LILCO Finding B-162B. The memorandum also directed NRR personnel to review regulatory guidance documents, because, as Mr. Conran testified, the Regulatory Guides and the Standard Review Plan have to be revised to reflect the memorandum's definitions. LILCO Finding B-168. No such review or revision would be necessary, of course, unless the interpretation were new. Further evidence that this was a new interpretation may be found in Mr. Conran's acknowledgment that there was substantial debate concerning the definitions. See, e.g., LILCO Finding B-163. Moreover, the Staff acknowledged that it is only now starting to apply the definition. LILCO Findings B-162C, B-162D.

** The County seeks to avoid this evidence by arguing that, even if Staff practice has been as the evidence indicates it has been, then Staff practice was wrong. Practice, however,

cannot be so easily avoided. An agency's construction and application of its own regulations strongly suggest their correct interpretation. See, e.g., National Association of Greeting Card Pub. v. U.S.P.S., 569 F.2d 570, 600 (D.C. Cir. 1976), vacated on other grounds sub nom. U.S. Postal Service v. Associated Third Class Mail Users, 434 U.S. 884 (1977); United States v. Board of Supervisors of Arlington County, 611 F.2d 1367, 1372 (4th Cir. 1979); cf. Natural Resources Defense Council v. NRC, 582 F.2d 166 (D.C. Cir. 1978) (administrative interpretation, practice and usage accorded great weight in interpreting statutes); Batterton v. Marshall, 648 F.2d 694 (D.C. Cir. 1980) (changes in agency practice require rulemaking). The County has simply ignored substantial evidence in the record supporting LILCO's conclusion that, in practice, the NRC Staff has consistently equated important to safety and safety related. See LILCO Proposed Opinion at ~~39-41~~ 42-45 and associated findings; see also Reply Findings RB-16, RB-79 (SC 7B:132).

** In addition to disregarding Staff practice, the County also groundlessly dismisses LILCO's assertion that the Company's interpretation is consistent with industry practice.2/ SC concludes that:

2/ In SC's original proposed opinion, it did ~~does~~ not appear that the County ~~means~~ meant to suggest any difference

(footnote cont'd)

> [T]he fact that industry may have generally used a safety-related/nonsafety-related classification scheme (see Finding 7B:11) is not probative to the question whether proper attention has been paid to all SS&Cs important to safety.

SC Proposed Opinion at ~~25~~. 27. Obviously, the use of safety related and non-safety related as a classification scheme has nothing to do with whether proper attention has been paid to all structures, systems and components important to safety. This is true even if important to safety is interpreted as the County wants. Thus, in this statement, the County concedes the important point that Shoreham can still meet GDC 1 even if LILCO's interpretation of important to safety is wrong.

In summary, the County's proposed opinion fails to rebut LILCO's conclusion that the Denton Memorandum advances a new definition for important to safety which cannot be adopted in the absence of a rulemaking.

(footnote cont'd)

between LILCO's interpretation of important to safety and that generally accepted by industry. As the County concedes, Stone & Webster and General Electric use LILCO's interpretation. SC Proposed Finding 7B:15. Nothing in the record suggests that LILCO's statements about the rest of industry are incorrect. See, e.g., LILCO Finding B-159. That the industry as a whole uses LILCO's interpretation is strong evidence that the Staff has accepted this interpretation in the past.

b. The TMI-1 Decision

** Suffolk County argues that the interpretation of important to safety adopted by the TMI-1 Board3/ reflects the actual use to which non-safety related structures, systems and components are put. See SC Proposed Opinion at 21-22. 23-24. According to the County, LILCO's interpretation would result in an anomolous situation because the structures, systems and components "relied upon in practice to respond to serious accidents"4/ would be outside the NRC's regulations. SC Proposed Opinion at ~~22~~. 23. To the contrary, the structures, systems and components relied upon to prevent and mitigate accidents are the safety related set. See LILCO Findings B-47, B-48. This set, by itself, is sufficient to perform these functions. See LILCO Finding B-402.

3/ Metropolitan Edison Company (Three Mile Island Nuclear Station, Unit No. 1), LBP-81-59, 14 NRC 1211, 1342-46 (1981). The County's revised opinion, however, adds a curious reference to Mr. Conran's view that no other utility disagrees with the Staff's interpretation and that Metropolitan Edison accepted the Denton definition. SC Proposed Opinion at 27-28. Mr. Conran's view is without basis, Reply Finding RB-39H (SC S7B:14), and Metropolitan Edison's "acceptance" of the definition confirms that, consistent with the rest of the industry, it did not use the Denton definition prior to the TMI-1 decision. Reply Finding RB-39I (SC S7B:15).

4/ The County's claim that the plant operators would rely upon non-safety related systems is based upon an incomplete and misleading use of the record. See Reply Finding RB-24 (SC 7B:36, 7B:37).

** The safety related set of structures, systems and components must be designed and constructed such that failures in non-safety equipment will not prevent the safety related set from performing its functions. The NRC's regulations also place performance requirements on the safety related set. In order to ensure these requirements are met, careful attention must be given to the design and construction of both safety related and non-safety related equipment. See, e.g., LILCO Finding B-260. In addition to regulations that specify performance or design requirements,5/ the NRC has regulations that specify consequence requirements.6/ The plant as a whole, including non-safety related structures, systems and components, must be designed and constructed to ensure that these overall consequence limits are met. As a result, non-safety related structures, systems and components fall within NRC regulations, though certain specific requirements such as GDC 1 do not apply to them. Thus, LILCO's interpretation of important to safety does not place non-safety related items outside the NRC's regulations. See LILCO Finding B-210A.

5/ See, e.g., 10 CFR Part 50, Appendix A and Appendix K.

6/ See, e.g., 10 CFR Part 100; 10 CFR Part 20; 10 CFR Part 50, Appendix I. Within Part 100, there are also specific design and performance requirements aimed at achieving the consequence requirements. See, e.g., 10 CFR Part 100, Appendix A. Although the specific requirements focus on safety related equipment, the overall consequence limitations apply to the whole plant.

** Finally, the County argues that the TMI-1 Board's conclusions on the Denton Memorandum were based on essentially the same facts as presented to this Board and were well considered. SC Proposed Opinion at ~~22-24~~. 24-26.7/ What the County asks this Board to do is ignore the substantial record before it. The evidence here shows that "(1) for years the NRC and industry have used interchangeably 'important to safety' and 'safety related' and (2) this usage is well rooted in the Commission's regulations." LILCO Proposed Opinion at ~~44~~. 49.

c. The Environmental Qualification Rule

Suffolk County points to the recent rule on Environmental Qualification of Electric Equipment, 48 Fed. Reg. 2728 (1983), as evidence that the Commission has adopted the Denton Memorandum interpretation of important to safety. Rather than clarifying the issue, however, this rule reemphasizes the need to engage the problem squarely in a rulemaking.

7/ LILCO has no doubt that the TMI-1 decision was well considered. It is for precisely this reason that the Company believes the TMI-1 record was not as well developed as the present record. The TMI-1 opinion does not discuss the licensee's position on the meaning of important to safety, nor the industry position. Certainly, these factors would have been considered by the Board if they had been developed in the record.

Although the EQ rule states that it includes "that portion of equipment important to safety commonly referred to as 'safety-related' . . . ," id. at 2730, this statement is not persuasive evidence of the Commission's interpretation of important to safety. As the NRC witnesses on environmental qualification testified, GDC 4 (which concerns environmental and missile design bases of structures, systems and components important to safety) has been interpreted at least since 1974 as the safety related set.8/ For instance, it was so interpreted in 1980 when the NRC issued guidance on environmental qualification. Not until the recent EQ rule appeared did anyone suggest that GDC 4 applied to more than safety related equipment. Reply Finding RB-15.

Moreover, the explanation given by the staff's EQ witnesses for the inclusion of non-safety related equipment in the rule demonstrates vividly the lack of any considered decision to extend the meaning of important to safety to more than the safety related set. LILCO witnesses testified that the category of equipment under 10 CFR § 50.49(b)(2) constituted a null set for Shoreham. Reply Finding RB-19. In other words, since LILCO has properly classified its systems, there are no

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8/ The witnesses presented evidence of actual Staff practice that substantiated this testimony. See Reply Findings RB-15 to -17.

non-safety related items that can prevent safety related equipment from performing their safety functions. Although the Staff was not yet in a position to agree with LILCO's assessment, the Staff witnesses admitted that the (b)(2) set was likely to be small. In fact, the NRC witnesses testified that the reason for including the category of non-safety related equipment in the rule was that some older plants may not have properly classified electrical equipment. Reply Findings RB-20. Thus, in the Commission's view, if the safety related set is properly defined, that set is sufficient to meet GDC 4.

** In summary, the environmental qualification rule is not evidence of a long-standing Commission interpretation of important to safety in the EQ context. See LILCO Finding B-259X. Nor did the rule establish a new definition of important to safety in all regulatory contexts. That was not the purpose of the rulemaking. As was readily apparent during cross-examination on environmental qualification, the putative expansion of the definition of important to safety in the EQ sphere alone has created substantial problems for the NRC Staff. Reply Finding RB-17. The problems for both the Staff and utilities would be immense if the EQ rule were read to redefine important to safety for all applications of the term. In addition, as noted above, inclusion of non-safety related equipment in the rule, while appearing to extend GDC 4 beyond the safety related set, does not actually do so.9/

9/ It would also be inconsistent with other recent Commission rules to assume that the environmental qualification rule

(footnote cont'd)

2. Suffolk County Has Failed to Engage LILCO's Analysis of Regulatory History

** There is strong evidence that the original intent of certain important NRC regulations was to equate the term important to safety with the term safety related. LILCO Proposed Opinion at ~~23-26.~~ 25-28. The County would have the Board reject LILCO's analysis out of hand because it is "extremely difficult" to infer intent from regulatory history of more than ten years past. SC Proposed Opinion at ~~26.~~ 28.10/ But analysis of regulatory history is a well accepted legal tool that cannot be skirted just because it is difficult or concerns regulations more than a decade old. In reality, the County hopes to obscure that, in fact, the pertinent intent is clearly as LILCO has described it.

(footnote cont'd)

represents a definitive restatement of important to safety. See LILCO Proposed Opinion at ~~37~~. 39-40.

10/ A textual footnote in the County's Proposed Opinion also deals with LILCO's discussion of regulatory history and similarly lacks significant analysis. Footnote 2 on page 26 28 of the County's opinion attempts to rebut LILCO's argument that a broad interpretation of "important to safety" would be contrary to the notice requirements of the Administrative Procedure Act. The County seems to suggest that any defects in the rulemaking were remedied by the opportunity to comment on the final rule. Defects in the notice given during a rulemaking cannot be remedied by the opportunity to comment on the final rule. National Tour Brokers Ass'n v. United States, 591 F.2d 896, 902 (D.C. Cir. 1978); see also Izaak Walton League v. Marsh, 655 F.2d 346, 365 (D.C. Cir. 1891) (opportunity for public meeting following decision is an empty gesture).

B. Compliance With the General Design Criteria, Including GDC 1

Suffolk County concludes that LILCO's interpretation of important to safety has had a substantive impact on Shoreham's compliance with the General Design Criteria. SC Proposed Opinion at 3. First, the County claims that no specific evidence was submitted on LILCO's compliance with individual GDCs, except GDC 1. Therefore, according to the County, the Board cannot conclude LILCO has met the NRC's regulations. Second, with respect to GDC 1, the County alleges that the evidence is insufficient to support a decision in LILCO's favor. These arguments should be rejected for the reasons set out below.

1. General Design Criteria

** For the reasons stated on pages ~~44-46~~ 50-52 of LILCO's Proposed Opinion, SC/SOC 7B does not require an inquiry into each regulation using the term important to safety. Rather, the focus of this contention is whether the classification methodology used by LILCO is appropriate. In its prefiled testimony, the County chose to focus on GDC 1 to illustrate its position, and LILCO responded in kind. Evidence concerning the details of compliance with other GDCs is not necessary for the Board to decide SC/SOC 7B.

Moreover, Suffolk County's attempt to shift the focus to other GDCs exposes two weaknesses in the County's position. First, it demonstrates a fundamental inconsistency in the County's reasoning. And, second, it provides another example of the NRC's practice of equating safety related and important to safety.

** The fundamental inconsistency involves the County's position on whether it is necessary to use a classification category called important to safety to comply with NRC regulations. The County's proposed opinion explicitly says it is not:

> In interpreting the term important-to-safety to encompass a subset of safety-related SS&Cs, this Board is not ruling that licensees must use any particular classification system. The NRC's regulations do not require an applicant to use any particular classification terms but rather to comply with substantive regulatory requirements.

SC Proposed Opinion at ~~25~~ 27 (emphasis added). In fact, as already noted, the County dismisses LILCO's assertion that its classification scheme is consistent with industry by concluding that the use of safety related and non-safety related is "not probative to the question whether proper attention has been paid to all SS&Cs important to safety." Id. LILCO agrees.

** Elsewhere, however, the County's proposed opinion suggests that the mere lack of a category of important to

safety prevents compliance with NRC regulations. For example, the County argues that the lack of the term "important to safety" in LILCO's commitment in the FSAR with respect to GDC 2 makes "LILCO's evaluation of GDC 2 compliance . . . not adequate since it is only in terms of safety-related SS&Cs." SC Proposed Opinion at ~~31~~. 34. Similarly, in urging the Board to find insufficient evidence of compliance with all General Design Criteria, the County relies on LILCO's failure to use important to safety:

> The Board also finds that this misinterpretation is a substantive problem at Shoreham. Because of LILCO's misinterpretation, there is insufficient evidence to conclude that LILCO has systematically analyzed nonsafety-related SS&Cs to assess their importance to plant safety . . . .

SC Proposed Opinion at ~~16~~ 18 (emphasis added). Thus, although the County concedes that no particular classification scheme is mandated by regulation, it nonetheless argues that its scheme must be adopted to show that the plant is safe.

The GDC 2 example cited above provides additional evidence of NRC practice concerning important to safety. As noted by the County, GDC 2 states in part:

> Structures, systems, and components important to safety shall be designed to withstand the effects of natural phenomena such as earthquakes, tornadoes, hurricanes, floods, tsunami and seiches without loss of capability to perform their safety functions.

10 CFR Part 50, Appendix A, Criterion 2 (emphasis added).

LILCO's commitment to comply with GDC 2 is stated as follows:

> All safety related structures, systems and components are protected from or designed to withstand the effects of natural phenomena. The natural phenomena considered, and the loading combinations and analytical techniques used in the design of safety related structures, systems and components are discussed in various sections of Chapter 3.

LILCO Ex. 11 (FSAR), at 3.1-3 (emphasis added).

** The NRC Staff, aware of this commitment, concluded that LILCO had met the requirements of GDC 2. See SC Finding 7B:12. This is another indication that the NRC, in practice, has equated safety related and important to safety.11/

2. Quality Assurance for Non-Safety Related Structures, Systems and Components

The County also contends that there is insufficient evidence to conclude that LILCO meets GDC 1 for non-safety related structures, systems and components. The Board, of course, need not reach this question if LILCO has correctly interpreted the meaning of important to safety. Assuming for the purpose of this section, however, that the category of structures,

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11/ In a footnote, the County concedes that GDC 2 does not require all structures, systems and components important to safety to be seismic Category I. Rather, the County only suggests that such classification needs to be considered. SC Proposed Opinion at ~~31~~ 34 n.5.

systems and components is broader than the safety related set, there is ample evidence to conclude that Shoreham meets GDC 1 in all respects.

** Before analyzing the weaknesses in the County's position, it is useful to note that the County and LILCO agree on a number of key points:

> (1) As already noted, Suffolk County agrees that use of a classification "important to safety" is not required by NRC regulations. SC Proposed Opinion at ~~25~~. 27.
>
> (2) Also, as noted above, Suffolk County agrees that a classification scheme using only safety related and non-safety related categories does not preclude a finding that proper quality assurance measures have been applied to structures, systems and components important to safety, even assuming that category is broader than the safety related set. See SC Proposed Opinion at ~~25~~. 27.
>
> (3) Suffolk County agrees that the NRC's regulations do not require the application of 10 CFR Part 50, Appendix B to non-safety related structures, systems and components. SC Proposed Opinion at ~~35~~. 39.12/
>
> (4) Suffolk County concludes that under its interpretation of GDC 1, the Criterion does not dictate any particular QA requirements. SC Proposed Opinion at ~~43~~. 47.
>
> (5) And Suffolk County agrees that the NRC Staff has no comprehensive guidance on QA programs for items important to safety but not safety related. SC Proposed Opinion at ~~43~~. 47-48.

12/ Contrary to the assertion in its findings, the County's position on the scope of Appendix B has not been consistent. Reply Finding RB-23 (SC 7B:34).

** These five points make it clear that Shoreham's classification methodology has nothing to do with whether LILCO meets the requirements of GDC 1 as interpreted by Suffolk County and the Staff. At issue are only the details of the QA program applied to non-safety related structures, systems and components. And the County concedes that, given points (4) and (5) above, GDC 1 affords an applicant considerable leeway in applying quality assurance measures to non-safety related structures, systems and components. SC Proposed Opinion at ~~43~~, 47, ~~44~~ 48 n.~~9~~. 11. Thus, there is no "methodology question." The Board need not go beyond a conclusion that, notwithstanding LILCO's classification methodology and interpretation of important to safety, adequate quality assurance measures are applied to Shoreham's non-safety related structures, systems and components.

The thrust of the County's argument on compliance with GDC 1 is that, although LILCO, Stone & Webster and General Electric all apply quality assurance to non-safety related structures, systems and components, there is insufficient evidence that these programs are adequate. This conclusion relies on several erroneous premises as well as on mischaracterizations in Suffolk County's findings.

** The County urges the Board to adopt standards unsupported by expert testimony. See SC Proposed Opinion at

~~33-37~~. 37-41. In the County's view, a quality assurance program for non-safety related items should be measured using Appendix B as guidance. The definition of quality assurance should be the same as the definition of quality assurance in Appendix B. And the program should contain the elements of an Appendix B program. While these suggestions may well be appropriate,13/ there is no basis in the record to conclude that they are essential for compliance with GDC 1, as interpreted by the NRC Staff and Suffolk County.

Even taking Appendix B as the standard for non-safety related quality assurance programs, the programs used for Shoreham are adequate. The County's conclusions are based on an incomplete and misleading rendition of the facts found in the record.

** For example, with respect to Stone & Webster, the County's sole concern appears to be an alleged failure to have a "systematic and planned means of assessing what level of QA attention should be applied . . . ." SC Proposed Opinion at ~~30~~. 42. County finding 7B:50 quotes from the Stone & Webster QA Manual which states:

13/ In fact, in many respects, the Stone & Webster, General Electric and LILCO programs for non-safety related equipment have many elements of an Appendix B QA program. See, e.g., LILCO Findings B-215, B-217, B-224, B-242, B-246.

> The design, procurement, construction, and testing of category II and category III structures, components, and systems shall be accomplished based on applicable codes and standards of good design construction practice.

Without any basis whatsoever, the County urges the Board to dismiss this statement as "merely boilerplate." Time and again during cross-examination, Stone & Webster witnesses explained in detail how Stone & Webster applies quality assurance measures to non-safety related structures, systems and components. The witnesses described precisely which types of structures, systems and components were included in the non-safety related QA categories. LILCO Finding B-221. They also explained how QA requirements are developed. See LILCO Findings B-222, B-223, B-224. To illustrate the results of the Stone & Webster non-safety related QA program, a number of specific examples were discussed. See, e.g., LILCO Findings B-225 to -228. There is ample evidence in the record to conclude that Stone & Webster has applied appropriate quality assurance measures to non-safety related structures, systems and components.14/

14/ Suffolk County alleges as further evidence of inadequacies in Stone & Webster's non-safety related QA program that these structures, systems and components are "designed for their normal service conditions." SC Proposed Opinion at ~~38~~. 43. First, this has nothing to do with quality assurance; it concerns design. And second, the County misrepresents the evidence because, as the record reflects, off-normal conditions

(footnote cont'd)

** With respect to the non-safety related QA program at General Electric, the Company concludes there is insufficient evidence that the program is adequate because there was only "general testimony" about it. SC Proposed Opinion at ~~40~~. 44. Again, the County's conclusions ignore the record. General Electric witnesses on both the SC/SOC 7B witness panel and the QA witness panel testified that all structures, systems and components provided by General Electric are evaluated and receive quality assurance commensurate with their intended safety or power generation reliability function. LILCO Finding B-211. This supposed "general testimony" was amply supported by detailed evidence. General Electric witnesses described the requirements of the non-safety related QA program for one specific General Electric division and testified that this was a representative program. See LILCO Findings B-213 and B-214. The witnesses also discussed the quality assurance applied to a number of non-safety related components. See LILCO Finding B-215 This evidence was essentially uncontroverted. Suffolk County witness Hubbard did present some evidence to the contrary, but that evidence was not extensive, specific or persuasive. Reply Finding RB-30 (SC 7B:53).

(footnote cont'd)

are taken into account by Stone & Webster for non-safety related structures, systems and components. Reply Finding RB-26 (SC 7B:45).

** With respect to LILCO, Suffolk County's principal complaint seems to be the lack of a single manual that describes all aspects for a non-safety related quality assurance program. Significantly, however, no industry or NRC guidance exists on programmatic requirements for non-safety related quality assurance programs. Even Suffolk County acknowledges that "considerable leeway" must be given to applicants in complying with GDC 1. SC Proposed Opinion at ~~44~~ 48 n.~~9~~. 11. Thus, there is no basis for the suggestion that LILCO's program is deficient merely because no single manual or instruction was introduced into evidence. See Reply Finding RB-27 (SC 7B:47). Instead, the record reflects that LILCO has applied a comprehensive quality assurance program to non-safety related structures, systems and components at Shoreham. LILCO made clear that quality standards and quality assurance are applied to all systems, structures and components at Shoreham commensurate with their importance to the safe and reliable operation of the plant. See, e.g., LILCO Finding B-235. The details of the process were described at length both in the SC/SOC 7B record and the quality assurance record. See, e.g., Reply Findings RB-27 (SC 7B:47), RB-28 (SC 7B:48), RB-36 (SC 7B:63); LILCO Finding B-259G.

To summarize, Stone & Webster, General Electric and LILCO witnesses presented substantial and persuasive evidence

to support their conclusions that adequate quality assurance has been applied to all structures, systems and components at Shoreham. Without basis, the County asks this Board to disregard this evidence.

* 3. Reply to SC Opinion on Supplemental SC/SOC 7B Hearings

* Following supplemental hearings to address issues raised in the Affidavit of James H. Conran, the County added a number of arguments throughout its proposed opinion as well as a new section entitled "Subsequent Developments on Safety Classification." SC Proposed Opinion at 49-73. The arguments presented in the revised opinion are not persuasive.

* As a preliminary matter, it should be noted that the additions to the County's proposed opinion exhibit three pervasive tendencies. First, the County frequently implies Mr. Conran's personal views are those of the NRC Staff. E.g., SC Proposed Opinion at 8, 31, 36, 63, 66; SC Finding 7B:73, 7B:81. While Mr. Conran is a member of the NRC Staff, it is misleading to suggest his opinions have any official status. The Staff's supplemental testimony made it clear that Mr. Conran's views are his own and not the agency's. E.g., Staff Proposed Opinion at 16; Staff Findings 7B:141D, 7B:191K. Moreover, Mr. Conran has filed a Differing Professional Opinion, which is a formal

acknowledgment that his views differ from the position taken by the Staff. The passages in SC's proposed opinion that imply Mr. Conran's views have official status appear to be an attempt to gain some measure of legitimacy for his testimony.

* The second pervasive trait of the County's supplemental opinion is almost total and uncritical reliance on Mr. Conran's testimony, particularly that included in his affidavit. E.g., SC Proposed Opinion at 52, 52 n.12, 56, 57, 61, 69. This is unwarranted given Mr. Conran's questionable reasoning and his minimal qualifications to testify about much on which he expressed his views. See, e.g., LILCO Findings B-259Z, B-259BB, B-259EE, B-259GG. In contrast, the County dismisses Staff testimony as unconvincing even though it is based on the agency's corporate knowledge of the Shoreham plant and supported by witnesses personally familiar with Shoreham. E.g., SC Proposed Opinion at 55, 60. The County is at best unrealistic if it expects the Board to embrace the one-sided opinion it has proposed.

* Finally, the County's proposed findings and opinion unfairly and inaccurately characterize the record in other respects as well. For example, in a number of instances SC claims that LILCO interprets NRC regulations as covering only safety related structures, systems or components. E.g., SC Proposed Opinion at 52, 54, 59; SC Findings S7B:5, S7B:8. But

LILCO witnesses made clear the Company's position to the contrary. LILCO Findings B-210A; Reply Findings RB-39A (SC S7B:5), RB-39C (SC S7B:8). In other instances, the County concludes that LILCO's testimony concerning industry practice is wrong, citing Metropolitan Edison's adoption of the Denton Memorandum. E.g., SC Proposed Opinion at 27, 66, 67. The County fails to acknowledge that Metropolitan Edison is the only example cited of a utility that has adopted the Denton definition of important to safety. See LILCO Proposed Opinion at 48; Reply Findings RB-39H (SC S7B:14), RB-39I (SC S7B:15); Staff Finding 7B:48C. Moreover, the fact that even Metropolitan Edison did not adopt the definition until after the decision in the TMI-1 restart case indicates that the Denton definition had not been previously used. By submitting inaccurate and unreliable findings, the County merely continues the pattern established in its original SC/SOC 7B Findings. See, e.g., LILCO Reply at 1-3; Reply Findings RB-12 (SC 7B:27), RB-26 (SC 7B:45), RB-55 (SC 7B:96), RB-57 (SC 7B:98), RB-96 (SC 7B:168), RB-162 (SC 7B:287, 7B:288), RB-177 (SC:307), RB-239 (SC 7B:414), RB-248 (SC 7B:426), RB-251 (SC 7B:429), RB-39J (SC S7B:16), RB-39L (SC S7B:19), RB-39O (SC S7B:24, S7B:25).

* In addition to the pervasive problems noted above, the revised portions of the County's proposed opinion have a number of specific deficiencies concerning safety classification which are discussed below.

a. Design and Construction

* The County's proposed opinion attempts to avoid the unavoidable fact that, with the exception of the County's witnesses, the record shows that LILCO's interpretation of important to safety has had no substantive impact on the design and construction of Shoreham. See, e.g, LILCO Findings B-204A, B-208, B-210C, B-249, B-254, B-257 to B-259, B-259AA. The County points to three aspects of Mr. Conran's testimony in an effort to confuse the issue: (a) his use of "perhaps" in conjunction with the conclusion that the SRP and regulatory guides provide a "safety net or backstop" to mitigate misunderstanding, (b) his concern with the adequacy of the scope of the Staff's review, and (c) his concern with the Staff's reliance on LILCO's representations concerning items not included in the NRC review. SC Proposed Opinion at 54-55.

* As Mr. Conran explained during cross-examination, however, his use of "perhaps" as a qualifier in testifying about reliance on the SRP and regulatory guides reflected his lack of detailed knowledge of the review process and these guidance documents. LILCO Finding B-259BB; Staff Finding 7B:141R. The County misuses this testimony to imply that Mr. Conran's "perhaps" indicates some substantive defect in relying upon the documents. Reply Finding RB-390 (SC S7B:24, S7B:25).

* With respect to the scope of review, the County asks the Board to accept uncritically Mr. Conran's opinion that the Staff's audit review was inadequate to confirm that LILCO's interpretation of the regulations had no impact on the design or construction of Shoreham. To that end, the County simply ignores Mr. Conran's admitted unfamiliarity with the details of the Standard Review Plan, his lack of experience in reviewing nuclear plant applications, and his lack of knowledge concerning Shoreham in particular. LILCO Findings B-259Z, B-259BB; Staff Findings 7B:141Q, 7B:141R. The County also disregards the fact that qualified Staff witnesses who were themselves involved in Shoreham's review have testified emphatically that the Staff's review is adequate to ensure compliance with regulations regardless of any differing regulatory interpretations. Moreover, the Staff has concluded that no additional review of the Shoreham application is necessary to conclude that the plant's design and construction meet all regulatory requirements. LILCO Findings B-258, B-259CC; Staff Findings 7B:141P, 7B:141R.

* Finally, there is nothing to Mr. Conran's concern about the Staff's reliance on the applicant's affidavit concerning compliance with the GDCs. LILCO has given the Staff assurance that the Company has applied appropriate quality assurance and quality standards during the design and

construction of Shoreham. Indeed, the Staff knows more about LILCO's compliance with GDC 1 than it knows about that of most other utilities. See LILCO Finding B-256. LILCO's assurances have been given under oath in writing and on cross-examination. See, e.g., LILCO Findings B-210, B-235. These sworn, cross-examined assurances provided detailed explanations and examples concerning the quality measures applied to all of Shoreham's features. See, e.g., LILCO Findings B-211 to -248. And LILCO has met with the Staff and given further assurances that the same philosophy applied during Shoreham's design and construction will be applied during its operation. LILCO Finding B-259A; Staff Finding 7B:136B, 7B:136C. The later assurances have been confirmed in FSAR commitments to apply quality standards and quality assurance to all structures, systems and components mentioned in the FSAR, EOPs and Technical Specifications commensurate with their function. LILCO Finding B-259B, B-259C; Staff Findings 7B:136D to 7B:136F. These commitments were reiterated under oath by LILCO witnesses, including the Vice President-Nuclear, in the reopened portion of the SC/SOC 7B hearings. See LILCO Finding B-235. The overwhelming weight of the evidence in this proceeding shows that LILCO has met all of the NRC's regulations, as interpreted by the NRC Staff, for the design and construction of Shoreham.

b. Operations

* The County takes issue with LILCO's conclusion that the Staff is satisfied with the FSAR commitments just mentioned. SC Proposed Opinion at 58-59. Instead, the County believes that a more accurate statement of the record is that LILCO's commitment to do in the future what it has done in the past is not, in the Staff's view, all that is needed to license Shoreham. Id. at 59. Both views are correct and consistent. The Staff has not expressed any reservations about the substance of LILCO's commitment, in essence, to do in the future what had been done in the past. LILCO Findings B-197, B-259F; Staff Findings 7B:136E, 7B:136F; see Staff Finding 7B:141E. But the Staff also insists that LILCO adopt the Denton definition to avoid confusion, to ensure proper reporting of incidents and plant changes to the Staff, and to allow the NRC unfettered inspection access to Shoreham. See LILCO Proposed Opinion at 72-75. It is misleading for the County to attempt to use the Staff's concerns about the Denton definition -- which LILCO has acknowledged and addressed in its opinion -- to obscure the substantive agreement between the Staff and LILCO on its proposal for operations.

* The County claims that Shoreham's performance during operation will be affected because Staff resources and guidance

are not available to mitigate the effects of LILCO's supposed misunderstanding of the regulations. SC Proposed Opinion at 59-60. But LILCO's or any other utility's adoption of the Denton definition would not reduce the possibility of misunderstanding in any measurable way. See LILCO Finding B-259L. No witness could explain how the Staff would know anything more about the substantive treatment of structures, systems and components if the definition was adopted. See LILCO Findings B-259K, B-259GG. Indeed, LILCO's commitment to apply quality standards and quality assurance consistent with past performance tells the NRC in far more concrete terms what LILCO will do in the future than a statement by a utility that it adopts the Denton definition for purposes of GDC 1. Further, their adoption could easily increase confusion. When LILCO now says that it is treating structures, systems and components important to safety in a certain way, the Staff knows LILCO is referring to safety related equipment. If the Staff wants to cover a larger set for a particular activity, it can ask LILCO for further commitments. The ensuing discussions will make clear to everyone what equipment will be subject to the activity. If, on the other hand, LILCO (or any other utility) adopted the Denton definition and made a statement about structures, systems and components important to safety, the Staff would have no idea what set of equipment was involved. See LILCO

Finding B-259L. Thus, the Staff would either have to initiate the sort of discussion mentioned above or proceed in blissful ignorance. The risk of the latter makes the Denton definition particularly unsatisfactory.

* Moving on, the Staff and County arguments about the NRC's inspection authority are wholly irrelevant. LILCO has unequivocally stated that NRC I&E inspectors have a right to inspect all aspects of Shoreham. LILCO Finding B-259R. The County's unsupported inference to the contrary, see SC Proposed Opinion at 60 n.18, there is nothing amiss in a utility's objecting to a citation. See LILCO Proposed Opinion at 73-74. Moreover, the question will be largely academic after decision of this case. If LILCO's regulatory interpretation is upheld, LILCO may well have a valid basis for a legal objection to a particular citation involving non-safety related equipment.15/ If the Denton definition becomes law, then LILCO will be so governed. Inspection access, in short, does not call for adoption of the Denton definition.

* Finally, the County's arguments concerning reporting requirements are not persuasive. SC Proposed Opinion at 61 n.19. The County seriously misreads LILCO's views on reporting

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15/ But even under LILCO's view of the regulations, non-safety related structures, systems and components could be the subject of valid citations. See LILCO Finding B-210A.

under 10 CFR § 50.59. Reply Finding RB-39SS (SC S7B:86). As explained on pages 110-114 below, LILCO's interpretation of important to safety has no significant impact on LILCO's compliance with the NRC's reporting requirements. In sum, the County presents no persuasive arguments for imposing the Denton definition of important to safety on LILCO for the operation of Shoreham.

c. LILCO's Understanding of Safety Requirements

* As already noted, throughout the revised portions of its proposed opinion the County urges the Board to accept, almost verbatim, Mr. Conran's testimony. In particular, the County repeatedly focuses on Mr. Conran's view that LILCO's understanding of safety is deficient. E.g., SC Proposed Opinion at 50, 52, 61, 69. Stripped of its considerable excess verbiage, Mr. Conran's central point comes down to this:

(a) LILCO and the Staff disagree over the proper legal interpretation to apply to the term "important to safety."

(b) Therefore, Mr. Conran concludes, LILCO does not understand what is "minimally required for safety."

See LILCO Findings B-259Y, B-259DD.

* Mr. Conran's conclusion is a classic non sequitur; it confuses a legal dispute over the construction of a regulatory term with the knowledge, expertise and ability to design, build

and operate a safe plant. There is no necessary connection between the two. A safe plant could be designed, built and operated without any regulation. Sound engineering judgment and practice may exist apart from regulatory fiat. Put another way, the purposes reflected in the GDCs could be met by a plant builder and operator even if the GDCs did not exist. Thus, while it is true that LILCO and the Staff dispute the proper interpretation of important to safety, it simply does not follow from this that LILCO does not understand what is required for safety. See Staff Findings 7B:141E to :141H.

* Quite apart from its logical infirmities, Mr. Conran's conclusion that LILCO does not understand what is minimally required for safety is soundly refuted by the record and indeed even contradicted by other testimony of Mr. Conran himself. Inappropriate QA/QC treatment of non-safety related features covered by GDC 1 was a principal fear of Mr. Conran and the County. Yet, on this, the record provides no basis for concern; it shows that

(i) LILCO and its contractors have always acknowledged that non-safety related items can have safety significance and that LILCO and its contractors apply QA and QC standards commensurate with the function of these items. E.g., LILCO Findings B-209, B-210, B-210B to B-210D, B-211, B-221, B-235.

(ii) The Staff firmly concurs with LILCO's philosophy that non-safety related items have safety significance and differs with

LILCO only in whether GDC 1 applies to these items. E.g., Staff Findings 7B:132, 7B:136.

(iii) The Staff, through expert reviewers, made clear that Staff review and knowledge of Shoreham disclosed that LILCO and its contractors had accorded the appropriate safety significance to non-safety related features at Shoreham and treated them appropriately notwithstanding the dispute over the scope of GDC 1. E.g., Staff Findings 7B:133 to :135, 7B:141E, 7B:141F, 7B:141H; LILCO Findings B-204, B-204A.

* Manifestly, therefore, the record directly refutes Mr. Conran's assumption that disagreement over the definition of a term of regulatory art -- "important to safety" -- means that LILCO does not understand what is in fact important to safety in the design and construction of the non-safety related portion of the plant.

* Significantly, Mr. Conran's own testimony contradicts his conclusion. Thus, he testified as follows:

(i) Everything covered in the regulations, including GDC 1, as important to safety but not safety related is addressed in Staff guidance documents. LILCO Finding B-259GG.

(ii) He knows of no instance where LILCO has not met Staff guidance. LILCO Finding B-259BB.

(iii) Moreover, though repeatedly invited to do so, he could not offer any examples where LILCO's interpretation of important to safety had unacceptable results.16/ LILCO

16/ The County erroneously suggests that this fact should be ignored because differences would have been resolved in the

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> Finding B-259BB, B-259EE, B-259GG, B-259II. The inability to cite any such example is particularly telling because, even though Mr. Conran is not an expert reviewer, he has had ample opportunity to search for such an example. E.g., he testified that he reviewed LILCO's prefiled testimony and was present during weeks of LILCO panel testimony, both of which dealt with the QA/QC standards applied to various non-safety related plant features.17/

The inescapable fact is that Mr. Conran's conclusion regarding LILCO's understanding of what is minimally required for safety is illogical, refuted by the testimony of the Staff and LILCO and, indeed, contradicted by his own testimony.

* Mr. Conran's fallacious conclusion also seems to rest on his view that if LILCO will not agree that GDC 1 covers a particular non-safety related item, then LILCO does not understand its safety significance. LILCO Finding B-259DD. Not surprisingly, Mr. Conran never explains why the mere acknowledgment by a utility that GDC 1 applies to a non-safety

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give and take of the Staff review process. Staff witnesses, including Shoreham reviewers, testified that LILCO's interpretation of GDC 1 had no practical impact on Shoreham. LILCO Findings B-254, B-258, B-259; Reply Finding RB-39R (SC S7B:28); Staff Finding 7B:133 to :135.

17/ Significant, too, is the fact that the County witnesses, despite more than ample opportunity, have not presented to this Board any persuasive evidence that LILCO has failed to accord adequate QA/QC standards to any non-safety related item.

related item, mirabile dictu, confers on that utility a proper understanding of the function of the item in all modes of plant operation. It does not. The proper understanding of safety significance comes not from agreement on a regulatory term, but from the extensive, voluminous analysis and consideration that is a part of the design and construction process, including, but not limited to, the preparation of the FSAR. See LILCO Findings B-210, B-210C, B-210D; Staff Findings 7B:28, 7B:141E. The Staff's concurrence with this view is demonstrated by its seeking and obtaining commitments from LILCO that LILCO will treat non-safety related items in accordance with the safety significance attributed to these items in the FSAR. See Staff Findings 7B:136E, 7B:136F, 7B:141E, 7B:141F.

* In short, the dispute over the interpretation of "important to safety" is a legal dispute over agency jurisdiction, not one over safety philosophy.

C. Classification Methodology

** Although Suffolk County concedes that "[t]he Staff and LILCO have used a traditional DBA methodology for systems classification at Shoreham," SC Proposed Opinion at ~~44~~, 73, the County alleges:

> (1) The methodology is incomplete because (a) it identifies the safety related set of structures, systems and components but not the important to safety set and (b) the

Staff undertakes no systematic review to ensure that the NRC's regulations are applied to the important to safety but not safety related set of structures, systems and components. SC Proposed Opinion at ~~47-48~~. 76-77.

(2) The DBA methodology is flawed because it employs the single failure criterion and does not consider multiple failure accidents. SC Proposed Opinion at ~~48-50~~. 77-78.

(3) LILCO's methodology was applied inconsistently as illustrated by the classification of the turbine bypass system and the rod block monitor. SC Proposed Opinion at ~~50-53~~. 79-82.

(4) The non-systematic character of Shoreham's methodology was demonstrated by the "Pilgrim event" systems interaction problem. SC Proposed Opinion at ~~53-54.~~ 82.18/

The County also suggests that a review of emergency operating procedures would improve classification methodology. As will be explained below, none of these arguments has merit for one or more of the following reasons: (1) the criticisms have nothing to do with classification methodology; (2) the criticisms challenge NRC regulations; or (3) the criticisms have no basis in the record.

18/ This summary of the County's arguments paraphrases, rather than directly quotes, the cited pages.

1. LILCO's Classification
Methodology Is Not Incomplete

** As noted above, Suffolk County claims that the Staff/LILCO classification methodology is incomplete because it does not identify structures, systems and components important to safety.19/ This makes no difference if important to safety is synonymous with safety related. Even if important to safety is broader, the County's argument remains unpersuasive. First, it is inconsistent with the County's position that there is no regulatory requirement for use of a classification category of important to safety. If such a classification is not required, a methodology that does not define the category is not defective. Second, as the record reflects, there is no recognized methodology for identifying systems, structures and components important to safety (but not safety related), as that term is used in the Denton Memorandum and by Suffolk County. See LILCO Finding B-173. Although the County argues that there are methodologies that could be used, there is little evidentiary basis for them. In fact, there is no clear understanding of

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19/ The County's explanation of the Staff/LILCO classification methodology indicates a fundamental misunderstanding of the process. The County describes the methodology as "the DBA approach contained in regulatory guides; and the industry standards approach that has evolved over time." SC Proposed Opinion at ~~45~~. 74. This is an oversimplification of the process. Reply Finding RB-40 (SC 7B:75).

what systems, structures and components would be included in the important to safety (but not safety related) set. NRC Staff witnesses speculated on what might be important to safety but had no firm idea how to establish the set. See LILCO Finding B-174. The County's witnesses acknowledged that a contractor to the NRC was working on defining the set, and only recently had produced a preliminary proposal. In short, LILCO's methodology cannot be considered defective for failing to identify the important to safety set if no methodology to do so exists.

For the same reasons, there is nothing to the claim that the Staff review is inadequate because it involves no systematic effort to ensure that the applicant properly classifies systems important to safety. Moreover, the County's argument that the Staff review is inadequate because the NRC did not understand LILCO's interpretation of important to safety has nothing to do with classification methodology. Regardless of this misunderstanding, the Staff was well aware of LILCO's classification methodology. See, e.g., Staff Findings 7B:31, 7B:32, 7B:62. Indeed, the Staff knows that the industry as a whole uses only safety related and non-safety related classifications. See, e.g., LILCO Findings B-187, B-188. And the County suggestion that the Staff methodology for classification review is inadequate because of alleged deficiencies in FSAR

Table 3.2.1-1 similarly unpersuasive. The County misrepresents the record and makes apparent, once again, its fundamental misunderstanding of the purpose and use of Table 3.2.1-1. See Reply Findings RB-84 (SC 7B:84).

2. The Design Basis Accident (DBA) Analysis is Adequate

Suffolk County alleges that the DBA analysis is an inadequate methodology for systems classification because it uses the single failure criterion and does not consider multiple failure accidents.20/ A County witness admitted, however, that the accidents analyzed are an acceptable minimum under NRC's regulations. Reply Findings RB-56 (SC 7B:97), RB-58 (SC 7B:99); see also LILCO Finding B-44. Thus, the County's claim that the DBA approach is inadequate because it does not consider "serious multiple failure accidents" is a clear and impermissible attack on the NRC's regulations. See 10 CFR § 2.758.

** Similarly, County witnesses freely acknowledged that the requirements of the regulations are met by using the single

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20/ The County consistently misunderstands the DBA approach. As noted in LILCO's Reply Findings, and as admitted by the County's own witnesses, the design basis approach does consider multiple failure accidents. Reply Finding RB-61, RB-62 (SC 7B:104); RB-66 (SC 7B:110).

failure criterion. Reply Finding RB-67 (SC 7B:111, 7B:115). Indeed, in the County's proposed opinion, it acknowledges at ~~49-50~~ 78 that:

> the GDC set forth minimum design standards, which may be supplemented. (Finding 7B:109). In our view, the recent events at other facilities demonstrate clearly that compliance with what is the minimum required by the regulations is not acceptable.

Again the County would have this Board rewrite the Commission's regulations.

Moreover, whether to consider multiple accidents and whether to use the single failure criterion raise questions of design, not of classification methodology. Similarly, SC's reference to the Rogovin Report and its other attacks on the DBA approach are directed at the basic design requirements for nuclear power plants, not at classification methodology. This licensing case is not the proper forum for either consideration or resolution of the County's design dissatisfactions. The Commission has, however, provided another forum, the severe accident rulemaking, to consider such matters.

3. The Examples Cited by Suffolk County Demonstrate the Adequacy of LILCO's Classification Methodology

To illustrate alleged deficiencies in LILCO's classification methodology, Suffolk County attempts to find

inconsistencies in the classification of Shoreham's turbine bypass system and rod block monitor.21/ The only inconsistencies demonstrated were in Suffolk County's rationale and use of the record.

a. Turbine Bypass System

** According to Suffolk County, the turbine bypass system is an example of inconsistent application of LILCO's classification methodology because the turbine bypass is classified non-safety related while other equipment "relied upon in Chapter 15 has been classified as safety-related."22/ SC Proposed Opinion at ~~51~~. 80. Further, the County claims that there is no justification for the difference in classification. The County's conclusions are inexplicable given the extensive record to support the classification of this system.

21/ Five classification examples (turbine bypass, level 8 trip, SLCS, RBM and RCIC) were raised by the County. By submitting proposed findings on only two systems, it appears the County no longer wants to contest the classification of the other three. The same classification methodology was applied to all five, as well as to all other Shoreham structures, systems and components.

22/ The County cites SC Findings 7B:200 to 7B:204 to support this conclusion. Absolutely nothing in these findings deals with inconsistency in the classification of the turbine bypass system.

The basic thrust of the County's argument seems to be that the turbine bypass is "relied upon" to mitigate Chapter 15 events and therefore must be classified as safety related. As witnesses for all parties testified, Chapter 15 analyzes two categories of events, design basis accidents and transients. LILCO Finding B-43. With respect to design basis accidents, one of the purposes of the Chapter 15 analysis is to ensure that such accidents can be mitigated using only safety related equipment. LILCO Finding B-47. The DBA analysis reported in Chapter 15 demonstrates that the safety related set of structures, systems and components is sufficient to mitigate any of the postulated accident sequences. LILCO Finding B-48. Thus, the turbine bypass system is not required to mitigate any design basis accident.

This system does play a limited role in the mitigation of transients. If the bypass valves fail to open during a transient, however, the impact on the severity of the transient is minimal. LILCO Finding B-119; Reply Finding RB-121 (SC 7B:210). Given the system's limited role in transient mitigation, both the Staff and LILCO agree that it is not necessary to classify turbine bypass as safety related. LILCO Findings B-122, B-129; Reply Finding RB-122 (SC 7B:211). Although the system is not classified safety related, LILCO has nonetheless applied extensive quality assurance to it in recognition of its

role in the safe and reliable operation of Shoreham. This is consistent with LILCO's policy that quality assurance be applied to all non-safety related structures, systems and components commensurate with their functions. Both Staff and LILCO witnesses agreed that adequate quality assurance has been applied to the turbine bypass system. Shoreham meets the Staff's QA guidelines for such systems. LILCO Findings B-125, B-126; see also Reply Findings RB-114 (SC 7B:201), RB-116 (SC 7B:203), RB-117 (SC 7B:206).

b. Rod Block Monitor

Although the County alleges that the RBM system has been improperly classified, its reasons are not totally clear. Since the record shows that the rod block monitor is properly classified, the County's confusion is not material.

The function of the RBM is to prohibit erroneous withdrawal of a control rod and thus prevent local fuel damage. Erroneous withdrawal of a control rod, however, is not considered a design basis accident; such an event would be a mild transient. Accordingly, failure of the rod block monitor would not result in violation of 10 CFR Part 100. See LILCO Finding B-90; Reply Finding RB-129 (SC 7B:229). Therefore, this system need not be classified safety related. LILCO Findings B-93, B-97.

In any event, significant quality assurance has been applied to the rod block monitor at Shoreham. See LILCO Findings B-94, B-95, B-96. The only aspect of the rod block function that is not safety related is the reactor manual control system, which is used regularly and monitored continuously during the operation of the plant. LILCO Finding B-98; Reply Finding RB-127 (SC 7B:221). Both LILCO and Staff witnesses testified that the quality standards applied to the rod block monitor are commensurate with its function. See LILCO Finding B-99; Reply Finding RB-128 (SC 7B:224). In the face of uncontroverted evidence, the County offers nothing to support its allegation that the RBM is an example of inconsistent classification.

4. The Pilgrim Event

Finally, Suffolk County suggests that the so-called "Pilgrim Event" is indicative of non-systematic classification because there is no evidence that this potential systems interaction was considered in the classification of the drywell coolers. This allegation disregards the record. The evidence shows that:

> (1) failure of the drywell coolers would not prevent the plant from performing the functions required by 10 CFR Part 100, Appendix A. See LILCO Finding B-319. Thus, the drywell coolers are not required to be safety related.

(2) General Electric considered potential systems interaction between the Reactor Pressure Vessel water level indication and drywell temperature in the design of the plant. Reply Finding RB-89 (SC 7B:160).

(3) Stone & Webster considered the possible effect of drywell temperature in the design of the drywell coolers. See LILCO Finding B-322.

(4) Other measures, such as technical specifications, have been used at Shoreham to ensure that there will not be any adverse effect on plant safety caused by high drywell temperature. See, e.g., LILCO Finding B-323.

The "Pilgrim Event" lends no credence whatsoever to the County's argument that LILCO's classification methodology is deficient. See generally LILCO Findings B-319 to -324; Reply Findings RB-86 (SC 7B:147, 7B:148), RB-89 (SC 7B:160).

5. Emergency Operating Procedure Methodology

Finally, Suffolk County suggests that a systematic review of equipment relied upon in the EOPs, such as that described in the County's testimony, is necessary (a) to create a list of structures, systems and components important to safety and (b) to determine whether correct quality assurance and classification have been imposed. These conclusions are not supported by the record, for the following reasons:

(1) They ignore the fact that such an analysis is not required. LILCO Finding B-418.

(2) They ignore the evidence that the County's analysis was far from "systematic"; it was, at best, simplistic. LILCO Findings B-419 to -426. The County's attempts to address the weaknesses in its analysis are unpersuasive. See Reply Findings RB-147 (SC 7B:262), RB-148 (SC 7B:263), RB-149 (SC 7B:264).

(3) They ignore that LILCO through the BWR Owners' Group has carefully reviewed EOPs with the express purpose of verifying proper classification. LILCO Finding B-402.

(4) They cite no explanation in the record to show how this analysis would be used to "determine whether correct QA" had been applied. The evidence shows that the decision on how much QA to apply is a matter of judgment on the part of QA and design engineers, based on a number of factors including the function of the equipment. There is no formula that would convert information from an EOP review to QA requirements. See Reply Finding RB-157 (SC 7B:273).

In addition to the above defects, the Suffolk County conclusions rest on findings that do not accurately reflect the record. See, e.g., Reply Findings RB-150 (SC 7B:265), RB-156 (SC 7B:272), RB-158 (SC 7B:274). For these reasons, the argument that LILCO must conduct a review of EOPs along the lines suggested by the County is without merit.

In summary, the record shows that Shoreham's classification methodology complies with NRC regulations and guidance, as well as with industry standards. It is a comprehensive methodology that has resulted in the classification of an adequate set of safety related structures, systems and components at the plant.

D. LILCO Has Adequately Considered Systems Interactions

** Suffolk County has urged the Board to conclude that LILCO has not adequately taken systems interactions into account in the design of Shoreham. SC Proposed Opinion at ~~57-58~~. 86-87. To that end, the County mischaracterizes the systems interaction issue raised by Contention 7B. The question is not "how best to identify such interactions . . . and whether LILCO's . . . methodology is sufficient."23/ SC Proposed Opinion at ~~57~~ 86 (emphasis added). The issue is whether LILCO employed a methodology adequate to comply with NRC regulations. To assess the record as the County suggests, the Board would have to ignore existing requirements and evaluate systems interaction at Shoreham in terms of a hypothetical standard neither contemplated by the regulations nor clearly defined in this record.

** Because the County incorrectly states the pivotal issue, the three questions that it suggests form the core of the analysis24/ are largely irrelevant to the actual question

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23/ The County describes LILCO's methodology for identifying systems interactions as a DBA methodology. This further underscores the County's unfamiliarity with the design process for a nuclear power plant. As the record shows, there is a great deal more to the consideration of systems interaction than a DBA approach. See LILCO Proposed Opinion at ~~60-64~~. 82-87.

24/ SC Proposed Opinion at ~~57~~. 86.

before the Board. The question is not whether there is a "need," beyond that established in the regulations, to identify systems interaction in some undefined "systematic" fashion.25/ At issue is only whether LILCO's approach adequately meets regulatory requirements. Thus, it does not matter whether alternative methodologies may be "available" and "beneficial" or whether LILCO has used such additional methodologies in a "meaningful" way.

** The County's proposed analysis of the systems interaction issue is fatally flawed in several additional respects. By relying upon proposed findings that are not supported by the record, the County would have the Board conclude that: (1) the design process and the DBA analysis do not give assurance that systems interactions have been adequately considered for Shoreham, see SC Proposed Opinion at ~~66~~; 95; (2) supplemental methodologies exist and, if used systematically, are capable of identifying potential interactions missed by the traditional DBA approach, see id. at ~~68~~, ~~68~~; 95, 97; (3) LILCO systems interaction studies, including the Shoreham PRA, do not provide assurance that potential adverse systems interactions have been

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25/ The question of the "need" for additional criteria is being addressed by the Staff in Unresolved Safety Issue A-17. In the interim, the Staff believes existing criteria are adequate. See infra part II.D.4.

identified or addressed at Shoreham, see id. at ~~71~~, ~~76~~; 100, 106; and (4) insufficient basis exists to conclude that operation of Shoreham is acceptable given the pendency of Unresolved Safety Issues A-17 and A-47, see id. at ~~80~~, ~~82~~. 108-11, 116-22. As will be shown below, the record overwhelmingly rebuts these allegations.

1. Adequacy of the Design Process and DBA Analysis

Suffolk County's conclusion about the inadequacy of the design process and DBA analysis in considering systems interactions relies on four erroneous propositions: (a) that the occurrence of systems interactions at other plants, despite the use of the traditional design basis accident/Standard Review Plan approach, shows that this approach is inadequate; (b) that Unresolved Safety Issues A-17 and A-47 indicate generically that the Staff believes the approach is inadequate; (c) that County and Staff witnesses agreed that the traditional approach is deficient; and (d) that the "Pilgrim Event" and the "Michelson Concern" demonstrate the inadequacies of the approach. None of these arguments can withstand serious scrutiny.

a. Systems Interactions at Other Plants

** The County would have the Board reject substantial evidence that Shoreham's design process addresses systems interactions because they have occurred at other plants. These instances supposedly indicate a substantial flaw in the traditional DBA/SRP approach. Testimony to that effect, however, did little, if anything, to undermine the credibility of the design process for Shoreham. None of the events mentioned by the County26/ resulted in significant radiological releases, certainly none approaching the 10 CFR Part 100 limits. Thus, insofar as public health and safety are concerned, the cited events showed that the plants in question were adequately designed to cope with systems interactions. Moreover, the Staff, with full awareness of these events, continues to have confidence that the traditional approach satisfies regulatory requirements and provides reasonable assurance of public health and safety. Reply Findings RB-163 (SC 7B:289), RB-164 (SC 7B:290), RB-166 (SC 7B:293).

Nor did the County testimony engage the referenced systems interactions in enough detail so that meaningful conclusions could be drawn for the Shoreham design process.27/

26/ The TMI-2 accident, the Browns Ferry fire, the Browns Ferry partial failure to scram and an unspecified event at Crystal River 3. SC Proposed Opinion at ~~59~~. 88.

27/ In fact, it is not clear what systems interaction is involved in each of the events cited. The County's testimony has

(footnote cont'd)

No effort was made to describe how the design process at those plants failed. Moreover, it appears that the types of systems interaction in question have been considered for Shoreham. See e.g., LILCO Findings B-277 to -279 (fire hazards analysis), B-280 to -285 (cable separation study), B-302 to -305 (scram reliability study), B-308 (TMI-2 implications study), E-39, E-40 (improved scram discharge volume design).

LILCO has presented substantial, detailed evidence on how the design process for Shoreham adequately protects the plant against systems interactions. The County's findings are silent in this regard. Instead, the County argues that LILCO's testimony must be wholly disregarded because vaguely defined systems interactions may have occurred at other plants. Without more, the County's assertions have little to no probative value.

(footnote cont'd)

no discussion of the Crystal River 3 event. There is testimony in the record that the exact cause of the Browns Ferry partial failure to scram is unknown; systems interaction is but one possibility. LILCO Finding B-304. And, it is not clear what events at TMI-2 implicate the design process.

b. Implications of Unresolved Safety Issues A-17 and A-47

** A detailed discussion of Unresolved Safety Issues A-17 and A-47 appears later in this reply. It is necessary to mention these issues briefly now because the County points to them as evidence of the importance of systems interaction. See SC Proposed Opinion at ~~60~~. 89. Of course, it is important. But the County's proposed opinion fails, as does the finding it cites for support (SC 7B:290), to note that the Staff has clearly stated that "until the generic program is completed . . . reasonable assurance of public health and safety is provided by compliance with current requirements and procedures." Speis et al., ff. Tr. 6357, at 36-37; Reply Finding RB-164 (SC 7B:290); Staff Finding 7B:191K.

c. Lack of Agreement Between County and Staff Witnesses

** The County incorrectly suggests that its views are shared by the NRC Staff:

> The Staff and Suffolk County have concluded, and we agree, that the traditional approach to systems interaction identification is deficient in two respects. First, that approach is not systematic. . . .
>
> Second, the traditional approach generally does not make the best use of available methodologies designed to identify systems interactions.

SC Proposed Opinion at ~~60-61~~ 89-90 (citing SC Proposed Findings 7B:277-78, 293-97, 299-330, 350-76). This assertion of agreement between the Staff and the County is severely misleading.28/ In the Staff's prefiled testimony and during cross-examination, Staff witnesses stated that current regulations and guidance documents adequately address systems interactions. See LILCO Findings B-317, B-318; Reply Findings RB-162 (SC 7B:287, 7B:288), RB-163 (SC 7B:289), RB-164 (SC 7B:290), RB-166 (SC 7B:293); see also Staff Findings 7B:185 to 7B:190, 7B:191K to :191M.

** As illustrated in the reply findings cited in the preceding sentence, the County takes statements made by Staff witnesses substantially out of context. Thus, the Staff does not agree, as the County's proposed opinion at ~~60~~ 89 suggests, that a "comprehensive and systematic analysis designed and performed for the specific purpose of identifying potential adverse systems interactions" is needed to ensure adequate protection from systems interactions.

28/ The citation to over sixty findings of fact is a serious defect in the County's proposed opinion. The findings cited generally relate to systems interaction, but it is difficult to see how they support the conclusions stated. This sort of block citation appears frequently in the County's opinion. While block citations may be appropriate in certain circumstances (e.g., introduction or summary), they are inappropriate when used to support specific points of an argument. The County's technique of mass citation obscures the fact that the record does not support its conclusions.

Nor does the record support the County's assertion that the Staff agreed that the traditional approach does not make the best use of available methodologies. Only one of the findings cited by the County in this regard arguably supports its proposed opinion's allegation of agreement. See SC Finding 7B:293. Even then, as noted in Reply Finding RB-166 (SC 7B:293), the County did not accurately and fully characterize the Staff testimony. Moreover, as will be discussed in more detail below, the record is clear that the various methodologies identified by the County were in fact used in various of the specific systems interactions studies.

d. "Pilgrim Event" and "Michelson Concern"

** Suffolk County claims that the "Pilgrim flashing/boiloff problem and the so-called Michelson concern further demonstrate the deficiencies in the traditional approach." SC Proposed Opinion at ~~61~~. 90. These claims are based on findings that substantially misrepresent the record. The record actually shows that: (a) the issues were considered in the Shoreham design process, and (b) the existing Shoreham design deals adequately with the potential interactions.

** With respect to the Pilgrim event, Suffolk County concludes that "[t]he interaction which caused the unreliable indication had not been precluded in the Shoreham design

process and sufficient steps, such as temperature-related technical specifications, had not been implemented prior to the event to ensure that it would not occur." SC Proposed Opinion at ~~63~~. 92. The Pilgrim event was discussed above concerning its implications for systems classification. To summarize the conclusions stated there, (1) this potential systems interaction was considered in the design process; (2) the Shoreham design is adequate to deal with it;29/ and (3) steps have been taken in both the system design and technical specifications to reduce the possibility of such an event. See supra part II.C.4.

** With respect to the potential systems interaction raised in the "Michelson Memorandum," the County would have the Board conclude that "the adverse interaction had not been identified or largely precluded in the design process. . . . Thus, the methodology used did not detect the functional systems interaction . . . ." SC Proposed Opinion at ~~66~~. 95. Again, these conclusions are based on inaccurate and incomplete findings.30/

29/ In fact, LILCO demonstrated that the Shoreham design was adequate to deal with a worst case drywell temperature interaction involving a small pipe break. LILCO Finding B-320.

30/ Quite frequently, the County's findings are based solely on the Michelson Memorandum, ignoring the testimony of LILCO and Staff witnesses clarifying it. See Reply Findings RB-95 (SC 7B:167), RB-97 (SC 7B:169), RB-101 (SC 7B:178), RB-108 (SC 7B:189).

General Electric did consider this potential systems interaction in Shoreham's design process. General Electric concluded that it was a low probability event that would not significantly impair protective functions. LILCO Finding B-331. Moreover, the conclusion reached by General Electric in the design process has been confirmed in a Shoreham specific analysis, a generic probabilistic risk assessment and a preliminary Shoreham specific probabilistic risk assessment. LILCO Findings B-327 to -332; Reply Finding RB-112 (SC 7B:193, 7B:194, 7B:195). Finally, the NRC Staff has found that the Shoreham design is adequate to deal with the potential systems interaction described in the Michelson Memorandum. LILCO Findings B-326, B-329. Thus, the Michelson concern illustrates the adequacy, not the failure, of LILCO's system interaction methodology.

In conclusion, none of the arguments advanced by the County supports its assertion that the traditional design process and evaluations performed pursuant to it have not been satisfactory in addressing the potential for adverse systems interactions. It is no accident that the County's principal finding in support of the arguments addressed above cites not one word of testimony in the record. See SC Finding 7B:296 (second sentence).

2. Supplemental Methodologies

Suffolk County has consistently taken the position that LILCO can and must use supplemental methodologies to assure that systems interactions are adequately taken into account. The County assigns talismanic significance to these methodologies, with no rigorous analysis of their feasibility at Shoreham or potential for systems interaction benefits.

The County's insistence on the use of such techniques highlights its fundamental misunderstanding of "the traditional DBA/single failure criterion approach." The County believes that this approach is flawed because it does not consider multiple failure accidents. See, e.g., SC Proposed Opinion at 4. But the County's own witnesses testified that the DBA approach does consider multiple dependent failures. See, e.g., Reply Findings RB-62 (SC 7B:104), RB-66 (SC 7B:110). Moreover, the County acknowledges that systems interactions, by definition, involve dependent, as opposed to independent, failures. SC Finding 7B:282. The County's concern then must be with consideration of multiple independent failures. Yet the County's highly touted "supplemental methodologies" identify dependent, not multiple independent, failures. Reply Finding RB-66 (SC 7B:110). In short, the argument that LILCO must use these methodologies to compensate for deficiencies in the DBA approach makes no sense.

** Other arguments made by the County also reflect a poor understanding of the facts. The County claims that, in contrast to the DBA approach, systems interaction techniques "concentrate not just on reaching the ultimate goal, but also on what may happen in the process of achieving that desired goal." SC Proposed Opinion at ~~67~~. 96.31/ As the record reflects, the DBA approach and deterministic studies must analyze what happens to it in order to determine whether the plant meets the specified acceptance criteria. The Nuclear Safety Operational Analysis, used as part of the design basis approach, is a vivid illustration of how that approach considers "what may happen" to the plant in achieving the desired goal. See LILCO Ex. 11 (FSAR), Appendix 7A; see also LILCO Findings B-57 to -60. The approach uses systems interaction techniques such as commonality diagrams to determine the equipment needed to mitigate the accident in question. LILCO Finding B-59. The NSOA presents, in block diagram form, what functions are needed during the course of an accident. See, e.g., Burns et al., ff. Tr. 4346, at Attachment 3 (example of NSOA diagram).

31/ This conclusion, as with so many in the County's proposed opinion, is not supported by any reference to the record. The only attempt to tie the conclusion to the facts is a cite to a group of findings near the end of the carryover paragraph on page ~~68~~. 97. These findings are only marginally related to the subject being discussed and do not support the conclusions stated.

Similarly, in the deterministic studies, the analysis must include consideration of how the plant reacts following an accident. For example, a shutdown model was developed as part of the pipe break analysis. This model considered the automatic protective actions that would occur, as well as the anticipated operator actions following a pipe break. LILCO Findings B-273; see also LILCO Finding B-281 (use of shutdown model in cable separation study), B-289 (analysis of effects of cascading loss of power in the control system failure study); B-308 (computer simulation of reactor vessel parameters during transients in TMI-2 implications study). In short, the County's claim that the DBA approach ignores what happens during an accident sequence demonstrates only that the County does not understand the DBA approach.

In addition, the focus of the design basis approach on the ultimate goal (i.e., safe shutdown, Part 100 limits) -- which the County without analysis cites as a weakness -- is actually a strength of the process. As LILCO's PRA witnesses testified, a significant drawback of the systems interaction techniques championed by the County (such as walkdowns and dependency matrices) is their inability to yield ultimate conclusions on safety. See LILCO Finding B-348. For this reason, LILCO's PRA experts believe it appropriate to incorporate these techniques into a framework, such as a PRA, which can help

reach ultimate conclusions. In fact, many of the techniques suggested by the County were used in the Shoreham PRA. Similarly, the deterministic studies use systems interaction techniques in a framework geared to reach conclusions about the effect of interactions on plant safety. See, e.g., LILCO Findings B-347, B-392, B-397.

Finally, the County's insistence on the need to apply supplemental methodologies "systematically" is not well founded. First, as noted above, the methodologies are not particularly useful in isolation. Second, LILCO has incorporated these techniques into various systems interaction studies. See, e.g., LILCO Finding B-286 (FMEAs). Indeed, the Shoreham PRA methodology is the most advanced vehicle available incorporating these systems interaction techniques into a comprehensive study. LILCO Findings B-348, B-396. The comprehensive systems interaction methodologies discussed by NRC Staff witnesses are still under development, and there is no indication yet whether these methodologies will ever be effective or "cost-beneficial." LILCO Findings B-372 to -374; Reply Finding RB-166 (SC 7B:293).

3. LILCO's Systems Interactions Studies

a. Specific Systems Interactions Studies

Suffolk County dismisses LILCO's systems interactions studies as a basis for concluding that systems interactions have been adequately addressed at Shoreham. The County's findings on these studies, however, seriously misuse the record by a selective omission and misinterpretation of pertinent facts.

A pattern of sorts is reflected in the County's findings respecting the systems interactions analyses. Many of these findings would have the Board conclude that LILCO cannot be credited for a particular analysis as a systems interaction study because: (1) it was undertaken in response to a regulatory requirement; (2) it was not a part of a "systematic" analysis of systems interactions; and/or (3) there was "no evidence that systems interactions techniques were used." See, e.g., SC Findings 7B:305, 7B:308, 7B:314, 7B:325, 7B:370.

Whether a study was performed in response to a regulatory requirement is, by itself, of no moment in determining whether it was in fact a systems interaction analysis. Indeed, many of the regulatory requirements were promulgated to enhance consideration of systems interaction. The record is clear that LILCO, generally through Stone & Webster and General Electric, undertook a broad array of deterministic studies that were

specific to Shoreham. Moreover, the record also establishes that the generic studies discussed by LILCO's witnesses have significant applicability to Shoreham. See, e.g., LILCO Findings B-296, B-301, B-303, B-306.

** With respect to the accusation that these studies were not part of a "systematic" program, nowhere has the County explained, either in the record or in its analysis of the record, just what a "systematic" program might be. More importantly, the County has cited not a single regulation that requires an approach to systems interaction analysis different from that which the record overwhelmingly demonstrates was used at Shoreham. Finally, consideration in the aggregate of the systems interactions analyses cited by LILCO yields ample confidence that Shoreham has been designed and constructed with full awareness of systems interactions concerns. See LILCO Proposed Opinion at ~~60-69~~. 82-92.

The County's repetitious claim that certain of the systems interaction studies did not involve systems interactions techniques is, in each instance, directly or inferentially contradicted by the testimony. For example, the County's finding 7B:305 would have the Board conclude that the pipe failure studies "did not make use of systems interactions techniques." The unrebutted testimony of Mr. Dawe, however, was that such techniques were in fact used. Reply Finding RB-176

(SC 7B:305). More typically, a summary County finding will contain the observation that: "There is no evidence that any systems interactions techniques were used." See, e.g., SC Findings 7B:319, 7B:337. Without exception, this finding is suggested with respect to specific studies about which the uncontroverted testimony establishes that the analysis was, in fact, a systems interaction study. See, e.g., Reply Findings RB-185 (SC 7B:319), RB-196 (SC 7B:337). More often than not, there were no questions from the County's counsel regarding the techniques used. When the record is uncontradicted that a particular study considered systems interactions, the County should not be allowed to bootstrap its failure to inquire regarding the techniques used into a finding that no techniques were used.32/ Moreover, while certain studies are required, there is no regulatory requirement mandating the use of specified systems interactions techniques.

Finally, as correctly noted in County finding 7B:291, the witnesses were in general agreement regarding the types of techniques that can be used to identify systems interactions.

32/ County's counsel occasionally asked certain questions about Suffolk County Exhibit 19, an incomplete document that listed five ill-defined classes of evaluation techniques. LILCO witnesses testified that, as they understood the exhibit, the Shoreham systems interaction studies did use the techniques listed. See, e.g., Reply Findings RB-176 (SC 7B:305), RB-177 (SC 7B:307).

The record establishes beyond question, however, that the very techniques embraced by the County in finding 7B:291 were in fact used in the various studies discussed (e.g., failure modes and effects analyses, systems interactions analyses, dependency analyses, plant walkdowns, and PRA). See, e.g., Reply Findings RB-165 (SC 7B:291), RB-176 (SC 7B:305), RB-186 (SC 7B:320).

Two other practices recur throughout the County's findings in this regard. First, each discussion of a particular study winds up with a curious summary finding, only a few of which contain any citation to the record and none of which is supported either by the record or by the proposed findings that precede it. See, e.g., Reply Findings RB-176 (SC 7B:305), RB-185 (SC 7B:319), RB-192 (SC 7B:328), RB-211 (SC 7B:362). Second, many of the County's findings will cite a particular response, but then misleadingly account for only part of the answer or fail to include a follow-up answer or explanation. See, e.g., Reply Findings RB-204 (SC 7B:350), RB-206 (SC 7B:353).

b. Suffolk County's Conclusions Regarding the Shoreham PRA Are Unfounded

** LILCO's witnesses presented extensive testimony concerning the use of the Shoreham PRA to identify and assess potential systems interactions. LILCO Proposed Opinion at ~~74~~

97-98. As the record reflects, PRAs are an effective tool for identifying systems interaction and assessing their impact on plant safety. The Shoreham PRA has identified no systems interactions that would be considered risk outliers. Id. at 97. Moreover, the Shoreham PRA cannot be viewed in isolation; it is only part of a comprehensive program to review systems interaction. LILCO has established a program conducted by the Independent Safety Evaluation Group to conduct a systems interaction review of Licensee Event Reports, including those from a surrogate plant. LILCO Findings B-314 to -316. These results along with the results of the operating experience gained at Shoreham will be fed back into the PRA to form an ongoing program to identify and assess systems interactions. See LILCO Finding B-370. Thus, the Shoreham PRA, coupled with the LER review program and the program for ongoing use of the PRA, is strong evidence that the plant is and will continue to be well protected against systems interactions. Suffolk County disagrees with this conclusion and urges the Board to hold that the Shoreham PRA does not provide "assurance that all or even most potential adverse systems interaction have been identified or addressed at Shoreham." SC Proposed Opinion at ~~76~~. 106.

At the outset, it should be noted that the County has misrepresented LILCO's position. LILCO witnesses made no claim that the Shoreham PRA or any PRA could detect all systems

interaction. What the LILCO witnesses did say was that the PRA was the best method available for identifying and assessing systems interactions and that the results of this study had not identified any unacceptable systems interactions. LILCO Findings B-395, B-396. By alleging that LILCO claims it has detected "all" systems interactions, the County sets up a straw man which it then proceeds to knock down. Because the County has misrepresented LILCO's claim, its proposed opinion and findings fail to engage what was actually accomplished by the Shoreham PRA.

The County relies on several propositions, which may be summarized as follows:

> (1) The PRA was not undertaken as a systems interaction study;
>
> (2) The exclusion of some external initiators makes the PRA incomplete;
>
> (3) The limited use of walkdowns makes the PRA incomplete;
>
> (4) LILCO's review of the Shoreham PRA has been inadequate; and
>
> (5) The failure to detect the Michelson concern detracts from the validity of the PRA.

As will be shown below, these criticisms are not persuasive.

(1) Formal Purpose of the PRA

** Suffolk County urges that the conclusion of the Shoreham PRA should be rejected because it was not formally undertaken for the purpose of identifying potential adverse systems interactions. SC Proposed Opinion at ~~72~~, ~~76~~. 102, 106. The objection is frivolous. First, regardless of the formal purpose of the study, there is substantial, uncontroverted evidence in the record from LILCO's expert witnesses that the Shoreham PRA did, in fact, go to great lengths to consider systems interactions. See, e.g., LILCO Findings B-348, B-354 to -369. Second, a PRA need not be called a systems interaction study to address adequately systems interactions. The County emphasizes that the Shoreham PRA was a risk assessment tool and concludes, therefore, that systems interactions were a secondary consideration. But as the LILCO experts testified, a PRA must take into account systems interactions in a comprehensive manner in order to be an effective risk assessment tool. Reply Findings RB-254, RB-255, RB-256. Thus, by its very nature, a PRA considers systems interaction. Third, as Mr. Hubbard stated, the methodology used in the Shoreham PRA is the "type of methodology that we thought was appropriate for a system interaction analysis." Reply Finding RB-219.

(2) Exclusion of Certain External Initiators

Suffolk County asserts that the methodology used in the Shoreham PRA was deficient because it failed to consider certain external initiating events. However, the decision to exclude certain initiating events has nothing to do with the methodology of the PRA. Instead, it involves the scope of the PRA. See Reply Finding RB-224 (SC 7B:389). Thus, such a decision has no bearing on whether the rest of the PRA is adequate. By erroneously suggesting a flaw in the methodology, the County attempts to taint the whole PRA without addressing the precise effect such exclusions might have.

According to the County, three potentially important external initiating events -- fires, floods and earthquakes -- were excluded from the Shoreham PRA. SC Finding 7B:389. While there is no dispute that these events were excluded33/ their exclusion was justifiable. First, at the time the Shoreham PRA began, experts in the field had generally concluded that external events were not dominant contributors to risk. Although several recent PRAs have identified external initiators as potentially significant contributors to risk, those conclusions may not be applicable to Shoreham. Reply Finding RB-228 (SC 7B:394). Second, the techniques for assessing external

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33/ Internal floods were considered. Reply Finding RB-224 (SC 7B:389).

events in PRAs are still being developed. The PRA Procedures Guide does describe methods for considering fires and earthquakes, but there may be large uncertainties associated with the assessment of such accident sequences. LILCO Reply Finding RB-226 (SC 7B:391). Based upon these considerations and the fact that a number of deterministic studies concerning external events had already been conducted for Shoreham, SAI decided that an adequate PRA could be done for the plant without including in it fires, floods and earthquakes. Reply Finding RB-228 (SC 7B:394).

(3) Use of Walkdowns

** Suffolk County argues that the "limited scope of walkdowns" in the Shoreham PRA ought to "diminish the weight [placed] on LILCO's assertion that all potential adverse systems interactions were identified." SC Proposed Opinion at ~~74~~. 103.34/ There is no basis in the record for the conclusion that the walkdowns conducted for the Shoreham PRA were not adequate to identify comprehensively systems interactions. In fact, the testimony of Dr. Burns -- a PRA expert with

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34/ As noted above, LILCO never asserted that all potential adverse systems interactions were identified by the PRA. Once again, Suffolk County sets up a straw man that does not accurately reflect the position taken by LILCO.

significant experience in the field -- provided uncontroverted evidence that the walkdowns conducted for Shoreham were adequate to identify systems interactions at the plant. Suffolk County seeks to rebut Dr. Burns' testimony with findings that are inaccurate and do not support the conclusions the County urges on the Board. Reply Findings RB-230 (SC 7B:398, 7B:399), RB-231 (SC 7B:402), RB-233 (SC 7B:404).

** Moreover, Suffolk County points to the Diablo Canyon and Indian Point walkdowns as models for "systematic and comprehensive plant walkdowns." See, e.g., SC Proposed Opinion at ~~73~~. 103. This reliance is unjustified. As the record reflects, the walkdowns at these plants were undertaken for specific purposes and may not be suited for effective use at other plants such as Shoreham. LILCO Finding B-381; Reply Findings RB-235, RB-236 (SC 7B:408). Thus, the evidence indicated that there was insufficient information to draw any conclusion about the generic efficiency of the types of walkdowns undertaken at Diablo Canyon and Indian Point. LILCO Finding B-381; Reply Finding RB-234 (SC 7B:407). Further, walkdowns may not be appropriate for the identification of many types of interactions. Reply Finding RB-235. The suggestion that the Shoreham PRA is somehow inadequate because of the scope of its walkdowns simply has no basis in the record.

(4) LILCO's Review of the PRA

** The County's conclusions also rely on an alleged lack of LILCO review of the Shoreham PRA. The County states: "More importantly, however, no evidence was presented from which this Board can conclude that there is reasonable assurance that potential adverse systems interactions that may have been identified by the PRA analysts have been or will be actually addressed in any systematic way by LILCO." SC Proposed Opinion at ~~74~~ 104 (emphasis added). This conclusion, as well as related conclusions concerning LILCO's review of the PRA, are based on findings that mischaracterize the record. See, e.g., RB-247 (SC 7B:424, 7B:425), RB-248 (SC 7B:426).

First the County's findings selectively rely on comments taken out of context in an attempt to show that LILCO's PRA review process is somehow limited. For example, the County suggests that there is no documentation of LILCO's systems interaction review. The witness in question actually testified that there was documentation of the PRA review for systems interactions; it was just not labeled a "systems interaction review." Reply Finding RB-248 (SC 7B:426). The record shows that LILCO has conducted an extensive review of the PRA for systems interaction. Reply Findings RB-245 (SC 7B:422), RB-246 (SC 7B:423).

Moreover, the County ignores non-LILCO review of the PRA for systems interaction. SAI has extensively analyzed systems interactions and will document the results of the review in the final PRA. The Peer Review Group, a distinguished panel of PRA experts, considers the Shoreham PRA for, among other things, systems interactions. Reply Finding RB-249 (SC 7B:422 to 7B:427). Finally, LILCO is conducting an ongoing review of systems interactions that will be used to update the PRA throughout the life of the plant. See LILCO Findings B-314 to -316 (ISEG LER review), B-370 (ongoing risk management review).

(5) Michelson Concern

The County also suggests that the Shoreham PRA is flawed because it failed at the outset to include the systems interaction identified in the Michelson Memorandum. When the record as a whole is reviewed, it becomes clear that the failure to include the Michelson concern does not reflect adversely on PRA methodology. See Reply Finding RB-112 (SC 7B:193, 7B:194, 7B:195). PRAs need not take into account all possible interactions to be effective. Reply Finding RB-256. The Michelson Memorandum merely compiled operating data in a way that suggested that potential initiators of the event were more likely than previously believed. And while steps have been

taken to incorporate the Michelson scenario into Shoreham's PRA, the result is likely to confirm the previous conclusions of both General Electric and SAI that the Michelson concern is not a significant contributor to risk. Reply Finding RB-112 (SC 7B:193, 7B:194, 7B:195).

Rather than indicating a flaw in the Shoreham PRA, the treatment of the Michelson concern demonstrates one of its strengths. As new operating experience is obtained, it can be analyzed within the PRA framework to assess the extent of the risk. This is one of the reasons why LILCO's continuing LER review and risk management program will be important parts of Shoreham's consideration of systems interactions in the future. LILCO Findings B-314 to -317, B-370.

4. Unresolved Safety Issues A-17 and A-47

* a. Task A-17 35/

* Suffolk County asserts under the standards set out in Virginia Electric and Power Co. (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245 (1978), there is insufficient evidence to justify the operation of Shoreham in the face of Unresolved Safety Issue A-17. The County's

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35/ This section replaces sections II.D.4 and II.D.4.a of LILCO's initial reply.

argument, in essence, involves the following chain of reasoning: USI A-17 is one of the most important Unresolved Safety Issues and significant progress toward its resolution should be required to be demonstrated, but little has been made. As a result, the Staff's characterization of it as purely confirmatory should be discounted if not disregarded, and the only basis for evaluating Shoreham's ability to prevent unacceptable systems interactions is the existing regulatory standards. These standards are definitionally inadequate, according to the County, because North Anna requires the Board to be able to find "that something specific has been done at Shoreham" that resolves USI A-17. SC Proposed Opinion at 120. However, nothing sufficient has been done at Shoreham, and therefore the North Anna finding cannot be made.

* The premises and reasoning on which the County's argument rest are both flawed. Consequently, the County's conclusion that the "North Anna finding" cannot be made is incorrect.

* First, the County urges that this Board conclude that the label "confirmatory" for USI A-17 is "totally at odds with the history of USI A-17" as a high priority program. SC Proposed Opinion at 119. The County's position is ill founded. USI A-17 is and always has been regarded as confirmatory by the Staff. LILCO Findings at B-318D, B-318F; Staff Findings 7B:176

7B:177, 7B:191K. Equally important, the Staff is and always has been of the opinion that existing regulations provide a sufficient basis for continued licensing pending the ultimate disposition of USI A-17. LILCO Findings B-317, B-318, B-318D; Staff Findings 7B:185, 7B:188 to :190. There is nothing about the relative ranking of unresolved safety issues that inherently affects their potential classification as confirmatory or otherwise. Thus, the County's argument that USI A-17 should be regarded as something other than a confirmatory matter, during the pendency of which licensing can continue, is mistaken.

* Second, the County's assertion that some particular pace of progress must take place toward resolution of USI A-17 is inherently in conflict with USI A-17's status as a confirmatory item. The County's position was refuted by the testimony of the Staff experts responsible for resolution of USI A-17. The Staff witnesses stated, that, in their technical opinion, the pendency of USI A-17 should not impede the issuance of an operating license to Shoreham even if USI A-17 were finally resolved on a schedule substantially longer than currently predicted by the NRC. LILCO Findings B-318D, B-318J; Staff Findings 7B:191K, 7B:191L.

* Equally important, the Staff's own perception of USI A-17 has evolved: events and the accretion of information since the designation of USI A-17 have increased the Staff's

confidence in the efficacy of current requirements and in the likelihood of a satisfactory resolution of the issue. LILCO Findings B-318F, B-318I; Staff Findings 7B:191M, 7B:191O to :191Q.

* Third, the County reads the "North Anna finding" requirement for unresolved safety issues far too narrowly. In Virginia Electric and Power Co. (North Anna Nuclear Power Station, Units 1 and 2), ALAB-491, 8 NRC 245, 248 (1978), the Appeal Board ruled, in the context of an operating license proceeding, that unresolved issues should not be ignored merely because they might have generic applicability. But cases applying the standard have made clear the flexibility permitted in justifying operation in the face of the unresolved safety issue. Generally, a listing of licensing bases is offered by way of example, not by way of limitation or as a dispositive statement. In North Anna, for instance, the Appeal Board stated:

> But there may be one or more other justifications for permitting the plant to operate. The most common are that a solution satisfactory for the particular facility has been implemented; a restriction on the level or nature of operation adequate to eliminate the problem has been imposed; or the safety issue does not arise until the later years of plant operation.

Id. at 248 (emphasis added).

* That the North Anna Appeal Board was using illustrative terms in describing bases on which licensing may proceed during the pendency of a USI is confirmed by the more recent Pacific Gas and Electric Co. (Diablo Canyon Nuclear Plant, Units 1 and 2), LBP-81-21, 14 NRC 107 (1981). There, the Licensing Board listed the following reasons as acceptable for permitting operation despite the pendency of Unresolved Safety Issues:

> (1) the problem has been resolved for the reactor under study, (2) a resolution can reasonably be expected before operation, (3) there will be no safety implications until after years of operation and alternative means will exist to avoid undue risk to the public, (4) current standards are adequate but confirmatory studies are desirable while licensing continues, (5) a problem is so unlikely to occur as to be an incredible event, (6) the task is for the purpose of resolving unclear, conflicting, or impractical requirements of the regulations, or, (7) presently adequate criteria can be improved.

Id. at 118.

The Appeal Board has recently affirmed the Licensing Board's opinion, including the Licensing Board's disposition of the unresolved safety issues. Pacific Gas and Electric Co. (Diablo Canyon Nuclear Plant, Units 1 and 2), ALAB-728, slip op. at 47-52 (May 18, 1983).

* The record clearly establishes that Shoreham meets the fourth of the bases articulated in Diablo Canyon for going

forward with licensing despite the existence of unresolved safety issues. There is substantial evidence on the record that USI A-17 is recognized as confirmatory in nature and that the current regulatory standards, which have been met by Shoreham, are adequate. LILCO Findings B-318D to -318F; Staff Findings 7B:176, 7B:185 to :190; LILCO Proposed Opinion at 100-01; Staff Proposed Opinion at 65-66.

* The Staff testified that the Shoreham application was satisfactorily evaluated against existing licensing requirements, including the "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants" (reissued as NUREG-0800 in July 1981 with the addition of TMI-2 accident-related requirements). LILCO Finding B-319E; Staff Findings 7B:185, 7B:186. In addition, the Staff has consistently stated that applicants, including Shoreham, who meet the current regulatory requirements provide reasonable assurance that potential adverse systems interactions present no undue risk to public health and safety and that no additional systems interaction requirements need be imposed on applicants. LILCO Finding B-318E; Staff Findings 7B:188 to :191, 7B:191V, 7B:191W.

* LILCO's compliance with the existing, adequate regulatory scheme and the confirmatory nature of A-17 are together a sufficient basis for the North Anna finding. In addition,

the record shows that LILCO has taken extra steps to address systems interaction at Shoreham. LILCO Proposed Opinion at 101-102; Staff Finding 7B:191S. Even Mr. Conran agreed that the systems interaction studies performed specifically for Shoreham would provide an adequate basis for licensing Shoreham under North Anna absent his view of the safety classification issue. LILCO Finding B-318C. Since systems interaction studies are performed independently of safety classification, Mr. Conran's limitation on the North Anna finding is without basis for Shoreham.36/ LILCO Finding B-318H; Staff Findings

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36/ With respect to LILCO's system interaction studies, the County adopts Mr. Conran's suggestion that LILCO's interpretation of important to safety created a "synergistic effect" on systems interaction studies. SC Proposed Opinion at 106-08. But, as LILCO observed in its proposed opinion, one County witness, as well as the NRC Staff witnesses, rejected Mr. Conran's view and stated that Shoreham's system interaction studies were not affected by systems classification nomenclature. See LILCO Finding B-318C to -318E, B-318H; Staff Findings 7B:191U. Moreover, there was testimony throughout the systems interaction record concerning the extensive consideration given to non-safety related equipment in systems interactions studies. See, e.g., LILCO Findings B-260, B-368. Thus, contrary to the County's suggestion, LILCO has a strong basis for concluding that Mr. Conran's concern is without merit. LILCO Proposed Opinion at 104.

The County's proposed opinion unsuccessfully attempts to put flesh on the bare bones of Mr. Conran's testimony by asserting five possible ways in which safety classification may affect systems interaction studies. SC Proposed Opinion at 106-07. The five items, reduced to their essence, merely reiterate the County's position that LILCO does not understand the safety significance of non-safety related structures, systems and components because it does not use a classification category of important to safety. This criticism is entirely without

(footnote cont'd)

7B:191U, 7B:141E to :141H; Staff Proposed Opinion at 66. These Shoreham-specific studies performed by LILCO establish an additional basis for the North Anna finding: that at Shoreham a sufficient solution for the issue has been reached. However, such an additional basis is not necessary because substantial evidence on the record demonstrates that the situation at Shoreham fits squarely within the fourth basis articulated in Diablo Canyon.

* Finally, Suffolk County asserts that the North Anna opinion requires "the Board to find that something specific has been done at Shoreham that resolves for that plant the outstanding systems interaction concern." SC Proposed Opinion, at 120. As is shown above, this assertion both misreads North Anna and the law on unresolved safety issues, as applied most recently in Diablo Canyon.37/ Indeed, to the extent that the

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(footnote cont'd)

basis. As the record amply reflects, LILCO and its principal contractors do understand the safety significance of all of Shoreham's structures, systems and components. LILCO Reply at 36-37. Moreover, the County's statement that "the essential element of any systems interaction study [is] the analyst's judgment as to the safety significance of equipment" demonstrates its misunderstanding of the method and objective of systems interaction studies which assess the possibility that one plant system acting on one or more other systems, in a way not consciously intended by design, may adversely affect the safety function. Spies et al., ff. Tr. 6357, at 34-35; Staff Findings 7B:142, 7B:174. Thus systems interactions studies are performed without regard to the classification of structures, systems and components. LILCO Finding B-313H.

37/ Curiously, the County never attempts to distinguish -- indeed never mentions -- the Diablo Canyon Licensing Board case

(footnote cont'd)

County is suggesting that systems interaction studies be required as the means of meeting the North Anna test at Shoreham, such a proposal has recently been rejected by the Appeal Board in Diablo Canyon, ALAB-728 (May 18, 1983). Affirming the Licensing Board's rejection of a contention dealing with systems interactions,38/ the Appeal Board stated:

> As the Licensing Board correctly noted in rejecting this contention, there is "[no] requirement in the regulations for this kind of comprehensive study." Thus, contrary to the joint intervenors' assertion, there is no regulatory premise for the contention. As the Commission has stated, "[g]eneral design criteria, as their name implies, are 'intended to provide engineering goals rather than precise tests or methodologies by which

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(footnote cont'd)

and its acceptance of continued licensing while confirmatory items are resolved, despite the fact that that case had figured prominently in both LILCO's original and revised findings on this issue (LILCO Proposed Opinion at 98-100) and those of the Staff (Staff Proposed Opinion at 61).

38/ The contention asserted, in pertinent part, that

> [A]n operating license cannot be granted for Diablo Canyon until the applicant "demonstrates that structures, systems and components important to safety will not be prevented from operating and performing their intended functions as a result of interactions with non-safety related systems." To do so, joint intervenors contend, would violate General Design Criteria 2, 3, 4, 22 and 24.

Id. at 57-58 (footnotes omitted).

> reactor safety [can] be fully and satisfactorily gauged.'" And, the design criteria cited by the joint intervenors have never been found by the Commission to require the specific systems interaction study called for by contention 15 & 16.

Id. at 58-59 (footnotes omitted).

* In short, the County's proposed statement of the bases for North Anna findings is far narrower than the actual tests developed in that case and elaborated in Diablo Canyon. Substantial evidence in the record supports the fact that USI A-17 is a confirmatory item; that the existing regulatory standards are adequate for licensing in the interim; and that Shoreham more than meets those standards. Therefore, the North Anna finding can be made for Shoreham.

b. Task A-47

Unresolved Safety Issue A-47 involves potential control system interactions and is a subset of the overall systems interaction issue. Staff Finding 7B:173. It is similar in thrust to A-17 because it is also a "confirmatory" USI. It calls for review of the existing regulatory criteria to ensure that they adequately address potential control system interactions. Reply Finding RB-262 (SC 7B:444); Staff Finding 7B:193, 7B:198. In the Staff's view, the existing regulatory requirements, coupled with two confirmatory studies being undertaken

by LILCO, will adequately ensure that control system interactions of the type included in A-47 will not unduly risk the public health and safety at Shoreham. Reply Finding RB-270; Staff Finding 7B:201.

** The extensive testimony by LILCO witnesses about how systems interaction is taken into account in Shoreham's design process provides an additional basis for concluding that existing requirements and practice are adequate. See LILCO Proposed Opinion at ~~60-64~~ 82-87 and related findings. This testimony is particularly germane here since control system interactions are avoided by ensuring separation of control and safety systems in the design process. The Staff reviews the design for proper separation of control and safety systems and for appropriate use of isolation devices. Reply Finding RB-269. As with A-17, the Shoreham PRA provides an additional reason for concluding that the plant's design is adequate to deal with potential control systems interactions. See, e.g., LILCO Finding B-369 (PRA considers all systems); Reply Finding RB-237 (SC 7B:409) (consideration of adverse effects on control systems).

** Not only is there sufficient evidence to conclude that Shoreham can be operated safely despite the pendency of A-47, the evidence also indicates that the confirmatory studies being conducted by LILCO need not be completed prior to plant operation. Although the NRC Staff has requested the results of

these studies prior to fuel load, the Staff has allowed other plants until the first refueling to complete similar studies. Reply Finding RB-271. This fact, coupled with the pertinent considerations set out in LILCO's proposed opinion, justify operation in advance of completion of the studies. See LILCO Proposed Opinion at ~~77~~; 107-08; Reply Finding RB-268 (SC 7B:455).

E. Conclusion

The foregoing discussion establishes that Suffolk County's proposed findings and conclusions are neither well reasoned nor well rooted in the record. LILCO's proposed opinion and related findings on safety classification/systems interaction should be adopted by the Board, supplemented by the discussion in part II.A.1.c. above and the associated reply findings concerning environmental qualifications.

III. REPLY TO THE STAFF

The NRC Staff's proposed opinion on SC/SOC 7B and SOC 19(b) is generally in accord with the views stated by LILCO in its proposed opinion. In the area of the interpretation of the term important to safety, however, a basic disagreement remains. In the Staff's view, LILCO has misinterpreted the NRC's regulations by equating important to safety with safety

related. Since many of the reasons cited by the Staff parallel the arguments made by Suffolk County, this reply will, in large measure, refer to the appropriate portions of LILCO's reply to Suffolk County.

LILCO also intends to address briefly the use of the PRA in this proceeding. It is the Staff's view that this Board need not rely on the Shoreham PRA to conclude that Shoreham has adequately considered systems interactions. While LILCO agrees that it is not necessary to rely on the PRA, the PRA provides further assurance of the adequacy of the Shoreham design.

A. Important to Safety39/

* The NRC Staff disagrees with LILCO's interpretation of "important to safety." For the reasons stated in LILCO's proposed opinion, LILCO believes it has correctly interpreted the Commission's regulations. LILCO Proposed Opinion at 22-49; see also LILCO Reply at 5-15. These reasons need not be repeated here. There are, however, several aspects of the Staff's proposed opinion that should be addressed:

39/ This section, though it incorporates some of the arguments in LILCO's initial reply, is largely new and replaces the original section. Because the Staff has now produced its own regulatory analysis of important to safety, a response to that analysis is appropriately included in the Board's opinion. Thus, LILCO has written this section in the form of a proposed opinion.

(1) The Staff's insistence that LILCO's interpretation of "important to safety" has always been wrong;

(2) The Staff's fallback view that, even if LILCO's interpretation has not always been wrong, it now clearly is wrong in light of the Commission's January 6, 1983 revision of 10 CFR § 50.49 (the EQ rule); and

(3) The Staff's belief that it would be appropriate for this Board to seek to codify the Denton Memorandum by imposing it on LILCO.

* We have difficulty with each of these propositions; we explore each in turn.

* 1. Interpretation of Important to Safety prior to January 1983

* In a belated reply to LILCO's analysis of pertinent regulatory history,40/ the Staff argues that "[e]ven in the absence of the Commission's recent revision of . . . § 50.49 . . . [this Board should] reject LILCO's construction of 'important to safety.'" Staff Proposed Opinion at 26. We will

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40/ The Staff offered no meaningful response to LILCO's analysis of January 17, 1983 until the Board strongly invited any party who disagreed with LILCO's conclusions to make its views known, however belatedly. See Tr. 21,111-12 (Brenner, J.)

consider in a moment the various factors cited by the Staff to buttress its conclusion. For now, suffice it to say that the most these factors can do for the Staff's argument is to suggest that the meaning of "important to safety" has been ambiguous. Neither these factors nor anything else show that LILCO's interpretation prior to January 1983 was wrong.

* First, the record is unavoidably clear that for years (a) LILCO, its NSSS vendor, and its architect engineer -- along with the nuclear industry as a whole -- have equated the regulatory terms "important to safety" and "safety related," and (b) they have done so without quibble from the Staff until NRR's issuance of the Denton Memorandum in November 1981. LILCO Findings B-5, B-11, B-31, B-158 to -160, B-162A, B-164, B-166, B-167, B-187, B-188; see B-162B (Denton definition new), B-168 (Staff has not reviewed guidance documents to conform them to Denton Memorandum). Accordingly, it is reasonable to conclude that the Memorandum broke new ground, at least so far as the industry was concerned.

* Second, even after appearance of the Memorandum, NRR made little early effort to implement it. Even now, the document has yet to be embodied in a Regulatory Guide or in any other formal guidance document. LILCO Finding B-166. Even now, the Staff has yet to try to apply the Denton definition to any plants except TMI-1 and Shoreham, much less to the industry

as a whole. When asked "why Shoreham," the Staff noted that it "had to start somewhere." LILCO Findings B-162B, B-162C. Such lassitude on the Staff's part would be inconceivable if the Denton memorandum had, in fact, mirrored longstanding and unambiguous regulatory requirements.

* Third, the Staff says that it was confused. E.g., "LILCO's citation of 10 CFR § 72.15(a)(14), which uses the terms 'important to safety' and 'safety-related' in close conjunction, succeeds only in demonstrating that the drafters of the regulations may themselves have confused the terms over the years, a point made by testimony in this proceeding . . . ." Staff Proposed Opinion at 33 n.11; the Denton Memorandum "was intended . . . to eliminate a terminological problem which had arisen because individual Staff members had in the past used the terms inconsistently." Id. at 36. Mr. Conran spent "more than a year" seeking to bring order out of this so-called confusion, ultimately drafting the Denton definition. Id. But again, the Staff simply does not become confused about the meaning of longstanding, unambiguous regulatory requirements; nor is it likely that the preparation of a short memorandum that simply mirrors longstanding, unambiguous requirements would take more than a year to research and write.

* Indeed, we cannot accept the Staff's rationalization that the practice of equating the two terms was merely a

"terminological problem." This theory might be plausible in explaining conflicting testimony of witnesses or informal comments by Staff members, but it does not easily survive the equation of the two terms in official documents such as 10 CFR § 72.15(a)(14). It is unacceptable for the Staff to explain such a clear expression of intent in a regulation by saying "the drafters of the regulations may themselves have been confused." Staff Proposed Opinion at 33 n.11. We presume the Staff would repudiate on similar grounds formal guidance documents, such as Regulatory Guide 1.105, which explicitly define structures, systems and components important to safety as those required to perform the Part 100, Appendix A safety functions (i.e., the safety related set). LILCO Finding B-167.

* We are also not persuaded by the Staff's argument that the Denton definition is merely a clarification of terminology because the Staff has always applied its current concept of "important to safety" in practice. Staff Proposed Opinion at 37. The concept is that non-safety related equipment does play a role in the safe operation of the plant and that such equipment is covered by the NRC's regulations. LILCO Finding B-210D; Staff Finding 7B:48D. LILCO agrees. LILCO Findings B-210A, B-210D. But this does not mean that the Staff has, in practice, interpreted the regulatory term "important to safety" in a particular regulatory context (e.g., GDC 1) in the way it

now urges. As we discuss on page 115 below, the Staff concedes that it equates important to safety and safety related in the context of GDC 2. And the Staff concedes that it has taken steps to apply GDC 1's specific regulatory requirements to non-safety related equipment by redefining the term important to safety in that context. See Staff Finding 7B:48B. Thus, the Staff has not consistently interpreted important to safety in the way defined by the Denton Memorandum.

* In short, we conclude that knowledgeable people in the nuclear industry and in the agency itself have for more than a decade either equated "important to safety" and "safety related"41/ or been confused as to the relationship between these two terms of regulatory art. The question becomes, then, whether the January 1983 revision of § 50.49 has materially altered the situation.

* 2. Interpretation of Important to Safety after January 1983

* "Fortunately," says the Staff, "a clear answer was very recently provided by the Commission: 'important to

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41/ As another Licensing Board recently stated in discussing the new Environmental Qualification rule: "In the past, 'important to safety' has been equated with 'safety related.'" Public Service Company of New Hampshire (Seabrook Station, Units 1 and 2), Memorandum and Order (slip op.) at 2 (May 13, 1983).

safety' is broader than safety-related in the Commission's view." Staff Proposed Opinion at 25 (citing the recent revision to § 50.49). Unquestionably, there is language in this revision referring to "that portion of equipment 'important to safety' commonly referred to as 'safety related' . . . ." It is significant for the discussion just concluded that this language is the first time in more than a decade of regulatory use of "important to safety" and "safety related" that the Commission has ever said anything that squarely differentiates one term from the other. Unfortunately, this differentiation does little to help us decide whether we should assist the Staff in its campaign to codify the Denton Memorandum without the benefit of a rulemaking focused squarely on it.

* The recent revision to § 50.49 is not helpful in resolving the present issue for several reasons. First, as noted on pages 13-14 above, the revision's verbal distinction between "important to safety" and "safety related" seems to have very little practical significance in the EQ context. Section 50.49(b)(2) requires that "[n]onsafety-related electrical equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of safety functions [specified in § (b)(1)] by safety-related equipment" must be included in EQ programs. (Emphasis added.) LILCO has persuasively argued that no such "nonsafety-related electrical

equipment" exists in a properly designed and classified facility. If the failure of one set of electrical equipment "could prevent satisfactory accomplishment of [specified] safety functions" by another set of equipment, then both sets must be designed and classified as safety related. This has been done at Shoreham. See LILCO Findings EQ-26 to -27, B-210E; EQ Supplement to LILCO Proposed Opinion of March 28, 1983, at 158; pages 13-14 above.

* More important, the definition of important to safety given in revised § 50.49 is not the same definition used in the Denton Memorandum. It is narrower. Section 50.49 deals with electrical equipment whereas the Denton definition concerns the universe of structures, systems and components. Further, § 50.49's important to safety focuses on "equipment whose failure under postulated environmental conditions could prevent satisfactory accomplishment of [specified] safety functions by safety-related equipment," whereas the Denton Memorandum reaches far more widely. It defines important to safety as structures, systems and components that "provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public," which LILCO properly believes is the safety related set. But the Memorandum makes unmistakably clear that much more is intended -- "the broad class of plant features covered (not necessarily explicitly) in

the General Design Criteria, that contribute in [an] important way to safe operation and protection of the public in all phases and aspects of facility operation . . . ." Goldsmith et al., ff. Tr. 1113, Attachment 1 (emphasis in original); see LILCO Finding B-174.

* Nor are the § 50.49 and Denton definition the same as the operative "important to safety" language proposed by the Staff as a license condition for Shoreham. This language provides that "all non-safety related structures, systems and components and the plant computer software will be accorded, as a minimum, the safety significance given them in the FSAR, as amended, technical specifications and emergency operating procedures." Staff Proposed Opinion at 145.42/

* These observations have dual significance: (a) knowledgeable people remain quite confused about the practical significance of differentiating between "important to safety" and "safety related" and (b), if there is to be such differentiation, it is clear that the content given "important to safety" will vary with the context in which the term is used. "A

42/ Immediately following this sentence in the proposed licensing condition is a sentence reading "These structures, systems and components shall henceforth be appropriately termed 'safety related,' or 'important to safety' . . . . " That does not make sense since the antecedent to "these structures, systems and components" is "all non-safety related structures, systems and components."

word is not a crystal, transparent and unchanged," Justice Holmes once suggested. Rather, "it is the skin of a living thought and may vary greatly in color and content according to the circumstances and the time in which it is used."43/ While this cannot fairly be said of all words, it certainly fits "important to safety" as the Staff would now define it. Therefore, no single definition of important to safety (other than safety related) can have the precision essential to consistent, efficient regulation.

* Reference to several GDCs is instructive. If important to safety is read to impose regulatory requirements beyond the safety related requirements, then GDC 1 can be feasibly interpreted to demand graded QA for non-safety related but important to safety features commensurate with their safety significance. But what about GDCs 2 and 4? A component is either seismically qualified or it is not. It is either environmentally qualified or it is not. Thus, if important to safety under GDC 1 is the regulatory justification for graded QA on non-safety related features, what does important to safety compel under GDCs 2 and 4? Who decides? How? When? With what means of ensuring prompt, consistent answers from reviewer to reviewer, from inspector to inspector, from ASLB to ASLB?

43/ Towne v. Eisner, 245 U.S. 418, 425 (1918).

For GDC 2 the Staff would apparently answer that the scope has been defined as the safety related set by 10 CFR Part 100, Appendix A. Staff Proposed Opinion at 32. A similar answer might be given for GDC 4, though § 50.49 applies only to electrical equipment. But what about the many other GDCs in which important to safety appears? For example, GDC 20 requires automatic initiation of equipment important to safety, but no regulation defines that important to safety set. In other words, the Staff's regulatory scheme would require a definition of "important to safety" for each place that this term appears in the regulations. But rather than proceeding to develop those concrete definitions, the Staff urges adoption of what amounts to a non-definition, thereby inviting severe disruption of the regulatory process.

* It follows that revised § 50.49 does not tell us what the regulatory consequences of codifying the Denton definition would be. It also follows that (a) the uncertainty apparent in revised § 50.49 as to what practical implications, if any, flow from the revision's distinction between important to safety and safety related in the EQ context, see, e.g., Reply Findings RB-17, RB-19, and (b) the various definitions of important to safety given in § 50.49, the Denton Memorandum, and the Staff's proposed license conditions, all strongly caution against the abrupt adoption of "important to safety" requirements that

would prove to be dangerously simplistic once attempts are made to apply them in actual practice.

* Finally, the most important reason why revised § 50.49 does not answer the present question is that nothing in the revision itself or its rulemaking record suggests that the Commission meant for the revision to answer the question. Had the Commission so intended, it would surely have set out the Denton definition in its notice of proposed rulemaking and sought comments on it;44/ such an invitation, in turn, would surely have elicited a radically different response than did the actual notice of proposed rulemaking.45/ Revised § 50.49 was concerned with complex issues regarding environmental qualification, not with the even more complex issues involving important to safety. Thus, revised § 50.49 provides no basis for us to codify the Denton Memorandum in this proceeding.

* 3. The Appropriate Forum for Making Law

44/ The phrase "important to safety" did not appear in the proposed rule published for comment. 47 Fed. Reg. 2878 (1982).

45/ Indeed, as a matter of administrative law, we cannot construe the rule as a definition of important to safety for all its uses in the regulations. See PPG Industries Inc. v. Costle, 659 F.2d 1239, 1250 (D.C. Cir. 1981) (notice defective if object of rulemaking not clearly specified).

* It is axiomatic that a Licensing Board's mandate is to apply the Commission's regulations, not enact them. The Staff avoids this difficulty by claiming that the Denton definition involves no new regulatory requirements or, failing that, that the Denton definition was sanctioned last January by revised § 50.49.

* The difficulty is not so easily skirted, however. For reasons detailed on pages 91-94 above, the present record does not permit us to conclude that the Denton Memorandum simply mirrors longstanding, unambiguous regulatory requirements. Nor is it credible that the Commission's recent revision of its EQ rule constitutes a blanket endorsement of important to safety definitions that were never mentioned during the EQ rulemaking.

* Further, whether these definitions are or are not to be given the force of law is a wholly generic question -- no more relevant to Shoreham than to any other reactor. And it is clear that the Staff has yet to think through the practical implications of codifying the definitions, thus inviting disagreement and confusion in the regulatory process if content must be given to them after rather than before their codification.

* Against this background, we decline to assist the Staff in its attempt to make the Denton definition law without

the benefit of rulemaking. The generic, complex, confused issues posed by this attempt are precisely the sort of issues appropriately resolved by Commission rulemaking, not by fits and starts in individual dockets.

* We are, of course, well aware that we could choose to certify this matter to the Commission; we have taken advantage of this option on other occasions, e.g., Memorandum and Order Referring Denial of Suffolk County's Motion to Terminate to the Appeal Board and Certifying Low-Power License Question to the Commission (through the Appeal Board), LBP-83-21 (April 20, 1983). But we see no need for certification in this instance. The Staff knows its way to the Commission and needs no help in getting there. Moreover, as indicted below, speed is not of the essence.

* 4. No Crisis

* Long before anyone thought of preparing the Denton Memorandum, LILCO had embraced and was implementing the philosophy underlying the memorandum. There is no dispute (a) that structures, systems and components beyond the safety related may have safety significance, and (b) that to the extent non-safety related features do have safety significance, they should be treated accordingly; in particular, they should be subject to appropriate levels of quality assurance. LILCO

Findings B-210B to -210D. This philosophy is at the heart of sound engineering judgment and practice. See LILCO Finding B-210, B-210C. LILCO has stressed that sound engineering judgment and practice exist without any necessity for them to be required by regulation.

* It comes as no surprise, accordingly, that the Staff agrees that lack of the Denton definition in the past has not prevented LILCO from designing and constructing Shoreham safely. See, e.g., LILCO Findings B-204, B-204A; Staff Findings 7B:134, 7B:135. The Staff also concedes that imposition of the definition now would not require altering any of LILCO's present arrangements for Shoreham's operation. See Staff Finding 7B:136B. The Staff's concern centers on events years hence. See LILCO Finding B-259E; Staff Finding 7B:136.

* Moreover, as observed on page 91 above, the Staff has moved very slowly in its effort to breathe life into the Denton Memorandum. The pace of this effort suggests no particular sense of urgency even on NRR's part for a quick resolution of how "important to safety" is to be construed as a term of regulatory art. That interpretation poses a myriad of difficult questions still early in their analysis. Mature consideration of at least the major issues is essential if the resulting requirements are to be well advised. The time for mature consideration is available. We urge the Staff and industry to get on

with it in a systematic, focused fashion. It is neither appropriate nor reasonable to expect a Licensing Board sitting in an individual case to do the job.

* 5. Audendum to Point One

* Some pages ago, we promised further comment on the factors cited by the Staff to support its claim that LILCO's interpretation of "important to safety" has always been wrong. Each factor is discussed briefly below, in the order in which the Staff raised it.

* a. GDC 60

* The Staff cites its own finding 7B:26 to support the notion that GDC 60 "requires radioactive effluent control and treatment equipment, which is non-safety related." Staff Proposed Opinion at 26. The finding, however, is a general statement that GDCs apply to non-safety related equipment; it does not support a specific conclusion about GDC 60. Moreover, GDC 60 makes no reference to important to safety. Thus, although the introduction to Appendix A states that the GDCs address structures, systems and components important to safety, the omission of the term in GDC 60 leaves its scope unclear. Also, the record does not establish whether the non-safety related portions of the radioative effluent treatment system are

installed in the plant because they are required by GDC 60 or whether they are installed as a matter of good engineering practice or in response to some other regulatory requirement (e.g., 10 CFR Part 20).

* b. GDC 1: Common Parlance

* On page 27 of its proposed opinion, the Staff suggests that "important to safety" in "common parlance . . . would clearly be broader in meaning than" certain words replaced by the phrase in a draft of GDC 1. If we are to deal in "common parlance," however, safety related is even broader in meaning than important to safety -- compare the elastic concept of "related" with the more limited notion of "important." But we may confidently assume that the Staff would not argue that the regulatory meaning of "safety related" is broader in scope than the regulatory meaning of "important to safety." The point, of course, is that we are talking of the regulatory definition of these words, not common parlance. And for reasons previously noted, there is good reason to believe that "important to safety" was used in various regulations in past years as a synonym for longer descriptions of safety related features found in the drafts of these regulations.

* On page 28 of its proposed opinion, the Staff argues that "[i]f words used in a regulation or statute to express a

certain meaning are omitted, the proper presumption is that a change of meaning was intended," citing Chertkof, 676 F.2d at 987-88. The court's language was:

> In the amendments adopted in 1953, which became the 1954 code, Congress cut out the language from which the government seeks to derive comfort. To us, it seems that the deletion of language, having so distinct a meaning, almost compels the opposite result when words of such plain meaning are excised.

Id. at 987 (emphasis added). First, as a matter of fact, the deletion in Chertkof was just that -- the omission of key words, not as in GDC 1 the substitution of one set of words for another set when the two could easily be understood to be synonymous. Second, as a matter of law, Congress may drop or substitute words with no explanation whatsoever and still be deemed to have fundamentally altered the meaning of the resulting language, if its plain meaning so indicates. Congress is not bound by the Administrative Procedure Act. The Commission is; it may not materially change definitions between draft and final regulations without providing meaningful notice and opportunity for comment. Thus, when no such notice and opportunity are given, the necessary presumption is that words may change somewhat between draft and final regulations but not the basic definitions embodied in the draft and final regulations.

* c. GDC 44

* The Staff asks us to reject LILCO's argument that GDC 44 was originally intended to apply to safety related systems. Staff Proposed Opinion at 28. According to the Staff the requirement that the GDC 44 cooling systems must remove heat load under normal operating as well as accident conditions is evidence that important to safety is a broader term than safety related. LILCO's analysis, however, demonstrated that this GDC evolved from proposed GDCs that clearly referred to safety related features. LILCO Proposed Opinion at 31. Nothing in the record supports the implication, essential to the Staff's argument, that only non-safety related systems are operated under normal conditions. To the contrary, it is obvious to us that some safety related equipment does operate and must be cooled during normal operation. Thus, there is no inconsistency in LILCO's argument.46/

* d. § 50.34(a)(7)

* On page 29 of its proposed opinion, the Staff claims that LILCO's interpretation of § 50.34(a)(7) ignores

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46/ Although witnesses did not testify directly on GDC 44, we believe the redundancy (i.e. single failure) and on-site power requirements included in the GDC are further evidence that it applies only to safety related cooling systems.

surrounding language and is obviously contrary to public health and safety. With respect to the latter, we fail to see the "obvious" adverse effects of LILCO's interpretation of § 50.34(a)(7) on public health and safety that are suggested but not explained by the Staff. With respect to the former point, a fair reading of the section supports LILCO's view. We agree with the Staff that the first sentence of § 50.34(a)(7) does require a description of the quality assurance program for the whole plant. But that must be read with the second sentence which says that the requirements for such a program are found in Appendix B; all parties agree that Appendix B only applies to safety related structures, systems and components. LILCO Finding QA-14. Finally, the Staff underscores the word "include" in the third sentence, suggesting that the QA program for the plant must be larger than the Appendix B program. The suggestion is misguided. The third sentence addresses the FSAR description of the QA program, not the scope of the program itself. Reading these three sentences together supports LILCO's view that the only QA program currently specifically mandated by regulation is the Appendix B program applied to safety related equipment.

* e. Void in QA Regulations

* The Staff is concerned that LILCO's interpretation of important to safety imposes no quality assurance requirements on non-safety related equipment even though it may play a role in the safe operation of the plant. Staff Proposed Opinion at 30. But sound engineering judgment and practice do impose such requirements. And it is certainly not the case that non-safety related equipment falls outside the scope of regulatory authority. Performance and consequence requirements ensure regulatory control over non-safety related, as well as safety related, equipment. See LILCO Reply at 10-11. These standards allow maximum flexiblity to the designer, constructor and operator of a plant in selecting the appropriate mix of relevant factors (e.g., design margins, design approach, quality assurance) so long as the basic performance and consequence requirements are met.

* The effectiveness of this approach is demonstrated by its successful results at Shoreham; appropriate quality assurance was applied to all non-safety related structures, systems and components despite LILCO's, S&W's and GE's belief that non-safety related QA is not a regulatory requirement. LILCO Findings B-209, B-210C. Despite this success, the Staff apparently finds performance standards to be a reason for mandating

a non-safety related QA program. Staff Proposed Opinion at 30. We fail to see the logic in this reasoning. Moreover, if the Staff is not satisfied with the results achieved by the performance approach (as was apparently the case after TMI-2, Staff Finding 7B:48B), appropriate steps, such as rulemaking, can be taken to impose specific requirements. This has not yet been done for non-safety related QA.47/

* f. § 50.59

* The Staff claims that LILCO's narrow construction of important to safety will have an adverse affect on the Company's reporting of plant modifications under 10 CFR § 50.59.48/

47/ In passing, we note with interest one of the Staff's examples -- fire protection -- which (i) demonstrates the proper approach to imposing specific regulatory requirements and (ii) ironically, provides another example of the equality of important to safety and safety related in NRC regulations. After almost ten years of experience under the general fire protection requirements of GDC 3, the Commission enacted by rulemaking in 1980 very specific regulations on the subject. 10 CFR § 50.48 and Appendix R. This rule references quality assurance guidance for fire protection equipment. 10 CFR § 50.48(a) n.4. It is also instructive to note that the Commission equates important to safety and safety related and uses them interchangeably in this rule: "The phrases 'important to safety' or 'safety related,' will be used throughout this Appendix R as applying to all safety functions." 10 CFR Part 50, Appendix R, § I; see generally Appendix R.

48/ We find the Staff's arguments concerning the impact of LILCO's interpretation of important to safety in contexts other than GDC 1 particularly unpersuasive. As noted above, the Staff's approach results in a variable definition of important to safety, which may or may not be different from LILCO's defi-

Staff Proposed Opinion at 30-31. As the Staff recognizes, however, LILCO belives that a § 50.59 review must be conducted for all plant modifications, whether safety related or non-safety related. LILCO Finding B-259V, B-259W. Consequently, the only potential impact of LILCO's interpretation is that the modification might be reported after it is made. The Staff incorrectly believes this is significant because it has misconstrued LILCO's position. The Staff states that "[u]nder LILCO's construction, if the 'probability of occurrence or the consequences of an accident or malfunction' of non-safety-related equipment previously evaluated in the FSAR is involved, then an unreviewed safety question is not presented . . . ." Staff Opinion at 31. But, according to LILCO, any modification which increases the probability of occurrence or the consequences of an accident previously evaluated, which increases the probability of occurrence or consequences of a malfunction of safety related equipment, or which creates the possibility for an accident or malfunction not previously evaluated, is an unreviewed safety question regardless of the classification of the equipment involved. Reply Finding RB-39SS

(footnote cont'd)

nition. Differences, if any, cannot be identified until important to safety is defined for each of those contexts.

(SC S7B:86). Thus, the only potential impact of LILCO concerns instances in which modifications might increase the probability of a malfunction of non-safety related equipment where that probability, in turn, does not affect any accident or safety related equipment previously evaluated or create a new accident. Such an impact is insubstantial.

* g. Part 21

* LILCO's interpretation of important to safety would have no impact on the scope of 10 CFR Part 21. Although the Staff claims that LILCO's interpretation would improperly limit the reporting obligations under Part 21, a review of the regulation and its history clearly indicates otherwise. The regulation was intended to focus on safety related structures, systems and components, though, as LILCO witnesses explained, non-safety related equipment would be reported if the reporting requirements of Part 21 are met. LILCO Finding B-259U.

* Reporting requirements of 10 CFR Part 21 apply to a "basic component" as defined in § 21.3(a)(1). A basic component is:

> [A] plant structure, system, component or part thereof necessary to assure (i) the integrity of the reactor coolant pressure boundary, (ii) the capability to shut down the reactor and maintain it in a safe shutdown condition, or (iii) the capability to prevent or mitigate the consequences of accidents which could

> result in potential offsite exposures comparable to those referred to in § 100.11 of this chapter.

This is the definition of safety related structures, systems and components contained in 10 CFR Part 100, Appendix A. See LILCO Finding B-7. Thus, on its face, Part 21 focuses on safety related structures, systems and components.

* The term important to safety does, however, appear within this part of the regulations. In § 21.3(a)(3), a basic component is defined to include "design, inspection, testing, or consulting services important to safety that are associated with the component hardware . . . ." In other words, the use of important to safety in Part 21 describes a number of functions associated with basic (i.e., safety related) components.

* The plain language of the regulation is enforced by the regulatory history of Part 21. The summary of the final rule published in the Federal Register made clear that the principal focus of the rule was safety related structures, systems and components:

> NRC licensees and other firms and organizations covered by the new regulations must adopt internal procedures to assure that safety-related defects and noncompliance are brought to the attention of responsible officers and directors.

42 Fed. Reg. 28892 (1977). The summary of the regulation also

states that it covers "responsible officers of firms and organizations supplying safety-related components, including safety-related design, testing, inspection and consulting services." Id. Thus, this description evidently assumes that the use of the term important to safety in conjunction with design, testing, inspection and consulting services in § 21.3(a)(3) is meant to be synonymous with safety related. Moreover, throughout the supplementary information accompanying the rule, it is manifestly clear that this regulation is directed at safety related structures, systems and components. Thus, the Staff's suggestion that LILCO's interpretation would improperly limit Part 21 is incorrect. LILCO's equation of important to safety with safety related is entirely consistent with and supported by this part of the NRC's regulations.49/

49/ As the Staff correctly notes, Staff Finding 7B:50C, we declined to admit into evidence a Staff document offered by LILCO, NUREG-0302, Revision 1, "Remarks Presented (Questions/Answers Discussed) at Public Regional Meetings to Discuss Regulations (10 CFR Part 21) for Reporting of Defects and Noncompliance" (October 1977) (LILCO Ex. 68). This document attempts to explain the meaning of Part 21 and includes the following exchange:

> Does Part 21 apply to only "safety related" items?
>
> Response:
>
> Yes. Part 21 applies to any defects and noncompliance which could create substantial safety hazard in activities that are within the regulatory authority of the Nuclear Regulatory Commission; therefore only those items which are "safety related" are within the scope of Part 21.

(footnote cont'd)

* h. Part 100, Appendix A

* The Staff incorrectly dismisses LILCO's conclusion that the regulatory history of 10 CFR Part 100, Appendix A, supports the Company's interpretation of important to safety. Staff Proposed Opinion at 31-32. On page 32, the Staff suggests that the removal of important to safety from portions of the final version of Part 100, Appendix A, could indicate an intent to change the meaning of important to safety. The deletion of the term in certain places, however, is not significant because both the draft and final versions provide sound basis for concluding that safety related and important to safety are synonomous. In the draft rule, the equality of the terms was quite explicit. In the final rule, the reference to GDC 2 provides strong evidence that the equality remained unchanged. LILCO Proposed Opinion at 36-38.

* The Staff's suggestion that reference to GDC 2 in the final rule is not important is quite puzzling. The Staff

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(footnote cont'd)

Id. at 21.3(a)-1 to -2. We declined to admit LILCO Ex. 68 because of uncertainty created by Mr. Conran's hearsay testimony concerning the author's intention. Staff Finding 7B:50C. We do note, however, that regardless of the author's intent, this official Staff document, on its face, limits Part 21 to the safety related set, which has a well understood meaning.

reasons that "[i]t is not unusual for general design criteria to be given greater specificity through a regulation," Staff Proposed Opinion at 32, and that the general requirements of GDC 2 can be given specific content "through their application and administration by the NRC," id. at 32 n.10. In other words, the Staff says LILCO should not be concerned about GDC 2 because Part 100, Appendix A, and Staff practice have established that its scope (i.e., the definition of important to safety for GDC 2 purposes) is the safety related set. Thus, the Staff concedes LILCO's point that, at least for GDC 2, important to safety and safety related are synonomous. The clear implication is that Staff now advocates a definition of important to safety for GDC 2 different from that which it advocates for GDC 1.

Finally, the Staff's analysis of Part 100, Appendix A ignores critical information accompanying the final rule that supports LILCO's position. The Federal Register notice states:

> The proposed rule required that the Operating Basis Earthquake selected be related to the operability of those structures systems and components necessary for power generation. Many of the comments questioned the legality of imposing safety requirements on portions of the plant which were not safety related. As a result of these comments, the definition of the Operating Basis Earthquake was made more restructive.

38 Fed. Reg. 31,279 (1973). Thus, the Commission narrowed the

Operating Basis Earthquake "to those features of the plant that are safety related." Id. Since Part 100, Appendix A provided specific requirements for implementing GDC 2, there is a strong implication that the term structures, systems and components important to safety is limited to the safety related set.

More important, by equating systems preventing undue risk to the public health and safety with the safety related set, the Commission made it clear that the definition of important to safety in Part 50, Appendix A (structures, systems and components that prevent undue risk to the public health and safety) means safety related structures, systems and components.50/ This conclusion follows from the Commission's final definition of the Operating Basis Earthquake which states, in relevant part:

> it is that earthquake which produces the vibratory ground motion for which those features of the nuclear power plant necessary for continued operation without undue risk to the health and safety of the public are designed to remain functional.

10 CFR Part 100, Appendix A, III(d) (emphasis added). As noted above, the Operating Basis Earthquake was intended to apply to the safety related features of the plant. 38 Fed. Reg. 31,279

50/ See also 10 CFR Part 50, Appendix B, Introduction (equating equipment which prevents undue risk to the public health and safety with safety related equipment).

(1978). Thus, Part 100, Appendix A provides strong evidence that important to safety was intended by the Commission to be synonomous with safety related.

* i. § 50.54

* The Staff suggests that LILCO's reliance on 10 CFR § 50.54 is misplaced. Staff Proposed Opinion at 32-33. Section 50.54 indicates that an Appendix B quality assurance program meets all NRC quality assurance requirements, implying that the scope of GDC 1 and Appendix B are equal. LILCO Proposed Opinion at 39-40. The Staff argues that this implication cannot be drawn because the regulation also states that "the QA program description becomes a principal inspection and enforcement tool . . . ." Staff Proposed Opinion at 32 ." (emphasis added). According to the Staff, the use of "principal" implies other enforcement tools. This is a non sequitur. Of course there are other enforcement tools (e.g., Appendix B itself and the utility's QA Manual, procedures and instructions), but this has no bearing on the statement in the rule that all of the Commission's QA requirements are embodied in Appendix B.

* j. Part 20

* The Staff's concern with Part 20 is that the NRC "would be stripped of regulatory authority" over the equipment

needed to comply with Part 20. Staff Proposed Opinion at 38 n.14. This is not true. Part 20 has nothing to do with classification of structures, systems and components; neither the term important to safety nor safety related appears in it. Reply Finding RB-272 (Staff 7B:27). Thus, LILCO's interpretation would have no effect on the scope of Part 20. Instead, this regulation specifies consequence limitations with which LILCO and other utilities must comply regardless of whose interpretation of important to safety is adopted. As LILCO witnesses noted, this regulation encompasses non-safety related equipment. LILCO Finding B-210A.

B. The Shoreham PRA

** The NRC Staff urges the Board not to "rely on the Shoreham draft PRA for firm conclusions as to the identification of intersystem dependencies." Staff Proposed Opinion at ~~50~~. 75. In the Staff's view, Shoreham is adequately protected from systems interactions because it complies with existing regulations and regulatory guidance. While LILCO agrees with the Staff's conclusion about the adequacy of existing requirements and Shoreham's compliance with them, LILCO does not agree with the Staff that the Board should not draw conclusions about the PRA.

** The Staff argues that (1) the PRA is a draft document; (2) the Board does not have the benefit of the Staff's views on the PRA; (3) the draft PRA excludes external events; and (4) the Staff has not concluded that PRAs are the "best method" for considering systems interactions. Staff Proposed Opinion at ~~50-51~~. 75-76. None of these reasons precludes the Board from finding that Shoreham's PRA provides significant additional assurance that systems interactions have been adequately considered for the plant.

First, the weight of the evidence indicates that the Shoreham PRA as litigated is unlikely to change significantly when issued in final form. Reply Finding RB-279 (Staff 7B:221). Second, though the Staff's views on the PRA would be helpful, there is substantial evidence without them that the PRA can be relied upon. See generally LILCO Findings B-333 to -398. Moreover, the Staff should not be permitted to object on these grounds after having declined to undertake any type of review, despite urging by the Board. Third, as explained in LILCO's reply to Suffolk County, the exclusion of external events is not a valid reason to reject LILCO's conclusions. And finally, the question of whether PRAs are the "best method" to deal with systems interactions is immaterial. Although the record supports a conclusion that PRAs are the best available method, see LILCO Findings B-395, B-396, the Board need not go

so far. LILCO only asks the Board to find that the PRA gives additional assurance that Shoreham is well protected from adverse systems interactions.

In summary, the Staff's reasons for urging that the Board not rely on the PRA are not persuasive. Although LILCO agrees that such reliance is not mandated by the regulations, the record supports a Board conclusion that the Shoreham PRA provides additional assurance that systems interactions will not pose an undue risk to the public health and safety at Shoreham.

C. Conclusion

** LILCO concurs with the Staff except as to the meaning of important to safety and the potential impact of LILCO's interpretation of the term, and the Staff's proposed findings and conclusions on Shoreham's PRA. For the reasons stated above, including the relevant portions of LILCO's reply to Suffolk County, the Staff's views on the meaning of important to safety and the potential impact of LILCO's interpretation of the term are unwarranted. Also, ~~and~~ the record supports favorable conclusions about the Shoreham PRA. In all other respects, LILCO agrees with the Staff. LILCO's proposed opinion and related findings on safety classification/systems interaction should be adopted by the

Board, supplemented by the discussion in part III.A above concerning the Staff's analysis of the regulatory history of important to safety.