

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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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))

SUPPLEMENTAL TESTIMONY OF
LOUIS D. JOHNSON REGARDING TORREY
PINES TECHNOLOGY'S INDEPENDENT VERIFICATION
OF SHOREHAM NUCLEAR POWER STATION

1. Mr. Johnson, what is the purpose of this supplemental testimony?

A. To respond to certain contentions in paragraph VI of the County's handwritten, undated memorandum entitled "Suffolk County Torrey Pines Technology Examination" (County's Memorandum).

2. In paragraph VI(1) of the County's Memorandum, the County contends that a large number of Discrepancy Reports (DR's) contain more than one discrepancy. With respect to the first three DR's listed by the County, DR's 006, 023 and 035, have you examined these, Mr. Johnson, to determine whether

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these first three on the County's list include more than one discrepancy?

A. Yes, I have examined those DRS for this purpose. It is true that more than one specific condition or item is listed on each of the referenced DR's (006, 023, and 035). There is, however, only one kind of discrepancy presented on each of the referenced DR's. As matters turned out the conditions or items noted on these 3 DR's, were not valid, i.e., they were not, in the final analysis, different from a requirement.

3. Please describe the nature and the contents of DR's 006, 023 and 035.

A. DR-006 identifies 14 missing radiation detectors, all in system D11 and of the same type. Six of the detectors are safety related and PFR-056 was generated for these six detectors. Our investigation disclosed that a Repair Rework Request existed which properly controlled the installation of all 14 detectors by the startup organization. They were also being tracked on the master punchlist. Accordingly, the PFR was invalidated because the observed condition was not different from a requirement. This item would have been invalidated at the DR stage had the TPT personnel been aware of the Repair Rework Request at that time.

DR-023 describes four identical pressure switches mistakenly thought to be incorrectly located on the wrong side of a 2" crossover pipe between the 24" lines. The flow diagram used in this walkdown does not specify the exact location, but merely requires that the pressure switches be on the main steam line between the 36" header and the main steam control valves. The flow diagram is not the installation drawing. Since these four pressure switches can be located anywhere along this line, the observed condition was not contrary to any requirement and the DR was therefore properly invalidated. Because the observed conditions were identical, they were logically put on one DR form.

DR-035 describes two identical discrepancies on loops A and B of system T48 at the hydrogen recombiners. At that time, the DR was thought to be valid and a PFR-001 generated. Our subsequent investigation disclosed that appropriate repair/rework paper existed and was sufficient to invalidate the PFR because the observed condition was not contrary to a requirement. Here again, as in DR 006, these items would have been invalidated at the DR stage if TPT personnel had been aware of repair rework paper. These discrepancies were included in the same DR because they were identical and could logically be treated together.

4. Mr. Johnson, is the inclusion of more than one item or condition in a single discrepancy report consistent with the TPT procedures?

A. Yes.

5. In reaching the conclusions of the TPT independent verification, did you and TPT take into account the fact that more than one discrepancy or condition might be included in a DR?

A. Yes.

6. Does the fact that some or even many DR's may include multiple discrepancies change or affect the conclusions of the TPT independent verification report?

A. No. Let me explain the method we used to arrive at the conclusions presented in the report. In general, three basic questions were examined by competent and qualified engineering personnel: (1) Did LILCO have a satisfactory construction control program?, (2) Did LILCO implement the construction control program?, and (3) Did the construction control program result in sound safety related hardware? These questions are the underlying logic of the verification program as reflected in Tasks A through E. What we found as a result of our extensive efforts enabled TPT to answer the questions in the affirmative.

7. Mr. Johnson, let us assume for the moment that it is relevant to count each condition or item listed in a DR as a separate discrepancy, ^{or persons under your supervision} have you reviewed all of the DR's, including the 100 DR's listed in paragraph VI(1) in the County's Memorandum to determine the total number of separate, valid discrepant items or conditions listed in all DR's?

A. Yes. The total number is 303 separate items or discrepant conditions out of the approximately 150,000 attributes or items inspected.

8. You indicated earlier the fact that more than one discrepancy or condition might be included in a DR was taken into account by TPT in reaching its conclusions and that TPT's conclusions were not affected by that fact. Is the fact that there were 303 differences between observed conditions and requirements in all the DRs consistent with your answers to those questions?

A. Yes.

9. Mr. Johnson, at paragraph VI(2) of the County's Memorandum, the County notes that nine PFR's address more than one DR. With respect to the first three on the County's list, PFR's 016, 021 and 025, do these address more than one DR?

A. Yes. PFR 016 incorporated DR's 063 and 104, PFR 021 incorporated DR's 114 and 141, and PFR 025 incorporated

DR's 032 and 033. However, each PFR dealt with only a single potential safety concern although they referred to more than one DR.

10. Mr. Johnson, is the inclusion of more than one discrepancy report in a single potential finding report consistent with the TPT procedures?

A. Yes. A potential finding report relates to a single potential safety concern. Each of the discrepancies referenced in the PFR is reviewed as a part of the PFR review process.

11. Would you please describe the contents and nature of those PFR's?

A. PFR 016 dealt with valves that had not been installed in the control rod drive piping vent and drain lines. DR 063 related to a missing valve in the drain line, and DR 104 related to a missing valve in a vent line in system C11. PFR 021 dealt with an inability to verify that a valve was the correct hardware. DR 114 related to dimensional discrepancies on the valve and DR 141 related to a pressure rating discrepancy on the same valve. PFR 025 dealt with added relief valves in system P50. DR's 032 and 033 related to an added relief valve in each of the legs of the system.

12. What was the disposition of the PFR's?

A. All three PFR's were invalidated based on additional information (E&DCR's, Repair Rework Requests, and proper GE design definition document) provided by LILCO as part of the PFR review process. Thus, in each case the observed conditions were ultimately found to be in accord with the required conditions and therefore there was no safety concern so the PFR's were invalidated.

13. Mr. Johnson, in your answers in this Supplemental Testimony, you have indicated that TPT personnel used additional information such as E&DCR's, Repair Rework Requests and other documents in their ongoing consideration whether to invalidate or validate a PFR or DR. Did TPT take any steps to determine whether this additional information preexisted the inspection or was generated as a result of the inspection?

A. Yes we did. We were very sensitive to whether information that we received in terms of documents had been generated as a result of our activities or whether they preexisted. There was no case in which a DR or PFR was invalidated on the basis of information or documentation which did not preexist the inspection. Only in cases where the information preexisted was it used as a basis for reconsideration of the validity of discrepancies. In cases

where the information was generated as a result of our activities, the concerns were carried through the potential finding process and were classified as findings or observations depending on significance.

14. In paragraph VI(3)(a) of the County's Memorandum, the County contends that a number of DR's were improperly invalidated "generally for the reason that change from required condition did not affect system performance." With respect to the first three of these DR's, DR's 010, 011 and 012, do you agree that these were improperly invalidated as noted?

A. No. Those DR's involved branch line and drain line sequence and the reviewer in this walkdown was using flow diagrams. Flow diagrams, however, are not intended to specify the precise physical location of piping, but rather they present process system requirements in terms of function and system logic. These DR's relate to conditions addressing vents, drains and instrument lines or conditions relating to the precise sequence of branch lines in a process system, conditions that are not controlled by the flow diagram. When this use of flow diagrams in the Shoreham construction process was understood, the subject DR's were properly invalidated since there was no difference between the observed condition and the design requirements of the flow diagrams. Physical

dimensional requirements for piping are specified in the piping isometric drawings, which were used appropriately in later walkdowns.

15. In paragraph VI(3)(b) of the County's Memorandum, the County contends that DR's 042 and 047 were improperly invalidated "because not within audit scope." Were these DR's improperly invalidated?

A. No. These DR's were properly invalidated because there was no difference between an observed condition and a requirement.

The particular walkdown from which the two DR's were written was to determine if major components were installed in the proper sequence in the system. The walkdown was carried out by comparing the hardware with the flow diagram.

The flow diagram may indicate the existence of items like flanges or flex lines, but does not set the design requirements for these specific items. These items are specified on piping isometric drawings rather than in flow diagrams. The flow diagrams did not show the requirements for the flanges and flex lines that were the subject of DR's 42 and 47. Subsequent inspection of flanges and flex lines to the requirements specified on the piping isometrics showed that the flange and flex lines were properly installed.

16. In paragraph VI(3)(c) of the County's Memorandum, the County contends that a number of DR's were improperly invalidated because DR "does not affect system performance." With respect to the first three DR's in this group, DR's 9, 10 and 11, do you agree?

A. No. These DR's were properly invalidated because there was no difference between an observed condition and a requirement. The particular walkdown from which the two DR's were written was to determine if major components were installed in the proper sequence in the system.

The items in these DR's are not major components, but are items like vents and drains used in maintenance of system piping. Flow diagrams may indicate existence of these items but does not set the design requirements for these specific items. These design requirements are specified on the piping isometric drawings, not flow diagrams. The reference to system performance merely indicates that the requirements for these items were not part of these particular walkdowns because the flow diagrams used did not have on them the requirements for these items. But the remark "Does not affect system performance" is not the reason for invalidating the DR. The reason for invalidating the DR is that the observed condition was not different from any requirement.

17. In paragraph VI(3)(d) of the County's Memorandum, the County contends that DR's 186, 248 and 273 were improperly invalidated because "later review showed that discrepancy was resolved." Were these DR's improperly invalidated?

A. No. It is logical to use all the information available to determine validity of DR's. In these three cases, the supervising engineer was not satisfied that all information had been obtained and requested further investigation or walkdown. This was done routinely in evaluating validity of DR's. In these three cases it was clear that the additional information provided a firm basis for invalidating these three DR's.

18. In paragraph VI(3)(e) of the County's Memorandum, the County contends that a number of DR's were improperly invalidated because "secondary pipe support does not affect primary line." With respect to the first three DR's in this group, DR's 245, 287 and 324, do you agree?

A. No. We do not agree that these three DR's were improperly invalidated. The purpose of the pipe support walkdown that led to these DR's was to determine if the large bore pipe lines in the systems had supports which were located, oriented, and of the type required by the piping isometric drawing. The supports which are used to stiffen the vents and

drains are clamped directly to the primary pipe line that the vents and drains serve. Requirements for precise locations of these supports are not specified on the large bore isometrics and therefore there was no difference between requirement and observed condition and the DR's were invalidated.

I should note, though, that an additional DR in the County's group 3(e), DR 328, related to a missing support. This DR should have been valid, as was done on other DR's relating to missing secondary supports because a condition that met requirements was not observed. The existence of additional documentation controlling the observed condition was not then pursued because this DR presented no safety concern relating to the large bore piping.

19. In paragraph VI(3)(f) of the County's Memorandum, the County contends that DR 25 was improperly invalidated because "circuit still functions properly." Was this DR improperly invalidated?

A. No. We do not agree that this DR was improperly invalidated because, as stated previously, the flow diagram does not dictate the location where piping should be interconnected other than between major components. Thus, there was no difference between a requirement of an observed condition. The note in the DR that states "circuit still

functions properly" is not the reason the DR was invalidated but is merely a reminder that a discussion did take place. A flow diagram does not specify precise piping locations. This DR was properly invalidated because a requirement for the location did not exist at the flow diagram level.

20. In paragraph VI(4) of the County's memorandum, the County contends that the DR's listed in subparagraphs (a) through (f) were improperly invalidated because no PFR was written. Is this correct?

A. No. Based on a review of the first three DR's in each subparagraph, those DR's were not invalidated. PFR's were not written because for each of these reviewed DR's, there was no safety concern which would require the writing of a PFR. Valid DR's do not result in PFR's unless there is a perceived potential safety concern.

21. In paragraph 4(a) of the County's memorandum, the County contends that a number of DR's, including DR's 144, 145 and 160, should have become PFR's. Do you agree?

A. No. These were valid DR's, but under TPT's procedures they properly did not become PFR's because there was no safety concern. PFR's are not prepared unless there is a perceived safety concern by one of the reviewers that requires further evaluation. This group of DR's represents valid

discrepancies of a minor nature or that do not affect the performance of the safety systems. For example, DR 144 indicates that a coupling on a line is located at a slightly different location on the same line. Within a sequence of three supports, the coupling was actually located between the second and third supports, while the drawing showed it between the first and second supports. This had no effect on system operation.

22. In paragraph 4(b) of the County's memorandum, the County contends that a number of DR's, including DR's 97, 106 and 108, should have become PFR's. Do you agree?

A. No. We disagree that these valid DR's should have generated a PFR since no safety problem was indicated. In each case, a difference between required and observed conditions is found, making the DR valid in the strictest sense. However, each of the discrepancies is trivial and in no way can be construed to be a safety problem. For example, DR 97 involved two non-safety related electrical items. One of these items was a non-safety related pressure differential transmitter providing input to the startup transient monitoring system which was missing an identification tag. The only discrepancy was a missing identification tag. The transmitter itself does not affect safety because it merely provides a non-safety related measurement used to monitor startup.

23. In paragraph 4(c) of the County's memorandum, the County contends that a number of DR's, including 81, 298 and 306, should have become PFR's. Do you agree?

A. No. We disagree that these valid DR's should have resulted in a PFR since no safety problem was indicated. In each case, a difference between required and observed conditions was found, making the DR valid. In these cases, the items were mislabeled, but the proper equipment existed. For example, DR 81 was written because the diesel engine cooler for engine C was mislabeled. The mislabeling in no way presents a safety problem. The same is true for DR's 298 and 306.

24. In paragraph 4(d) of the County's memorandum, the County contends that a number of DR's, including DR's 120, 126 and 127, should have become PFR's. Do you agree?

A. No. These were valid DR's, but under TPT's procedures, they properly did not become PFR's because there was no safety concern. These DR's represent minor paperwork discrepancies. In DR 120, the proper component checklist sign-off was not evident but the lack of this sign-off on a non-safety related level switch is not a safety concern. DR 126 records that a checklist should have required an N-2 data report in a package but did not do so. However, the N-2 data report was in the package. Thus, the DR was valid but does not

constitute a safety problem so no PFR was required. On DR 127, a certificate of conformance for a pipe spool could not be located, but the proper piping material was confirmed through the material certification review and therefore a safety concern did not exist.

25. In paragraph 4(e) of the County's memorandum, the County contends that a number of DR's, including DR's 175, 180 and 181, should have become PFR's. Do you agree?

A. No, we disagree. Procedures are written to provide guidance to the user. In other words, some items are more important than others. In the case of DR's 175, 180 and 181 which deal with the preoperational test package review, there were minor items that did not match the precise requirements of the procedures. TPT judged these items to be minor though valid and by evaluation of the remainder of the preoperational test report, TPT was able to establish that no safety concern existed.

26. In paragraph 4(f) of the County's memorandum, the County contends that a number of DR's, including DR's 193, 244 and 312, should have become PFR's. Do you agree?

A. No. These were valid DR's but were properly not made PFR's because there was no safety concern. The particular vents and drains associated with these supports are located in

systems in which the failure of these drains will not impair their safety function. In addition, these supports do not support the primary line, but are merely there to stiffen the drain against seismic vibration. Thus, these DR's do not constitute a safety concern.

27. Paragraphs VI(5)(a)-(e) of the County's memorandum query the improper invalidation of PFR's. Were any PFR's identified by the County improperly invalidated?

A. No. On the basis of a review of the first three PFR's in paragraphs 5(a) through (e), no PFR's were improperly invalidated. Information was available and provided during the PFR evaluation stage that had not been identified at the DR stage. In all of these cases, the additional information demonstrated that the apparent discrepant conditions identified in the DR's had not in fact existed or had been corrected in the normal course of construction prior to issuance of the ^{PFR}~~DR~~. Therefore, no discrepant conditions existed with respect to these PFR's and since no safety concerns were present, they were properly invalidated.

28. In paragraph 5(f) of the County's memorandum, the County contends that there was inconsistent application of invalidation criteria for a group of PFR's, including 063, 064 and 085. Do you agree?

A. No. These PFR's were not invalidated. Therefore there could not be an inconsistent application of invalidation criteria. We assume that the County is questioning the fact that two of these PFR's became observations while the third became a finding on the temporary pipe supports. The reason for the difference is that PFR 064 was determined to be a finding under the multiple discrepancy criteria and the other temporary pipe support concerns were classified as observations with a reference to PFR 064.

29. Paragraph VI(6) of the County's memorandum identifies a number of DR's, including DR's 105, 127 and 136, where documentation was not readily available and could not be found. Do you agree that for these three DR's, documentation was not readily available or could not be found?

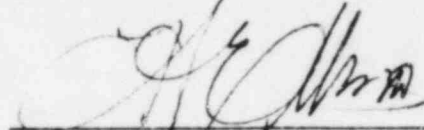
A. No, we do not agree that the documentation was not readily available or could not be found. The initial reviewer was not able to identify independently the required documentation for DR's 105, 127 and 136. Subsequent review by the team and task leaders, again acting independently, resulted in obtaining the required document on DR 105 to declare it properly invalid. In the case of DR 127, documentation was not found independently to invalidate the DR. Although it was left valid, a PFR was not issued since there was no safety concern.

Therefore, LILCO was never given the opportunity to provide additional documentation. It is not correct to say that "documentation could not be found," without giving LILCO the opportunity to produce the document. In the case of DR 136, the required documentation was identified independently by TPT and the DR was properly invalidated.

In some cases, TPT had difficulty independently locating material because team members were initially unfamiliar with site document control. This in no way implies that LILCO is unable to identify readily the documentation and retrieve it. It must be noted that this was an independent review, and LILCO was not asked to find documentation about a perceived problem, ~~except through the PFR accuracy review process.~~ During the review, LILCO provided access to documentation and, through requests for information, provided specific documents. However, LILCO was not told the reason for a document request or the specific need for a document. In some cases, during the PFR accuracy review process, LILCO provided additional documentation which TPT had not requested or had not been aware existed.

Respectfully submitted,

LONG ISLAND LIGHTING COMPANY



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DATED: January 17, 1983

LILCO, January 17, 1983

CERTIFICATE OF SERVICE

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

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I hereby certify that copies of SUPPLEMENTAL TESTIMONY OF LOUIS D. JOHNSON REGARDING TORREY PINES TECHNOLOGY'S INDEPENDENT VERIFICATION OF SHOREHAM NUCLEAR POWER STATION were served by hand (as indicated by two asterisks) on January 17, 1983, and upon the following by first-class mail, postage prepaid, or Federal Express (as indicated by an asterisk) on January 18, 1983:

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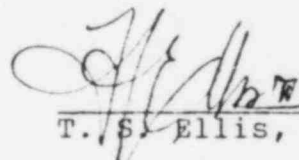
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