

LILCO, February 7, 1984

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

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))	

AFFIDAVIT OF JOHN C. KAMMEYER

John C. Kammeyer, being duly sworn, deposes and states as follows:

My name is John C. Kammeyer. I am employed by the Stone & Webster Engineering Corporation as the Assistant Head of the Site Engineering Office at the Shoreham Nuclear Power Station. Among other things, my responsibilities include engineering matters relating to the Shoreham diesel engines. Attached is a copy of my resume.

The purpose of this affidavit is to provide information concerning various matters raised in support of LILCO's response to Suffolk County's proposed supplemental diesel generator contentions.

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Contention I.A.2. This Suffolk County contention claims that the greater weight of the replacement crankshafts will cause excessive wear on the main bearings. This statement is based on an incorrect assumption. The original Shoreham crankshafts weighed 6230 kilograms whereas the replacement crankshafts weigh 6500 kilograms, an increase of less than 5%. Given this small increase in weight, there is no basis to conclude that there will be any significant increase in wear on the main bearing between the no. 4 and no. 5 cylinders. Also, LILCO has not observed any abnormal wear on this bearing in the past that would indicate any unusual or excessive forces on the main bearings when the original crankshafts were installed.

Contention I.B.1. This contention claims that exhaust temperatures for the Shoreham diesels are "very high (approximately 1100° F) and indicative of overrating." This is incorrect. During operation of the Shoreham diesels at the rated load of 3500 KW, exhaust temperatures do not exceed 980° F. Operation at the 2-hour rating of the diesels (3900 KW) results in exhaust temperatures which do not exceed approximately 1050° F. The manufacturer permits operation of the Shoreham diesels with exhaust temperatures up to 1100° F. Thus, the exhaust temperatures experienced during operation of the Shoreham diesels are within the limits specified by the manufacturer.

Contention II.A.6; Contention II.B.10. These contentions deal with electrical cables installed on the diesel generator for certain engine and panel circuits that were the subject of a September 27, 1983 Part 21 report by TDI. In response to this report, LILCO replaced the affected cables with appropriately qualified cable. No further action is required in response to this Part 21 report.

Contention II.A.7; Contention III.A.10. These contentions deal with the pitting found on the camshaft lobes for DG 101 during disassembly of the engines for replacement of the crankshafts. LILCO inspected the lobes on the camshafts for the other two diesels and found no similar conditions. The affected lobes on the diesel generator 101 camshaft have been replaced with new lobes. The pitting observed on the camshaft lobes had no effect on the operation of DG 101. In addition, inspection of the camshaft is required as part of the routine periodic inspection program for the diesel engines. Thus, even if the camshaft lobes had not been replaced, this inspection program would have identified any adverse changes in the condition of the camshaft.

Contention II.A.9. The failures of the tubing referenced in this portion of the contention were a result of inadequate tube support. All of the tube runs on Shoreham's

diesel engines have since been evaluated and modified, as appropriate, for proper support and there have been no recurrences of the type referenced in this paragraph of the proposed contention.

Contention II.A.11. The improper clamping force referred to in the letter referenced by the County means that the bolt was not properly torqued. The "bolt seizure" referenced in the letter would also be caused by the installation of the bolt. In either event, these relate to installation, not design.

Contention II.A.12. This contention deals with the pitting observed on three of the cylinder liners during the inspection of the diesel generators. These cylinder liners had been in use on the Shoreham diesels throughout the diesel generator factory test runs and the site preoperational test program without any adverse impact on operation. LILCO elected to replace the affected cylinder liners even though they were adequate for service. It should be noted that replacement of cylinder liners is a normal maintenance item. These components are inspected periodically and replaced as necessary.

Contention II.A.13. This contention lists a number of product improvements incorporated into the Shoreham diesels. A

number of the items mentioned in this list, e.g., items (f), (h), (i) and (j), are designed to improve maintenance on the diesels. One of the items, item (b), was in part a modification made to facilitate the removal of the Shoreham diesels from the diesel generator rooms in preparation for replacement of the crankshafts. Thus, the product improvements or modifications mentioned in this County contention do not necessarily reflect deficiencies in the original TDI design.

Contention II.B.2. The governor lube oil cooler assembly referred to in this County contention is positioned in a location on the Shoreham diesel generators different from that on the engine(s) covered by the referenced Part 21 report. Thus, the problem noted is not applicable to Shoreham.

Contention II.B.6. This contention involves the use of non-Class IE power to operate certain control devices on the diesels at the Perry station. This concern is not applicable to Shoreham because Shoreham uses Class IE power for all safety related diesel generator control circuits. Moreover, the installation of the power supplies to the diesel generator control circuits for Shoreham was not performed by TDI but was performed at the site by LILCO and its contractors.

Contention II.B.7. The concern listed in this contention is not applicable to Shoreham. When LILCO became aware of the incident at Grand Gulf, LILCO checked the torque on all the crankcase cover bolts to ensure that they had been properly torqued. LILCO also assured that generator guards were in place to prevent any loose objects from entering the generator and causing a problem similar to that experienced at Grand Gulf.

Contention II.B.8. The fuel oil line arrangement for the V-16 engine at Grand Gulf is different from the fuel oil line arrangement on Shoreham's in-line engines. Also, the fuel oil supply line that failed at Grand Gulf is not the same as the fuel oil high pressure injection tubes that failed at Shoreham. The Grand Gulf fuel oil line failed because of high cycle fatigue due to inadequate support of the line. LILCO has inspected the fuel lines at Shoreham to ensure that they have adequate supports to prevent the Grand Gulf problem from occurring at Shoreham.

Contention II.B.9. The problem identified in the contention is not applicable to Shoreham. Shoreham's pressure sensing line between the starting air storage tank and the starting air compressor is seismically supported.

Contention II.B.11. The link rod assembly mentioned in this contention is only used in Delaval's "V "engines and thus is not applicable to Shoreham.

Contention II.B.12. The concern raised in this contention is not applicable to Shoreham. The governor flexible drive coupling at Catawba used an isoprene material. The Shoreham diesels have a neoprene flexible coupling that is not susceptible to the type of deterioration that occurred at Catawba.

Contention II.B.15. LILCO has a different type of pneumatic logic than that used on the Grand Gulf engines and thus the concerns raised in MP&L's February 1, 1982 § 50.55(e) report are not applicable to Shoreham.

Contention III.A.4. This contention references a failure at the Grand Gulf station which is allegedly similar to the conditions reported by LILCO in SNRC-892. As noted in response to Contention II.B.8 above, the fuel line failure at Grand Gulf was in a different line and that occurrence is therefore not applicable to Shoreham.

Contention III.A.8. FaAA determined that the cylinder head nuts which had not failed during torquing would be acceptable during operation. Nonetheless, LILCO inspected all

cylinder head nuts for visual indications. LILCO replaced all existing nuts with new nuts on DG 101 and DG 103 whether or not indications were found. Because DG 102 had already been reassembled, only those nuts with indications on that engine (3 out of 64) were replaced. The remaining nuts were left in place in accordance with FaAA's recommendations.

Contention III.A.9. The condition referenced in this contention was discovered as part of the normal check-out and initial operation (C&IO) process for the Shoreham diesels. The condition was corrected and no other similar instances have been discovered.

Contention III.B.3; Contention IV.B.13. The valve springs referenced in this contention were deficient because the subvendor supplier had not shot peened the springs in accordance with the specification. This Part 21 report was not applicable to Shoreham because LILCO was not supplied with valve springs from the defective batch. In addition, LILCO inspected all of its valve springs to insure that the springs on the Shoreham engines had been shot peened and were supplied by TDI in accordance with the applicable specifications.

Contention IV.B.1. Shoreham's diesel engine pipes are not required to meet ASME Section III. Pipe welds on the

Shoreham diesels have been inspected and found to meet the applicable requirements.

Contention IV.B.2. The missing bolts identified in this contention are bolts that are used to prevent slippage between the cam gear and its hub in order to maintain proper timing of the engine. LILCO discovered this condition during the routine pre-startup inspection of the engines and then verified the timing of the engine and installed the bolts. In any event, if this condition had not been discovered and the cam gears had slipped, the engines would have remained operable.

Contention IV.B.3. Upon investigation of the condition referenced in this portion of the contention, LILCO determined that it was caused by improper alignment of the engine governor drive. LILCO repaired the governor and assured that it was properly aligned.

Contention IV.B.4. The condition cited in this portion of the contention was discovered by LILCO during inspections of the diesel generator required as part of the routine pre-startup check-out of the diesels. The crankshaft thrust had been checked at the TDI shop in Oakland prior to factory operation and found to be acceptable. The condition was

attributed to damage incurred during shipment to the site by rail. Thus, this condition does not reflect QA deficiencies.

Contention IV.B.5. The Shoreham diesel generators do not have and are not required to have any battery racks installed.

Contention IV.B.6. LILCO has verified that all electrical pump motors for the diesels comply with the requirements in the specification and purchasing documents.

Contention IV.B.7; Contention II.B.14. Shoreham diesel generators do not have check valves manufactured by the William Powell Company which were the subject of the Part 21 report referenced in this contention.

Contention IV.B.8. LILCO has inspected the internal baffling of the diesel generator heat exchangers as part of the normal check-out and initial operation process and no problems of the type noted in this contention were found. In addition, as part of the periodic maintenance requirements of the Shoreham engines, inspections are conducted on the heat exchangers' internals.

Contention IV.B.9. The thrust bearing clearance on the Shoreham diesels was checked prior to initial operation of the

diesels. It has also been checked periodically since that initial operation, and no abnormal conditions have been noted.

Contention IV.B.10. At Shoreham, the switchgear components that appear to be involved in this contention were not supplied by TDI. Thus, the condition referenced in the Gulf States May 27, 1983 § 50.55(e) report is not applicable to Shoreham.

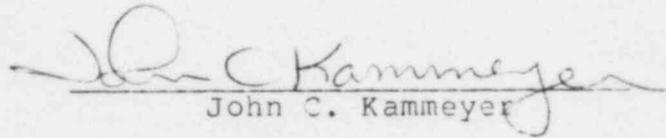
Contention IV.B.11. Pipe supports on the Shoreham diesels are not required to meet the ASME Section III Code.

Contention IV.B.15. This contention has nothing to do with Delaval's quality assurance program. The condition resulted from the failure to torque certain bolts on the rocker arm assembly during the recent reassembly of the diesels at Shoreham. The inadequate torquing resulted in operational loads causing damage to the subcover assemblies in question. LILCO identified this problem during the operation of the diesel generator and took corrective and preventive action as required by its quality assurance program.

Contention IV.D.2. The Shoreham replacement crankshafts were manufactured by Krupp, a German foundry and manufacturing company. Krupp is qualified to manufacture crankshafts for Delaval's diesels. These crankshafts were

manufactured subject to quality requirements specified by Delaval. In addition, during the fabrication of the replacement crankshafts, LILCO required that additional surveillance activities be conducted by LILCO and Delaval personnel.

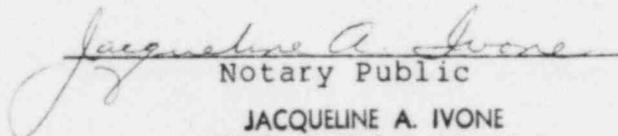
Contention IV.D.3. In addition to the normal quality assurance activities conducted by TDI for replacement components used at Shoreham, LILCO and its contractors performed additional inspections and witnessing of quality activities for these components.


John C. Kammeyer

STATE OF NEW YORK)
)
CITY/COUNTY OF *Suffolk*)

Subscribed and sworn to before me this 7 day of February, 1984.

My commission expires: 3/30/84


Notary Public
JACQUELINE A. IVONE
NOTARY PUBLIC, State of New York
No. 011V4601469, Suffolk County
Term Expires March 30, 1984

PROFESSIONAL QUALIFICATIONS

JOHN C. KAMMEYER

Engineer - Power Division/Assistant Head,
Site Engineering Office

STONE & WEBSTER ENGINEERING CORPORATION

Education

Ohio State University - Bachelor of Science, Mechanical Engineering 1979.

Appointments

Engineer, Power Division - February, 1981
Career Development Engineer, Power Division - June, 1979

Shoreham Nuclear Power Station, Long Island Lighting Company,
(Nov. 1979 to Present)

As ENGINEER (Aug. 1982 to Present) assigned to the Site Engineering Office (SEO) in the capacity of Power Engineer and Assistant Head-SEO, responsible to the Head-SEO for the Power Division effort. Responsible for directing engineers and designers in the resolution of construction and testing problems dealing with fluid systems and related components, such as piping, valves, mechanical equipment, and equipment erection. In addition, in the absence of the Head-SEO, responsible for the operation of the Site Engineering Office.

As ENGINEER (May 1981 - July 1982), assigned to the Site Engineering Office, responsible for resolving various engineering related construction problems, principally with piping and mechanical components, requiring an immediate solution to support the construction schedule. In addition, working directly with the client's start-up organization to resolve system operation deficiencies.

As ENGINEER and CAREER DEVELOPMENT ENGINEER (November 1979 - April 1982) in the Nuclear Engineering Group, responsible for preparing reactor plant flow diagrams, specifications, and FSAR sections. As a Career Development Engineer, spent four months at the Site Engineering Office, responsibilities included maintainability study of the 850 MWe power plant.

North Anna Power Station - Units 3 & 4, Virginia Electric and Power Company (June 1979 - November 1979)

As CAREER DEVELOPMENT ENGINEER, assigned to the Nuclear Engineering Group responsible for preparing reactor plant flow diagrams, specifications and FSAR sections.

U.S. NAVY (September 1969 - July 1975)

USS James K. Polk, SSBN 645 (April 1972 - June 1975)

Responsibilities included reactor operator, reactor instrumentation maintenance, supervision of division training; honorable discharge with ETR-2(SS) rating, commendation from Commander Submarine Squadron Sixteen.

Professional Affiliations

American Society of Mechanical Engineers - Associate Member.