C-29-1

LILCO

DEFICIENCY REPORT

☒ FIELD ☐ OTHER

LDR RESPONSIBILITY: M. Herlihy, LSU

LDR NUMBER: 346

SYSTEM/COMPONENT: Emerg. Diesel Gen.	SYSTEM DESIGNATOR: 24	MARK NO.: 101, 102, 103	DATE: 4/27/84 CLASS: QT - - - -
MFG./CONTRACTOR: TDI	P.O.: N/A	MATERIAL LOCATION: EDG 101, 102, 103	REJECT TAG NO: N/A ☐ YES ☒ NO
SPEC. VIOLATED: SMI-089	DRAWING VIOLATED: N/A	PROCEDURE VIOLATED: ESDCR F-6109G	CODE STANDARD VIOLATED: N/A

CONDITION DETAILS

Short peening was performed on crankshafts EDG 101, 102 & 103. No work summary sheets for 102 & 103 and QCA was not notified to perform inspection of taping and for 100% coverage per ESDCR F-6109G. No documentation that TDI inspected taping prior to shot peen per ESDCR F-6109G. Metal Improvement company submitted documentation on shot peening of only 2 replacement crankshafts.
Note: The above conditions were transmitted to LSU. LDR was requested by LSU.

ORIGINATOR: [signature] 4/26/84 (SIGNATURE / DATE)

QCA: [signature] 4/27/84 (SIGNATURE / DATE)

RESPONSIBILITY: ☒ LSU ☐ S & W ENG. — SIGNATURE/LEAD SU ENG: [signature] DATE: 5/7/84

ACTION: ☒ ACCEPT AS IS ☐ REWORK ☐ MANUAL ☐ FSAR ☒ OTHER Order Documentation
☐ SCRAP ☐ REPAIR ☐ PROCEDURE

DISPOSITION DETAILS

See attached documentation. SHEET 2 AND 3

APPROVALS

[signature] 5/11/84

[signature] 5/7/84
S & W LEAD ENG./LSU TEST ENG./DATE

[signature] 5/11/84
PROJECT ENGINEER / DATE

[signature] 5/11/84
LILCO SU ENG. / DATE

[signature] 5-11-84
LILCO SITE QCA / DATE

REPAIR/REWORK REQUEST NO.: N/A

ENG. COMPLETE/DATE: N/A

RRR COMPLETE: N/A
CONST SUPT/DATE

N/A
LILCO SU/DATE

REWORK INSPECTION: ☐ SAT. N/A ☐ UNSAT. [signature] 5-11-84
LILCO SITE QCA/DATE

LDR CLOSED: [signature] 5/11/84
LILCO SITE QCA/DATE

NEW LDR REPORT NO. ISSUED: N/A

REMARKS: Item 1 from LDR 282

C-29-2

LDR - 2340

#1 (taping crankshaft and 100% coverage) - accept as is. There is a lack of work supervisor summary sheets showing taping and OQA inspection of the shot peening process. Attached is a copy of an audit report from FQA on crankshafts 102 and 103 which audits the inspection, taping, and shot peening process. Also attached is an OQA verification report on shot peening coverage of the 101 crankshaft. The audit and verification reports provide sufficient documentation that shot peening was performed satisfactorily. ~~Additionally, Metal Improvements Company provided documentation showing that the work performed is specified.~~

#2 (TDI taping inspection). Attached is a copy of a memo from TDI stating they inspected crankshaft taping prior to shot peening.

#3 (Metal Improvement Company documentation). Attached is the documentation from Metal Improvements Company verifying that ~~three~~ crankshafts ~~were~~ shot peened.

C-29-3

ENGINEERING & DESIGN COORDINATION REPORT

NO.	F-46109C
JOB NO.	11612.03

PROJECT/CLIENT: SHOREHAM NUCLEAR POWER STATION UNIT 1 — LONG ISLAND LIGHTING COMPANY — R43 A/B

REFERENCES

DESCRIPTION:

Delaval has identified "holidays" or lack of shot peen coverage, in the fillet areas of the new diesel crankshafts, purchased in accordance with E&DCR F-46109C. These holidays have been dispositioned as functionally acceptable by TDI, however, recent analysis performed by Failure Analysis Associates indicate that 100% peening coverage is beneficial.

Please resolve.

TELECOPY DATES (REQUESTING PARTY)
Sent:
Rec'd:
Needed By:

Requested By: JC Kammeyer — Dept. or Div.: SFO — Tele. Ext.: 404 — Date: 9/10/83

PROBLEM SOLUTION:

Since the crankshafts are delievered to the site, Metal Improvements Co., a local firm with extensive experience in shot peening of crankshafts, will perform the rework. The fillet areas shall be repeened in accordance with the requirements of MIL-S-13165B to assure 100% coverage of the fillet areas. Peening shall be performed by Metal Improvements Co. on site and the crankshaft inspected by OQA for 100% peening at the fillet areas. Refer to attached procedure.

TDI QC inspection of journal bearing masking is required prior to commencing shot peening. [signature] 9.19.83
TDI DATE

TDI approval for shot peening procedure has been obtained written approval to be filed with R/R at close out.

TELECOPY DATES (RESPONDING PARTY)
Sent:
Rec'd:

AFFECTS WORK UNDER SPECIFICATION SH1-87
IMPLEMENTATION VERIFICATION ☐ IS ☐ IS NOT REQUIRED
VERIFIED BY: Talkon — Date: 9/16/83

Furnished By: [signature] JC Kammeyer — Date: 9/16/83
Responsible Lead Engr: JC Kammeyer for Pelayo [illegible]
FSAR CHANGE ☐ Yes ☒ No

☐ INFORMATION ONLY
☐ DRAWING CHANGE
☒ Cleaning CHANGE
☐ PROCEDURE CHANGE
☐ ENG. SERV. SCOPE OF WORK CHANGE
Change ☒ will be incorporated in the ☐ will not following documents: R43/1 V2 II

Project Design Engr.: NR — Date: —
Equipment Specialist: NR — Date: —
Qual. Sys. Div or Eng. Assur. Div.: NR — Date: —
Materials Engr: [signature] — Date: 9.[illegible]
Project Engineer Approval & Date: JC Kammeyer 9/10/83

CLIENT APPROVAL:
☒ Required ☐ Not Req'd.
Obtained Date: 9/16/83
Reference: Talkon w/ [illegible]

☒ Nuclear Safety Related (QA Cat I)
☐ Not Nuclear Safety Related (☐ QA Cat II ☐ QA Cat III)

[signature]

CLIENT DISTRIBUTION—CLIENT HEAD
☐ Engineering
☐ Project Manager
☐
☐

HEADQUARTERS: Engr — ; Des. Engr — ; Chief — Engr; Chief — Des. Engr; Chief Const. Serv.; [illegible]; X [illegible]

FIELD DISTRIBUTION: ☒ Originator; ☒ Chief QA Mgr; ☒ Chief Const. [illegible]; ☒ [illegible]; X [illegible]; X G. Rayan/LA...; [illegible]

CONST. SUPERVISORS: ☐ Structural —; ☐ Mechanical —; ☐ Electrical —; ☐ Piping —; ☐ Welding —; ☐ Instrument —; ☐ [illegible]

Procedure for Peening Crankshafts

1. Machinery used to perform peening shall be qualified using Almen C strip to an arc height of .008" to 0.10".

   Machinery shall be qualified prior to beginning each shift and every 4 hours thereafter.

   Almen C strips shall be marked with the date, time, operator and Almen C reading, forwarded to permanent plant file.

2. Shot for peening shall conform to the following. Shot shall be in conformance with the requirements of MI 550. Hardness of shot shall be R_C 45 to 52.

3. FaAA shall document via pictures of the before and after condition of fillets. [signature] 9-19-83 [signature] 9-20-83
   FaAA Observer DATE FaAA Author DATE

4. Peening on crankshaft shall be confined to fillets. TDI and FaAA shall approve all masked areas prior to peening. Tolerances for masking is 0" into fillet and $\frac{1}{32}$" into pin.

5. Peening of the unmasked areas shall be performed in accordance with MIL-S-13165B.

6. Peened areas shall be inspected by peenscan method. Acceptance criteria is 100% as verified by lack of UV trace in peened areas.

7. OQA inspection to assure 100% coverage of fillet areas.
   [signature] 9/20/83 [signature] 9.20.83
   OQA DATE TE DATE

CRANKSHAFT SERIAL NO. 693M

F-46109 G
Pg 3 of

C-29-5

ENGINEERING & DESIGN COORDINATION REPORT

PROJECT/CLIENT: SHOREHAM NUCLEAR POWER STATION UNIT 1 / LONG ISLAND LIGHTING COMPANY	R43 A/B
NO.	F-46109G
JOB NO.	11600.03

REFERENCES

DESCRIPTION:

Delaval has identified "holidays" or lack of shot peen coverage, in the fillet areas of the new diesel crankshafts, purchased in accordance with E&DCR F-46109C. These holidays have been dispositioned as functionally acceptable by TDI, however, recent analysis performed by Failure Analysis Associates indicate that 100% peening coverage is beneficial.

Please resolve.

TELECOPY DATES (REQUESTING PARTY)	
Sent:	
Rec'd:	
Needed By:	

Requested By	Dept. or Div.	Tele. Ext.	Date
J.C. Kammeyer	SEO	434	9/16/83

PROBLEM SOLUTION: Since the crankshafts are delievered to the site, Metal Improvements Co., a local firm with extensive experience in shot peening of crankshafts, will perform the rework. The fillet areas shall be repeened in accordance with the requirements of MIL-S-13165B to assure 100% coverage of the fillet areas. Peening shall be performed by Metal Improvements Co. on site and the crankshaft inspected by OQA for 100% peening at the fillet areas. Refer to attached procedure.

TDI QC inspection of journal bearing masking is required prior to commencing shot peening. The [illegible] TDI [illegible] DATE

TDI approval for shot peening procedure has been obtained TDI written approval to be filed with R/R at close out.

AFFECTS WORK UNDER SPECIFICATION SH1-89

IMPLEMENTATION VERIFICATION ☐ IS ☐ IS NOT REQUIRED — VERIFIED BY

TELECOPY DATES (RESPONDING PARTY)	
Sent:	
Rec'd:	

Furnished By	Date	Responsible Lead Engr	Date
J.C. Kammeyer	9/16/83	J.C. Kammeyer / [illegible]	9/16/83

☐ INFORMATION ONLY ☐ DRAWING CHANGE ☒ Crankshaft CHANGE ☐ PROCEDURE CHANGE ☐ ENG. SERV. SCOPE OF WORK CHANGE Change ☒ will be incorporated in the ☐ will not following documents: R43/L V2 II ☒ Nuclear Safety Related (QA Cat I) ☐ Not Nuclear Safety Related (☐ QA Cat II ☐ QA Cat III)	Project Design Engr. NR — Date — Equipment Specialist NR — Date — Qual. Sys. Div or Eng. Assur Div. NR — Date — Materials Engr [signature] — Date 9-16-83 Project Engineer Approval & Date J.C. Kammeyer 9/16/83	FSAR CHANGE ☐ Yes ☒ No CLIENT APPROVAL: ☒ Required ☐ Not Req'd. Obtained Date: 9/16/83 Reference: Taken w/ [illegible] CLIENT DISTRIBUTION—CLIENT HEAD ☐ Engineering ☐ Project Manager

FIELD DISTRIBUTION

HEADQUARTERS	FIELD DISTRIBUTION	CONST. SUPERVISORS
Engr / Des. Engr / Chief Engr / Project Engr [illegible]	☒ Originator / Chief QA Mgr / Client Const Mgr / [illegible]	Structural / Mechanical / Electrical / Piping / Welding / Instrument / [illegible]

Procedure for Peening Crankshafts

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   Almen C strips shall be marked with the date, time, operator and Almen C reading forwarded to permanent plant file.

2. Shot for peening shall conform to the following. Shot shall be in conformance with the requirements of MI 550. Hardness of shot shall be R_C 45 to 52.

3. FaAA shall document via pictures of the before and after condition of fillets. Dan O Soluson 9-17-83 Dan O Soluson 9 19 83
   FaAA Before DATE FaAA After DATE

4. Peening on crankshaft shall be confined to fillets. TDI and FaAA shall approve all masked areas prior to peening. Tolerances for masking is 0" into fillet and $\frac{1}{32}$" into pin.

5. Peening of the unmasked areas shall be performed in accordance with MIL-S-13165B.

6. Peened areas shall be inspected by peenscan method. Acceptance criteria is 100% as verified by lack of UV trace in peened areas.

7. OQA inspection to assure 100% coverage of fillet areas.

Peter Shew 9/18/83 John McNab 9.18.83
OQA DATE TDE Date

First Crankshaft to be shot peened Serial # 694

F-46109 G
Pg 3 of

SHOREHAM 1
NUCLEAR POWER STATION
STARTUP FORM 7.6

September 4, 1979
REVISION 10

REWORK SUPERVISOR WORK SUMMARY

BRIEF DESCRIPTION OF WORK:

Shotpeened Crankshaft Serial # 694 per attached procedure, by Metal Improvements

COMPONENTS REPLACED (IF APPLICABLE):

NA

M&TE, CALIBRATED TOOLS UTILIZED:

Machinery qualified using Almen "C" strip per Metal Improvement procedures.

ADDITIONAL COMMENTS:

John M Wolsh 9-18-83
Rework Supervisor Signature/Date

C-29-8

LILCO
LONG ISLAND LIGHTING

Station Operational Quality Assurance

VERIFICATION REPORT

File: 1A11.920-

Activity Verified:	Responsible Group:	Syst/Struct/Comp:
KRR LYS-10 32 Supp #4	LSU	CRANK SHAFT LSU

Reference Procedure/No.
F-46109G MIL-S-13165C

Reference Spec/No./Addendum/Date
N/A

Reference Drawing/Revision
N/A

Verification Description:

A VISUAL INSPECTION WAS MADE TO VERIFY SHOT PEENING OF MAIN JOURNAL BEARING (RADII) # 4, 5, 6 AND CONNECTING ROD BEARING JOURNAL RADII, # 2, 3 4 OF CRANK SHAFT 694

SHOT PEENING WAS COMPLETED SATISFACTORILY FOR THE ABOVE REFERENCED JOURNAL RADII

Preparer/OQA	Date	OQAE	Date
A. Lepore	9/17/83		

C-29-9

Transamerica Delaval

Transamerica Delaval Inc.
Engine and Compressor Division
550 85th Avenue
P.O. Box 2181
Oakland, California 94621

Date: May 5, 84

To: Mike Hackley - Mark Abramovitz

From: Mike Morahan

Subject: Tape inspection at crank journals

T.D.I witnessed the taping of the crank journals. The work was found to be acceptable prior to the shot peen process on D.G. (#101, 74010) #(102, 74011) (#103, 74012)

Mike Morahan
- D.I. Service Representative

Memo

NUCLEAR REGULATORY COMMISSION

Docket No. 50-322-OL Official Exh. No. C-30

In the matter of

Staff	IDENTIFIED ✓
Applicant ✓	RECEIVED ✓
Intervenor	REJECTED
Cont'g Off'r	
Contractor	DATE 9-20-84
Other	Witness Panel
Reporter ACE	

GINNS