

November 14, 1983

03-341 A



TO: J. M. Kelly

FROM: E. J. Nicholas

Subject: Trip Report On Nondestructive Examination(PT) of Piston Skirt

On November 9, 1983 I was requested to visit Transamerica Delaval in Oakland, California to witness the Liquid Penetrant(PT)Nondestructive Examination performed on the piston skirt bolt holes. The extent of the examination is as identified in Engineering & Design Coordination Report (E&DCR) F-46324 Section II (Ref. Attach. I). Attachment II identifies the piston skirts which were examined and witnessed by myself and the results.

Surface defects were removed utilizing TDI's "Spring Boss, Two Pc. Piston Skirt Repair Procedure for Removing Surface Defects Observed after Penetrant Inspection (PT)" (Attachment III). Defect removal was verified by Liquid Penetrant Examination of the ground areas, in addition dimensional inspections of the Trust Collar area were performed. These inspections were performed by the S&W PQA inspector and witnessed by myself. The results of the Liquid Penetrant Examinations were photographed. These photographs will be turned over to OQA.

E. J. Nicholas
 E. J. Nicholas
 Field QA Section Supervisor

EJN/rc

cc: A. R. Muller - UQA
 J. Kammeyer - SED
 M. Schuster - UNICO
 R. Perra - S&W FQC OPS

→ FQA FILE

8412140377 840910
 PDR ADOCK 05000322
 G PDR

83-0638

STONE & W. ENGINEERING CORP.	ENGINEERING CORPORATION	INFORMATION REPORT
PROJECT / CLIENT:	SHOREHAM NUCLEAR PLANT STATION UNIT 1	DATE: 10/4
REFERENCES:	LDR-1811	FIG. NO. 1170277

PROBLEM DESCRIPTION:

Inspections performed on piston skirts for Engine 101 revealed numerous indications in the machined area on Boss around bolt holes, reference LDR-1811.

TELECOPY DATES REQUESTING PARTY

Requested By:

P. M. LESTER

Dept. or Div.

560

Tele. Ext.

526

Date:

11/9/83

Sent:
Rev'd:

Needed By

PROBLEM SOLUTION:

To expedite the arrival of new piston skirts on site, should it be determined that new skirts are required, LSU will issue a purchase requisition for a complete set of piston skirts, part no. 03-341-04-AE, for each engine plus two spares (total-26). Purchase of new piston skirts is on a risk basis pending results of failure analysis by F&V, and submittal and evaluation of required documentation by TDI. Inspection and Documentation requirements per attached pages 2 to 4.

AFFECTS WORK UNDER SPECIFICATION SH-089

IMPLEMENTATION VERIFICATION

IS NOT REQUIRED

VERIFIED BY

9/1/83

TELECOPY DATE, RESPONDING PARTY

Sent:

Rev'd:

Furnished By:

P. M. LESTER

Date:

11/9/83

Responsible Lead Eng.

R. M. LESTER

Date:

11/9/83

☐ INFORMATION ONLY☒ DRAWING CHANGE MANUAL☒ SPECIFICATION CHANGE☒ PROCEDURE CHANGE☐ ENG. SERV. SCOPE OF WORK CHANGEChange will ☐ be incorporated in thewill not ☐ following documents:

SH-089 R43-1 Vol II

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

Project Design Eng.

R. M. LESTER

Equipment Specialist

R. M. LESTER

Quality Control or Test Record Dev.

R. M. LESTER

Materials Eng.

R. M. LESTER

Project Engineer Approval & Date

R. M. LESTER 11/9/83

S. P. LESTER

EAS CHANGE ☐ Yes ☒ No

CLIENT APPROVAL

☒ Required ☐ Not Req'd.

Obtained Date:

Reference: CK 11/2/83

CLIENT DISTRIBUTION-CLIENT HEADQUARTERS

☐ Engineering☐ Project Manager

HEADQUARTERS

<input checked="" type="checkbox"/> Prop. Eng.	<input type="checkbox"/> Chief Eng.
<input checked="" type="checkbox"/> Prop. Des. Eng.	<input type="checkbox"/> Chief Des. Eng.
<input checked="" type="checkbox"/> Res. Eng.	<input type="checkbox"/> Sup. Const. Serv.
<input checked="" type="checkbox"/> Equip. Spec.	<input type="checkbox"/> On Eng. - EA Dev.
<input checked="" type="checkbox"/> Instr. Eng.	<input type="checkbox"/> R. M. LESTER
<input checked="" type="checkbox"/> QA-Qual. Sys. D.	<input type="checkbox"/> L. P. LESTER
<input checked="" type="checkbox"/> QA-Proc. D.	<input type="checkbox"/> S. P. LESTER

FIELD DISTRIBUTION

<input type="checkbox"/> Originator	<input checked="" type="checkbox"/> R. M. LESTER
<input type="checkbox"/> Client QA Rep.	<input checked="" type="checkbox"/> S. M. LESTER
<input type="checkbox"/> Client Const. Insp.	<input checked="" type="checkbox"/> M. L. LESTER
<input type="checkbox"/> SEW POC	<input checked="" type="checkbox"/> E. M. LESTER
<input type="checkbox"/> SEW Res. Eng.	<input checked="" type="checkbox"/> B. M. LESTER
<input type="checkbox"/> Field Des. Eng.	<input checked="" type="checkbox"/> S. T. LESTER
<input type="checkbox"/> Proc. POC	<input checked="" type="checkbox"/> S. P. LESTER

CONST. SUPERVISORS

<input type="checkbox"/> Structural	<input type="checkbox"/> S. M. LESTER
<input type="checkbox"/> Mechanical	<input type="checkbox"/> B. M. LESTER
<input type="checkbox"/> Electrical	<input type="checkbox"/> E. M. LESTER
<input type="checkbox"/> Piping	<input type="checkbox"/> S. T. LESTER
<input type="checkbox"/> Welding	<input type="checkbox"/> S. P. LESTER
<input type="checkbox"/> Instrument	<input type="checkbox"/> S. M. LESTER
<input type="checkbox"/> Planning	<input type="checkbox"/> S. P. LESTER

Attachment to ELMER F-40324

Page 1

I - Shop Inspections/Verifications:

Prior to shipment, the engineer's inspector shall perform the inspections and verifications as described below. A Certificate of Conformance to specification SHI-089 is required for all parts:

(A) General:

(1) NDE

Verify all NDE documented on Shop routing ledger has been performed and results acceptable. Verify and document that NDE procedures used are the same as those approved for use in accordance with SHI-089 original requirements. If any procedure deviates from those approved under original contract (either revision level or alternate procedure) the procedure actually used shall become part of the as shipped documentation package on a risk basis and shall be submitted to S&W for review. Inspector shall provide a list of applicable discrepancies (i.e. procedure used but not approved) to S&W Boston directly.

Verify that personnel certified to appropriate SMT-TC-1A levels have performed NDE as required.

(2) HEAT TREATMENT

Verify that any heat treatment as documented on the Shop routing ledger has been performed and accepted. Procedures used shall be reviewed for changes (revision level or alternate procedure) from those approved for use under SHI-089. If any procedure deviates from those approved under original contract, the procedure actually used shall become part of the as shipped documentation package on a risk basis and shall be submitted to S&W for review. Inspection shall provide a list of applicable discrepancies (i.e. procedure used but not approved) to S&W directly.

(3) SHOP ROUTING LEDGER SHEETS

Verify Shop Routing Ledger Sheet has been properly filled out and each applicable station task has been performed. Review in detail for any non-conformance or rework required during the manufacturing-testing process. Complete details of any such defect/resolution acceptance criteria and final acceptance shall be obtained and become part of the as shipped documentation package on a risk basis. Copies of all such documentation, as well as the shop routing ledger shall be provided to S&W Boston for review.

ATTACHMENT TO E&DCR # F46324
PAGE 3 OF 4

Page 2

(4) SHIP CLEANING SHIPPING/CRATING

The inspector shall review and verify the method of cleaning, shipping and crating is appropriate and acceptable in accordance with SHI-089.

(5) VISUAL INSPECTION

The inspector shall perform a complete visual inspection of all parts for obvious defects and/or deviation from the detail shop fabrication drawings. A dimensional check of a sufficient number of points shall be performed to verify the parts are in accordance with the shop drawings.

All items checked shall be documented. Any deviations should be brought to the immediate attention of the engineers.

Surface finish as specified on the shop drawing shall be verified.

(6) NDE TEST REPORTS

All NDE Test Reports shall be reviewed for completeness and accuracy and shall become part of the documentation package.

(7) CMTRs (if applicable)

Certified Material Test Reports shall be reviewed for completeness and shall become part of the documentation package.

II Shoreham Specific NDE Requirements

In addition to the Standard TDI piston skirt NDE, a color contrast penetrant test will be performed on each piston skirt by TDI personnel, in accordance with approved procedures. This may be supplemented by the use of LILCO NDE procedures/personnel.

The location to be inspected is the machined area on the boss around the four bolt holes inside the piston skirt, with particular emphasis on the vertical blended radii surfaces.

The penetrant test will be witnessed by SWEC POA & LILCO FQC. Acceptance criteria will be per TDI procedures or LILCO procedures as applicable, however linear indications will not be accepted without SWEC Engineering approval. All indications will be mapped by LILCO FQC personnel, clearly identifiable to the piston in question.

ATTACHMENT TO E&D CR # F-46324
PAGE 4 OF 4

Page 3

III DOCUMENTATION

(A) The following documentation will be included with the shipment:

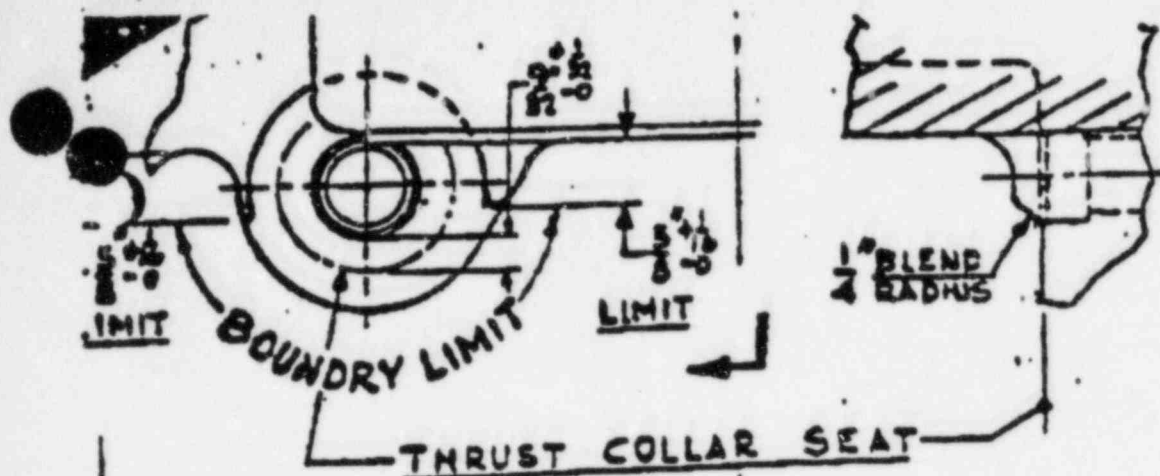
1. C of C to specification SH1-089
2. CMTRs if applicable
3. Heat Treatment records
4. Shop routing sheets
5. Results of MPI

(B) Documentation to be supplied by TDI, following shipment:

1. Seismic qualification per SH1-089
2. IEEE-387 qualification; analysis or testing per Section 5.4.4.
3. Inst. Manual Inserts.
4. Nonconformance & disposition records
5. 341-AE piston service history. To include details of both shop testing and field history (number in field, operating hours, etc).
6. TDI to perform review and document the effects, if any, of piston skirt changeout on the ability of the unit to achieve rated load and speed in the required time, and on the "Torsional and Lateral Critical Speed Analysis".

ATTACHMENT II

<u>Serial No.</u>	<u>Heat No.</u>	<u>Accept/Reject</u>
1. C88X	827J	
2. C89	811J	Accept
3. D42	937J	Accept
4. D49	937J	Accept
5. E5	104K	REJECT
6. E8	104K	REJECT
7. F7	181K	accept
8. F12	181K	Accept
9. F15	200K	Accept
10. F18	200K	Accept
11. F21	200K	Accept
12. F24	200K	Accept
13. F27	205K	Accept
14. F29	205K	REJECT
15. F32	205K	REJECT
16. F35	205K	REJECT
17. F33	256K	Accept
18. F36	256K	REJECT
19. F38	256K	Accept
20. F87	289K	Accept
21. F97	289K	Accept
22. F98	289K	Accept
23. G1	298K	Accept
24. G2	298K	Accept
25. G4	298K	Accept
26. G5	298K	Accept
27. G26	312K	Accept
28. G29	312K	Accept
29. G30	312K	Accept
30. G33	312K	Accept
31. G34	312K	Accept
32. G35	312K	Accept



W. E. C. International
Engine and Compressor Division
860 85th Avenue
P.O. Box 2151
Oakland, California 94621

SPRING BOSS, TWO PC., PISTON SKIRT
REPAIR PROCEDURE FOR REMOVING SURFACE DEFECTS
OBSERVED AFTER PENETRANT INSPECTION (PT)

- MINOR -



- 1) HAND GRIND EACH DEFECT WITHIN BOUNDARY LIMITS CAREFULLY REMOVING ALL SHARP EDGES WITH BLEND RADIUS.
- 2) FINISH POLISH ALL REPAIRS WITH "CRATEX #1350C" GRINDING WHEEL.
- 3) DO NOT VIOLATE $9/32$ " LIMITING DIMENSION SHOWN FOR THRUST COLLAR SEATING SURFACE.
- 4) DO NOT EXCEED $5/8$ " LIMITS SHOWN FROM CAST SURFACES.

- MAJOR -

- 1) MULTIPLE DEFECTS MAY BE COMPLETELY REMOVED BY HAND GRINDING ENTIRE LIP WITHIN BOUNDARY LIMITS.
- 2) USE THE SAME GRIND AND POLISH PROCEDURE AND OBSERVE ALL LIMITS SPECIFIED FOR SINGLE DEFECTS.

21180 PD 310652
SKIRT NO. 03-241-04 AE PISTON SKIRTS

D-4991

LONG ISLAND LIGHTING COMPANY

PURCHASE ORDER NO. 310552-32

OPS

DATE	QUANTITY	UNIT	DESCRIPTION	QUANTITY ORDERED	PRICE
11/10/83	26 ea.		Piston Skirt P/N 03-341-04-AE		\$6,323.00/ea.

TRANSAMERICA DELAVAL, INC.
350 85th Ave.
P.O. Box 2161
Oakland Calif. 94621
(415) 577-7400

F77679/T.Brown 11/10/83 310552-32

TERMS: ☐ NET 30 DAYS ☐ 2% 10 DAYS

BUYER: AF:gr
"ALL CASH DISCOUNTS ARE TAKEN STARTING WITH DATE OF INVOICE OR RECEIPT OF MERCHANDISE WHICHEVER IS LATER"

DELIVERED Shipping Point

SHIP VIA: ☐ YOUR DELIVERY ☒ Air Freight

DATE: November 12, 1983
DATE: November 30, 1983

VENDOR'S QUOTE REFERENCE: Telecon of November 10, 1983

ACCEPTANCE OF ORDER IS SUBJECT TO THE TERMS AND CONDITIONS PRINTED ON THE REVERSE SIDE HEREOF. THE TYPED MATERIAL CONTAINED HEREIN AND ANY FURTHER INSTRUCTIONS AND MATERIALS ATTACHED HERETO

LONG ISLAND LIGHTING COMPANY AT MARK: 310552-32

DESCRIPTION	M & S CODE	QUANTITY ORDERED	PRICE
CONFIRMING: DO NOT DUPLICATE-START-UP			
Modify our Purchase Order 310552 for Diesel Generator Sets (Spec. 7-089) for Shoreham Nuclear Power Station Unit No. 1 to incorporate the following additions:			
1.) Piston Skirt P/N 03-341-04-AE	8 1/2-1 R 25 (7 C 2 442)	26 ea.	\$6,323.00/ea.
2.) Thrust Collar P/N 03-341-04-AC	11 1/3-CL 2 447	104 ea.	35.95/ea. 6 1/2 11/12
3.) Spring Guide P/N 03-341-04-AF	7 1/16-CL 2 448	104 ea.	53.60/ea. 6 1/2 11/12
4.) Lock Tab P/N 03-341-04-ad		104 ea.	6.90/ea. 6 1/2 11/12
5.) Lock Pin P/N GC-023-000		104 ea.	1.00/ea. 6 1/2 11/12
6.) Cotter Pin GC-002-055 6 1/2 (10) C R 444		100 ea.	1.00/ea. 100 11-23
7.) Stud P/N 03-341-04-AB		104 ea.	86.55/ea. 6 1/2 11/12
Certificate of Compliance is required to state the material supplied is in accordance with Spec. SH1-089. PQA inspection is required only for item 1, Piston Skirt.			
Q.A. CATEGORY: J			
LILCO ESC-7D detailing reporting requirements under 10CFR21 attached hereto forms a part of this order.			

SHOREHAM NUCLEAR POWER STATION
APPROVED

11/10/1983

MONTHLY REPORT FORM PREPARED ☒ YES (FC-8574) DATE ☐ NOT REQUIRED

SPO RECORD CATEGORY _____

SPO EXPIRATION FOLLOW-UP DATE _____

FIELD QUALITY CONTROL

EXTRA COPIES OF P.O. TO:

- ☒ CONTRACTED PROJECTS
- ☐ INSURANCE DIV.
- ☐ PROPERTY RECORDS
- ☐ ADMINISTRATIVE SERV
- ☐ OFFICE SERVICES
- ☐ ENGINEERING
- ☐ TAX

PURCHASE ORDER NO. 310552-32

PK 11/1/83

C-1699.3

LONG ISLAND LIGHTING COMPANY

175 E. OLD COUNTRY ROAD

HICKSVILLE, N. Y. 11801

PURCHASE
ORDER

DESCRIPTION	IN S CODE	QUANTITY ORDERED	PRICE
<p>PQA Inspection/Documentation requirements in accordance with E&DCR F46324, copy of which is attached</p> <p><u>IMPORTANT</u> This order is issued subject to the following stipulations:</p> <p>Nothing in this Order or Supplement shall be deemed to release or prejudice any claims or causes of action (whether in contract, tort or otherwise) or to waive any prior rights or remedies that LILCO may have against Transamerica Delaval. LILCO expressly reserves the right to pursue any such claims, causes of action, rights and remedies that it may have, including but not limited to damages or claims for refund of monies paid pursuant to this order.</p> <p>All other terms and conditions remain the same as stated in the original purchase order.</p> <p><u>COPIES ONLY:</u></p>			
TOTAL ESTIMATED LUMP SUM COST OF THIS ORDER THRU SUPPLEMENT	31		\$4,953,664.80
TOTAL LUMP SUM COST OF THIS SUPPLEMENT			183,634.00
TOTAL ESTIMATED LUMP SUM COST OF THIS ORDER TO DATE			5,137,298.80
TOTAL AUTHORIZED VALUE OF THIS PURCHASE ORDER			2,173,000.00

QUANTITY		UNIT		DESCRIPTION		REMARKS		DATE	
1	26 EA			PISTON - SHORT					
2				03-341-04-AE					
3				03-341-04-AE					
4				03-341-04-AE					
5				03-341-04-AE					
6				03-341-04-AE					
7				03-341-04-AE					
8				03-341-04-AE					
9				03-341-04-AE					

ATTACHMENT TO E&DCR # F-46324
 PAGE 2 OF 4

Attachment to E&DCR F-46324

Page 1

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ATTACHMENT TO E & D CR # 146324
PAGE _____ OF 4

Page 2

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Page 3

III DOCUMENTATION

(A) The following documentation will be included with the shipment:

1. C of C to specification SH1-089 /
2. CMTRs if applicable
3. Heat Treatment records
4. Shop routing sheets /
5. Results of MPI

(B) Documentation to be supplied by TDI, following shipment:

1. Seismic qualification per SH1-089
2. IEEE-387 qualification/analysis or testing per Section 5.4.4.
3. Inst. Manual Effects.
4. Nonconformance & disposition records
5. 341-AE piston service history. To include details of both shop testing and field history (number in field, operating hours, etc).
6. TDI to perform review and document the effects, if any, of piston skirt changeout on the ability of the unit to achieve rated load and speed in the required time, and on the "Torsional and Internal Critical Speed Analysis".

415 577 7573

P.O. 310552-32 TransAmerica 2000
 7th. Piston Skirts P/N 03-341-04-AE
 S/N's F15, F24, F18, 042, F12, F21, F35

RECEIVING INSPECTION REPORT
 SHOREHAM NUCLEAR POWER STATION
 UNIT - 1
 STONE & WEBSTER ENGINEERING CORPORATION

DATE RECEIVED		11-12-83		JAN. 1983		PARTIAL		<input checked="" type="checkbox"/>	
STORAGE LEVEL		A		C		D		COMPLETE	
DOC. NO.		83-05046		DOC. NO.		83-05046		DOC. NO.	
TAC NO.		N/A		TAC NO.		N/A		TAC NO.	
DATE		11/12/83		DATE		11/12/83		DATE	
SIGNATURE		D.L. Jerny		SIGNATURE		D.L. Jerny		SIGNATURE	
UNSAT		<input type="checkbox"/>		UNSAT		<input type="checkbox"/>		UNSAT	
REMARKS		PQA Doc. Lacking H.T. Treat Records - H.T. Conditionally Released		REMARKS		PQA Doc. Lacking H.T. Treat Records - H.T. Conditionally Released		REMARKS	
Inspected IAW P.O., Proton, Lilco TP 12.019.99 and EIDCE F-46924		Inspected IAW P.O., Proton, Lilco TP 12.019.99 and EIDCE F-46924		Inspected IAW P.O., Proton, Lilco TP 12.019.99 and EIDCE F-46924		Inspected IAW P.O., Proton, Lilco TP 12.019.99 and EIDCE F-46924		Inspected IAW P.O., Proton, Lilco TP 12.019.99 and EIDCE F-46924	
C.R. #445		C.R. #445		C.R. #445		C.R. #445		C.R. #445	
INSPECTOR SIGNATURE		D.L. Jerny		INSPECTOR SIGNATURE		D.L. Jerny		INSPECTOR SIGNATURE	
DATE		11/12/83		DATE		11/12/83		DATE	
YES		<input checked="" type="checkbox"/>		YES		<input checked="" type="checkbox"/>		YES	
NO		<input type="checkbox"/>		NO		<input type="checkbox"/>		NO	
RELEASED FOR CONSTRUCTION USE		<input checked="" type="checkbox"/>		RELEASED FOR CONSTRUCTION USE		<input checked="" type="checkbox"/>		RELEASED FOR CONSTRUCTION USE	
SOURCE INSPECTED		YES		SOURCE INSPECTED		YES		SOURCE INSPECTED	
NO		<input type="checkbox"/>		NO		<input type="checkbox"/>		NO	
S.R.T.		49258		S.R.T.		49258		S.R.T.	
SAT		<input checked="" type="checkbox"/>		SAT		<input checked="" type="checkbox"/>		SAT	
UNSAT		<input type="checkbox"/>		UNSAT		<input type="checkbox"/>		UNSAT	
CONDITION		<input checked="" type="checkbox"/>		CONDITION		<input checked="" type="checkbox"/>		CONDITION	
DOCUMENTATION		<input checked="" type="checkbox"/>		DOCUMENTATION		<input checked="" type="checkbox"/>		DOCUMENTATION	
IDENTIFICATION		<input checked="" type="checkbox"/>		IDENTIFICATION		<input checked="" type="checkbox"/>		IDENTIFICATION	

Cat I SHI-089

Transamerica Delaval Inc.
Engine and Compressor Division
880 85th Avenue
P.O. Box 2181
Oakland, California 94621

P-8-17

R-33615
83-155

CERTIFICATE OF COMPLIANCE

TO: Long Island Lighting Company
96 John F. Webster Engineering Corp
P.O. Box 604
Wading River N.Y. 11792



SHOREHAM NUCLEAR POWER STATION - UNIT 1

REFERENCE PURCHASE ORDER NUMBER: 310552-32

SUPPLIER: Transamerica Delaval Inc.

WE HEREBY CERTIFY THAT THE PRODUCTS OR SERVICES FURNISHED ON THE ABOVE
REFERENCE PURCHASE ORDER MEET THE REQUIREMENTS OF THE APPLICABLE DRAWINGS
AND/OR SPECIFICATIONS. SH-1-BB

- ☐ PARTS LISTED ON THE ATTACHED PACKING LIST ARE SPECIFICALLY COVERED BY THIS CERTIFICATE.
- ☒ PARTS LISTED BELOW ARE SPECIFICALLY COVERED BY THIS CERTIFICATE.
- ☐ DOCUMENTATION IN MANUFACTURERS FILE TO BE SUBMITTED AS REQUIRED AT A LATER DATE.
- ☐ DOCUMENTATION ATTACHED/SHIPPED SEPARATELY.
- ☒ PART NUMBER(S) 03-341-04-AE IS/ARE EQUAL TO OR BETTER THAN THAT WHICH WAS ORIGINALLY ORDERED.

Q.D. Mills
L.L. MILLS MANAGER -
Quality Engineering
TRANSMERICA DELAVAL, INC. REPRESENTATIVE

11-11-83
DATE

NA
CUSTOMER REPRESENTATIVE

NA
DATE

PURCHASE ORDER NUMBER:

P.O. Box 4191
Oakland, California 94621
(415) 877-7400 Telex 335-304

Slack-A

MAIL TO: LONG ISLAND LIGHTING CO.
C/O STONE & WEBSTER ENG. CORP.,
P.O. BOX 604
MADING RIVER, N.Y. 11792 5415

SHIP TO:
LONG ISLAND LIGHTING CO.
SHOREHAM NUCLEAR POWER STATION
1/2 MI. EAST OF WILLIAMS FLOYD
PARKWAY, HIGHWAY 25A
SHOREHAM, Vt., NEW YORK 11706

ATTN:

UNION
R-33615
DOW HILLES

[illegible]

058-450
Sharon Joseph

74010 12

Forfeiture money

1999

28/10

1

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DOMS

1

MEY
1500

SAVO

[illegible]

INVOICE CUSTOMER FOR FREIGHT

COLLAR, THRUST
LOK-TAB
SKIRT
GUIDE, SPRING
GROOVER, PIN
STUD

GUIDE, SPRING
GROOVER, PIN
STUD
COTTER PIN
ACCOUNTING INFORMATION

65-201 N-344-3

REV. 01-11-09-83 CHG. QIV'S
ITEMS 1-6 ADD ITEM 7 TOTAL
CHG. CUST. P.O. 6 REQ. DATE

INVOICE CUSTOMER FOR FREIGHT

COLLAR, THRUST
LOK-TAB
SKIRT
GUIDE, SPRING
GROOVER, PIN
STUD

GUIDE, SPRING
GROOVER, PIN
STUD
COTTER PIN
ACCOUNTING INFORMATION

65-201 N-344-3

35.95
66.99
00.00
00.60
00.00
55.55
00.00

18

۱۹

00
55
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00

274

1727(3) 2014

We hereby certify that these goods were produced in compliance with all applicable requirements of Sections 6, 7 and 12 of the Fair Labor Standards Act, be attended and of regulations and orders of the United States Department of Labor issued under Section 14 thereof. No goods returned without our written permission. Damages contingent upon strike, fire, accidents or other delays beyond our control. Goods proving defective will be replaced. No claims for damages or labor will be allowed. We are not responsible for loss of peltains due to fire.

This Attached "Conditions Of Sale" Any Part Of This Document.

PAGE NUMBER

8

STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT
PRODUCT QUALITY CERTIFICATION

T-376A-

PURCHASER <i>Long Island Lighting Company</i>	J.O. <i>11600.37</i>	P.Q. NO. <i>510552</i>	PAGE OF CHANGE NO. <i>-32-</i>
PROJECT <i>Suburban Development Station #1</i>	SPEC. NO. <i>541-89</i>	REVISION <i>2 1-26-83</i>	ADDENDA <i>N/A</i>
SELLER/ADDRESS <i>Transamerica Delmar, Inc. 550 85th Avenue</i> <i>Delmar, CA 94621</i>			
DOCUMENTATION REQUIRED YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		QA CAT. <i>1</i>	SHIPPING RELEASE TAG NUMBER(S) <i>47258</i>

I HEREBY CERTIFY THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN INSPECTED IN ACCORDANCE WITH
S&W PROCUREMENT QUALITY ASSURANCE REQUIREMENTS AND ARE ACCEPTABLE FOR SHIPMENT.

CHECK BLOCKS
AS APPLICABLE

- ☒ AUTHORIZED DEVIATIONS AND NONCONFORMANCES HAVE BEEN NOTED BELOW.
☒ ALL SPECIFIED SUPPORTING DOCUMENTATION HAS BEEN REVIEWED AND FORWARDED TO S&W
 PROCUREMENT QUALITY ASSURANCE FOR DOCUMENTATION REVIEW.
☐ DOCUMENTATION PREVIOUSLY SUBMITTED.
☐ DOCUMENTATION TO REMAIN IN SELLER'S FILES.

ITEM NO. *3* P/N *03-341-04-AE* QUANTITY *8 EA.*

HT. No.	SERIES
1. 200K	F15
2. 200K	F24
3. 200K	F18
4. 827J	C88X
5. 937J	D42
6. 181K	F12
7. 200K	F21
8. 205K	F35

NAME (PRINTED) *W.F. Whitten*TITLE *District Manager*NAME (SIGNED) *W.F. Whitten*DATE *11/11/83* IN NO. *51105529011*

THORIZED DEVIATIONS AND NONCONFORMANCES
E4DCK # F-40324, DTD. 11-9-83

STONE & WEBSTER ENGINEERING CORPORATION SHIPPING RELEASE TAG

J. O. NO. <u>11600.37</u>		P. O. NO. <u>310552-32</u>
SPECIFICATION TITLE <u>DIESEL GENERATOR SETS</u>		
SPEC. DATE <u>1-26-83</u>	SPEC. NO. <u>SMI-89</u>	ADDENDUM THRU NO. —
SELLER OR CONTRACTOR <u>TRANSAMERICA DELAVAL INC.</u>		
SHIPPER <u>FLYING TIGERS</u>		
EQUIPMENT OR MATERIAL LISTED IS HEREBY RELEASED FOR SHIPMENT:		
MARK NO. <u>SEE PIN BELOW</u>		
QUANTITY <u>8 EA.</u>		
DESCRIPTION <u>Piston Skirts</u>		
HT #	PIN #	
<u>1. 200K</u>	<u>F15</u>	
<u>2. 200K</u>	<u>F24</u>	
<u>3. 200K</u>	<u>F18</u>	
<u>4. 227J</u>	<u>C88X</u>	
<u>5. 937J</u>	<u>D42</u>	
<u>6. 181K</u>	<u>F12</u>	
<u>7. 200K</u>	<u>F21</u>	
<u>8. 205K</u>	<u>F33</u>	
<input checked="" type="checkbox"/> REQUIRED DOCUMENTATION IS COMPLETE		
S & W INSPECTOR <u>L.R. Whitten</u>	DATE <u>11/13</u>	TAG NO. <u>47258</u>

ISSUED TO _____

DATE _____

* COA INSPECTED D. J. J. J. J.DATE 11/12/83P.O. NO. 310552-32REQ. NO. F77679

OF _____

VENDOR TRANSAMERICA DELAVALSHIPPER TRANSAMERICA DELAVALSHIPPERS NO. R-33615DATE REC'D 11/12/83CHECKED BY B. D. A. M. B. (10/20)MRR NO. 05046SHIPPED VIA FLYINOTIGENSPRO NO. 631-4100NO. OF CTNS 9WEIGHT 2,688

STORAGE LOCATION _____

STORE REQ NO. _____

* Conditionally Released CR # 445-NED 6108

P.O. ITEM NO.	QTY	DESCRIPTION	COMP. ID.
1	7	PISTON SKIRT P/N 03-341-04-A5	

P.O. 310552-32 Tran America Detail

1140. Piston Skirt P/N 03-341-04-AE

SN's G33, G34, G4, G2, G1, F87, F58, F56, F7, E8, C89

Cal I SHI-Q89

RECEIVING INSPECTION REPORT

STONE & WEBSTER ENGINEERING CORPORATION
UNIT-1
BROOKHAVEN NUCLEAR POWER STATION

DATE RECEIVED 11-13-83		JAN NUMBER 83-5047		PARTIAL COMPLETE	
STORAGE LEVEL		N/A		NED REPORT NO 6110	
<input checked="" type="checkbox"/> SAT		DOCUMENTATION REVIEW		DATE 11-13-83	
<input type="checkbox"/> UNSAT		SIGNATURE R. Perce		DATE 11-13-83	
REMARKS POA Doc. lacking Mt. Treat. Reps. Mt. conditionally Released Inspected IAW P.O., Prop. Ion, Lilco TP12-019, 99 and Eide F-46324 C.B. #447 R. Perce					
OC CONTROL NO (required) 5/2					

RELEASED FOR CONSTRUCTION USE	YES	NO	FORM NO 1-14
IDENTIFICATION	<input checked="" type="checkbox"/>		
DOCUMENTATION	<input checked="" type="checkbox"/>		
CONDITION	<input checked="" type="checkbox"/>		
SOURCE INSPECTED	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	
SAT			
UNSAT			

Transamerica Delaval Inc.
Engine and Compressor Division
880 82th Avenue
P.O. Box 2181
Oakland, California 94621

R-33615

83.756

(ORIGINAL)
009A

CERTIFICATE OF COMPLIANCE

TO: Long Island Lighting Company
% John F. Webster Engineering Corp.
P.O. Box 605
Wading River, N.Y. 11792



SHOREHAM NUCLEAR POWER STATION - UNIT 1

REFERENCE PURCHASE ORDER NUMBER: 310552-32

SUPPLIER: Transamerica Delaval Inc.

WE HEREBY CERTIFY THAT THE PRODUCTS OR SERVICES FURNISHED ON THE ABOVE
REFERENCE PURCHASE ORDER MEET THE REQUIREMENTS OF THE APPLICABLE DRAWINGS
AND/OR SPECIFICATIONS. SH-1-BB

- ☐ PARTS LISTED ON THE ATTACHED PACKING LIST ARE SPECIFICALLY COVERED BY THIS CERTIFICATE.
- ☒ PARTS LISTED BELOW ARE SPECIFICALLY COVERED BY THIS CERTIFICATE.
- ☐ DOCUMENTATION IN MANUFACTURERS FILE TO BE SUBMITTED AS REQUIRED AT A LATER DATE.
- ☐ DOCUMENTATION ATTACHED/SHIPPED SEPARATELY.
- ☒ PART NUMBER(S) 03-341-04-AE IS/ARE EQUAL TO OR BETTER THAN THAT WHICH WAS ORIGINALLY ORDERED.

D.D. Mills
L.L. MILLS MANAGER -
Quality Engineering
TRANSMERICA DELAVAL, INC. REPRESENTATIVE

11-12-83

DATE

N/A
CUSTOMER REPRESENTATIVE

N/A
DATE

PURCHASE ORDER NUMBER

STONE & WEBSTER ENGINEERING CORPORATION
 QUALITY ASSURANCE DEPARTMENT
 PRODUCT QUALITY CERTIFICATION

T-376A-

PAGE 1 OF 1

PURCHASER <i>Long Island Lighting Company</i>	J.D. <i>11600.37</i>	P.O. NO. <i>310552</i>	CHANGE NO. <i>M/C 32</i>
PROJECT <i>Surreman McClellan Sta. #1</i>	SPEC. NO. <i>SHI-89</i>	REVISION <i>E 1-26-83</i>	ADDENDA <i>N/A</i>
SELLER/ADDRESS <i>TRANSAMERICA DELAWARE INC 550 85TH ST. OAKLAND CA. 94621</i>			
DOCUMENTATION REQUIRED YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	QA CNT. <i>1</i>	SHIPPING RELEASE TAG NUMBER(S) <i>47260</i>	

I HEREBY CERTIFY THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN INSPECTED IN ACCORDANCE WITH
 SEW PROCUREMENT QUALITY ASSURANCE REQUIREMENTS AND ARE ACCEPTABLE FOR SHIPMENT.

CHECK BLOCKS
 AS APPLICABLE

- ☒ AUTHORIZED DEVIATIONS AND NONCONFORMANCES HAVE BEEN NOTED BELOW.
☒ ALL SPECIFIED SUPPORTING DOCUMENTATION HAS BEEN REVIEWED AND FORWARDED TO SEW
 PROCUREMENT QUALITY ASSURANCE FOR DOCUMENTATION REVIEW.
☐ DOCUMENTATION PREVIOUSLY SUBMITTED.
☐ DOCUMENTATION TO REMAIN IN SELLER'S FILES.

ITEM NO.		QUANTITY
<i>3</i>	<i>PIN 03-341-04-AE</i>	<i>11 EA.</i>
	<i>S/N. No. HT. No.</i>	
	<i>G33 - 312K</i>	
	<i>G34 - 312K</i>	
	<i>G4 - 298K</i>	
	<i>G2 - 298K</i>	
	<i>G1 - 298K</i>	
	<i>F87 - 298K</i>	
	<i>F58 - 256K</i>	
	<i>F56 - 256K</i>	
	<i>F7 - 181K</i>	
	<i>E8 - 104K</i>	
	<i>C89 - 8115</i>	

NAME (PRINTED) *W.F. Whitten* TITLE *District Manager*
 NAME (SIGNED) *W.F. Whitten* DATE *11-2-83* IN NO. *51105529012*

AUTHORIZED DEVIATIONS AND NONCONFORMANCES

STONE & WEBSTER ENGINEERING CORPORATION SHIPPING RELEASE TAG

J. G. NO.

11600.37

P. G. NO.

310552-32

SPECIFICATION TITLE

DIESEL GENERATOR SETS

SPEC. DATE

1-26-83

SPEC. NO.

341-89

ADDENDUM THRU NO.

N/A

SELLER OR CONTRACTOR

TRANSAMERICA DELAWARE, INC.

BUYER

AMERICAN AIRLINES

EQUIPMENT OR MATERIAL LISTED IS HEREBY
RELEASED FOR SHIPMENT:

MARK NO. SEE S/N BELOW

QUANTITY 11 EA.

DESCRIPTION Diesel Generators

S/N No. HT. No. S/N No. HT. No.

1. G33 - 312K

8. F56 - 256K

2. G34 - 312K

9. F7 - 121K

3. G4 - 298K

10. F8 - 104K

4. G2 - 298K

11. C89 - 811J

5. G1 - 298K

6. F27 - 298K

7. F58 - 256K



REQUIRED DOCUMENTATION IS COMPLETE

S & W INSPECTOR

H. F. Whitten

DATE

11/12/83

TAG NO.

47260

ISSUED TO Martha Luther DATE 11/13/83 ORIGINAL
 COA INSPECTED Edina DATE 11/13/83 WAYNE
 P.O. NO. 910552-32 REQ. NO. F 77679 OF T. BROOK
 VENDOR TRANS. AMERICA. DE LAVAL
 SHIPPER TRANS AM. DE LAVAL SHIPPERS NO. 20338
 DATE REC'D 11-13-83 CHECKED BY J. Lawler MRR NO. 05047
 SHIPPED VIA AMERICAN AIRLINES
 PRO NO. 001 SFO 5658745 NO. OF CTNS 11 WEIGHT 3553

STORAGE LOCATION

STORE REQ NO

NEED BILL INITIATED DUE TO DOC. MISSING - HEAT
 TREAT-CYCLE INFO MISSING - CONDITIONAL RELEASE
 447 - INITIATED TO RELEASE ALL 11 SIGINTS

P.O.
ITEM NO.

QTY

DESCRIPTION

COMP. ID

1

11

PISTON SKIRT.

P/N. 03-341-04 AE

Transamerica
Delaval
R-33615

Engine and Compressor Division
550 85th Avenue
P.O. Box 2181
Oakland, California 94621
(415) 377-7400 Telex: 333-304

TAG
R-33615
OUR NUMBER

DATE ENTERED
117091

MAIL TO:
LONG ISLAND LIGHTING CO.,
C/O STONE & WEBSTER ENG. CORP.,
P.O. BOX 604
WADING RIVER, N.Y. 11792

SHIP TO:
LONG ISLAND LIGHTING CO.,
SHOREHAM NUCLEAR POWER STATION
1/2 MI. EAST OF WILLIAMS FLOYD
PARKWAY, HIGHWAY 25A
SHOREHAM, L.I. NEW YORK 11786

MARKING:

INVOICE NO.	INVOICE DATE	CUSTOMER REF. NUMBER
INVOICE TAB	DATE SHIPPED	L. MCHUGH
	11-12-83	REQUESTED SHIP DATE
		11-11-83
		DEALER NO. DAYTON CODE
CARRIER		
American Airlines		
001 SFO 56587451		
DATE		NET 30 DAYS
OAK 11717		
PACKAGING		FACTORY OAKLAND
DOMESTIC AIR		
PARTIAL SHIP	YES	ROUTING REQUEST
QUANTITY SHIPPED	NO	AIR FREIGHT
PPD COL	04	

ENGINE MODEL	SERIAL NUMBER	CODE	SALES TAX	PRODUCT	HP	YEAR/MT	REMS	STATE
OSK-48	74010 12		0	55508	491	20 25 58		33

ITEM	QTY	PART NUMBER	DESCRIPTION	SCHEDULED DATE	UNIT PRICE	QTY SHIPPED	ORDER BALANCE	BOX NO.	EXTENDED PRICE
INVOICE CUSTOMER FOR FREIGHT									
1	96	03-341-04-AC	COLLAR, THRUST						
2	96	03-341-04-AD	LOK-TAB						
3	24	03-341-04-AE	SKIRT						
4	96	03-341-04-AF	GUIDE, SPRING						
5	96	GC-023-000	GROOVER, PIN						
6	96	03-341-04-AB	STUD						
ACCOUNTING INFORMATION									
65,201 N-344-3									

NUCLEAR

MAR-05047
310 552-52
F 77678
T. BROWN

ORDER WRITER
LP

We hereby certify that these goods were produced in compliance with all applicable requirements of Sections 8, 7 and 12 of the Fair Labor Standards Act, as amended, and of regulations and orders of the United States Department of Labor issued under Section 14 thereof. No goods returned without our written permission. Deliveries contingent upon strikes, fires, accidents or other delays beyond our control. Goods proving defective will be replaced. No claims for damages or labor will be allowed. We are not responsible for loss of patterns due to fire.

The Attached "Conditions Of Sale" Are Part Of This Document.

PAGE NUMBER
1

P-8-27

RECEIVING INSPECTION REPORT

SHOREHAM NUCLEAR POWER STATION
UNIT - 1
STONE & WEBSTER ENGINEERING CORPORATION

DATE RECEIVED 11-16-83	STORAGE LEVEL A B C D	OC HOLDING NO. 83-05053	NON RELEASE	PARTIAL COMPLETE	FIELD REPORT NO. 6115
SIGNATURE OF INSPECTOR R. P. Perra			DATE 11-16-83		
REMARKS POA Doc. lacking. H. Trans. Record Not Conditionally Released Inspected IAW P.O., Preplan, L. 100 TP 12.019.99 and E 100 F. 46324 C. P. #448 Specimen Location Dr. Perra for: R. P. Perra					
OC CONTROL NO. (if required) N/A					

P.O. 310552-32 TransAmerica Detail

7th. Piston Skirt #03-341-04AE
S/N's F-97, F-98, G-5, G-24, G-29, G-30
and G-35

Cat. I

SHI-089

SOURCE
INSPECTED
YES ☒ NO ☐

SRT #
47261

SAT
UNSAT

IDENTIFICATION
DOCUMENTATION
CONDITION

RELEASED FOR CONSTRUCTION USE
YES ☒ NO ☐

FORM NO.
1-19

R-33615

Transamerica Delaval Inc.
Engine and Compressor Division
580 85th Avenue
P.O. Box 2181
Oakland, California 94621

CERTIFICATE OF COMPLIANCE

TO: Long Island Lighting Company
96 Shore & Webster Engineering Corp.
P.O. Box 604
Wading River N.Y. 11792



SHOREHAM NUCLEAR POWER STATION - UNIT 1

REFERENCE PURCHASE ORDER NUMBER: 310552-32

SUPPLIER: Transamerica Delaval Inc.

WE HEREBY CERTIFY THAT THE PRODUCTS OR SERVICES FURNISHED ON THE ABOVE
REFERENCE PURCHASE ORDER MEET THE REQUIREMENTS OF THE APPLICABLE DRAWINGS
AND/OR SPECIFICATIONS. SN-1-B9

- ☐ PARTS LISTED ON THE ATTACHED PACKING LIST ARE SPECIFICALLY COVERED BY THIS CERTIFICATE.
- ☒ PARTS LISTED BELOW ARE SPECIFICALLY COVERED BY THIS CERTIFICATE.
- ☐ DOCUMENTATION IN MANUFACTURERS FILE TO BE SUBMITTED AS REQUIRED AT A LATER DATE.
- ☐ DOCUMENTATION ATTACHED/SHIPPED SEPARATELY.
- ☒ PART NUMBER(S) 03-341-04-AE (ITEM #3 ONLY) IS/ARE EQUAL TO OR BETTER THAN THAT WHICH WAS ORIGINALLY ORDERED.

R. L. Mills
L. L. MILLS MANAGER - Quality Engineering
TRANSAMERICA DELAVAL, INC. REPRESENTATIVE

11-15-83
DATE

PURCHASE ORDER NUMBER:

N/A
CUSTOMER REPRESENTATIVE

N/A
DATE

STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT
PRODUCT QUALITY CERTIFICATION

T-376A-

PURCHASER

Louisiana Livestock Company

J.O.

P.O. NO.

PAGE 1 OF 1

CHANGE NO.

PROJECT

11600-37

310552

M/C 32

Shreveport Livestock Auction, Inc.

SPEC. NO.

REVISION

ADDENDA

SELLER/ADDRESS

341-89

2 1-26-83

N/A

Transamerica Delaval, Inc.

550 85th Avenue

DOCUMENTATION REQUIRED

Oakland CA 94621

YES ☒ NO ☐

QA CAT.

SHIPPING RELEASE TAG NUMBER(S)

I

47261

I HEREBY CERTIFY THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN INSPECTED IN ACCORDANCE WITH
SEW PROCUREMENT QUALITY ASSURANCE REQUIREMENTS AND ARE ACCEPTABLE FOR SHIPMENT.

CHECK BLOCKS
AS APPLICABLE

- ☒ AUTHORIZED DEVIATIONS AND NONCONFORMANCES HAVE BEEN NOTED BELOW.
- ☒ ALL SPECIFIED SUPPORTING DOCUMENTATION HAS BEEN REVIEWED AND FORWARDED TO SEW
PROCUREMENT QUALITY ASSURANCE FOR DOCUMENTATION REVIEW.
- ☐ DOCUMENTATION PREVIOUSLY SUBMITTED.
- ☐ DOCUMENTATION TO REMAIN IN SELLER'S FILES.

ITEM NO.

3 P/N-03-341-04-AE

QUANTITY

7 EA.

S/N-F97 NT-289K
S/N-F98 NT-289K
S/N-G5 NT-298K
S/N-G26 NT-312K
S/N-G29 NT-312K
S/N-G30 NT-312K
S/N-G35 NT-312K

NAME (PRINTED) *W.F. Whitten*

TITLE *District Manager*

NAME (SIGNED) *W.F. Whitten*

DATE *11-15-83* IR NO. *310552-9013*

THORIZED DEVIATIONS AND NONCONFORMANCES
EDCR F-46324, DYO 11-9-83

ISSUED TO: Osma DATE: 11-16-83
 QCA INSPECTED: Osma DATE: 11-16-83
 P.O. NO. 310 552-32 REQ. NO. F77679 OF 1
 VENDOR: Transamerica Delaval Inc
 SHIPPER: Transamerica Delaval Inc SHIPPERS NO: R-33615
 DATE REC'D: 11-16-83 CHECKED BY: H. Allen MRR NO 83-05053
 SHIPPED VIA: Flying Tigers
 PRO NO: 6311 4052 NO. OF CTNS: 8 WEIGHT: 2337 (lbs)
 STORAGE LOCATION: CONDITIONAL RELEASED ON #448 STORE REQ NO: 11/16/83
REQUIRE HEAT CERTS. Osma

P.O. ITEM NO.	QTY	DESCRIPTION	COMP. ID
1	7	Piston skirt #03-341-04AE	



R-33615

Transamerica Delaval Inc.
Engine and Compressor Division
850 85th Avenue
P.O. Box 2181
Oakland, California 94621
(415) 577-7400 Telex: 335-304

SHIPPING
TAG
R-33615

OUR NUMBER
REV. 02

DATE ENTERED
11/10/83

MAIL TO:
LONG ISLAND LIGHTING CO.
C/O STONE & WEBSTER ENG. CORP.
P.O. BOX 604
WADING RIVER, N.Y. 11792

5415

SHIP TO:
LONG ISLAND LIGHTING CO.
SHOREHAM NUCLEAR POWER STATION
1/2 MI. EAST OF WILLIAMS FLOYD
PARKWAY, HIGHWAY 25A
SHOREHAM, L.I. NEW YORK 11786

MARKINGS:

ATTN:

ENGINE MODEL	SERIAL NUMBER	CODE	SALES TAX	PRODUCT	NO	TERRITORY	REMS	STATE	PARTIAL SHIP	QTY SHIP	PPD COL	NO. SH	ROUTING REQUEST
DSR-48	74010 12		0	55508	491	20 25 58		33	YES	NO	PPD	04	AIR FREIGHT
QTY	PART NUMBER	DESCRIPTION	SCHEDULED DATE	UNIT PRICE	QTY SHIPPED	ORDER BALANCE	BOX NO.	EXTENDED PRICE					
		REV. 01-11-09-83 CHG. QTY'S ITEMS 1-6, ADD ITEM 7. TOTAL. CHG. CUST. P.O. & REQ. DATE.											
		INVOICE CUSTOMER FOR FREIGHT											
104	03-341-04-AC	COLLAR, THRUST											
104	03-341-04-AD	LOK-TAB											
26	03-341-04-AE	SKIRT											
104	03-341-04-AF	GUIDE, SPRING											
104	GC-023-000	GROOVER, PIN											
104	03-341-04-AB	STUD											
100	GC-002-005	COTTER PIN 1/16X 1 1/4											
		ACCOUNTING INFORMATION											
		65,201 N-344-3											

ORDER WRITER

We hereby certify that these goods were produced in compliance with all applicable requirements of Sections 8, 7 and 12 of the Fair Labor Standards Act, as amended, and of regulations and orders of the United States Department of Labor issued under Section 14 thereof. No goods returned without our written permission. Deliveries

PAGE NUMBER

1

P-8-32

P.O. 310552-32 Trans America Delaval

1ea. Piston Skirt - P/N 03-341-04-AE

S/N C88X

RECEIVING INSPECTION REPORT

STONE & WEBSTER ENGINEERING CORPORATION
UNIT - 1

DATE RECEIVED 11-12-83		JAN NUMBER 83-5046		PARTIAL COMPLETE	
STORAGE LEVEL A B C D		NC INSPECTION TAG NO 19623		FIELD REPORT NO 61074608	
SOURCE INSPECTED YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		IDENTIFICATION YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		DOCUMENTATION REVIEW DATE 12/30/83	
SRT 47258		CONDITION YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		REMARKS Action Skirt Damaged in Shipping / PGM DIRE 2-12-83 Knot Rotor 25 M/D 12/2/83 Inspected IAW P.O. 310552-32 Lilco TP 12.019.99 and E/OCR F 46324	
SAT UNSAT		RELEASED FOR CONSTRUCTION USE YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>		INSPECTOR SIGNATURE M. J. Jarmine DATE 12/30/83	

CO CONTROL NO. (if required)
4/2

STONE & WEBSTER ENGINEERING CORPORATION
QUALITY ASSURANCE DEPARTMENT
PRODUCT QUALITY CERTIFICATION

T-376A-

PURCHASER	J.O.	P.O. NO.	PAGE OF
PROJECT	SPEC. NO.	REVISION	CHANGE NO.
SELLER/ADDRESS	QA CAT.	SHEET FILE NO.	

550 85th Avenue
Dunwoody, Ga 30015

YES ☒ NO ☐

42262

I HEREBY CERTIFY THE PRODUCT(S) IDENTIFIED HEREIN HAVE BEEN INSPECTED IN ACCORDANCE WITH
SEW PROCUREMENT QUALITY ASSURANCE REQUIREMENTS AND ARE ACCEPTABLE FOR SHIPMENT.

CHECK BLOCKS
AS APPLICABLE

- ☒ AUTHORIZED DEVIATIONS AND NONCONFORMANCES HAVE BEEN NOTED BELOW.
- ☒ ALL SPECIFIED SUPPORTING DOCUMENTATION HAS BEEN REVIEWED AND FORWARDED TO SEW
PROCUREMENT QUALITY ASSURANCE FOR DOCUMENTATION REVIEW.
- ☐ DOCUMENTATION PREVIOUSLY SUBMITTED.
- ☐ DOCUMENTATION TO REMAIN IN SELLER'S FILES.

ITEM NO. 2 P/N 03-341-04-AE QUANTITY 8 EA.

HT. No.	SCREWS
1. 200K	F15
2. 205K	F24
3. 200K	F18
4. 827J	C88X
5. 937J	D43
6. 181K	F12
7. 200K	F21
8. 205K	F35

NAME (PRINTED) W.F. Whitten TITLE DISTRICT MANAGER

NAME (SIGNED) W.F. Whitten DATE 11/11/83 IR NO. 51105529011

AUTHORIZED DEVIATIONS AND NONCONFORMANCES
E4DCK = F-40324, DTD. 11-9-83

STATE OF TEXAS

10.10		11600-37		310977-32																												
TO: <i>Dr. J. L. ...</i>																																
1-21-63		441-89																														
FROM: <i>Transoceanic Delivery, Inc.</i>																																
EQUIPMENT OR MATERIAL LISTED IS HEREBY RELEASED FOR SHIPMENT																																
MARK NO. <i>580 D/L Balm</i>																																
QUANTITY <i>9 EOL</i>																																
DESCRIPTION <i>Auto. ...</i>																																
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Transamerica Delaval, Inc.
Engine and Compressor Division
850 52th Avenue
P.O. Box 2161
Oakland, California 94621

P-8-36
K-33615
83-755

CERTIFICATE OF COMPLIANCE

TO: Long Island Lighting Company
Electric Division Engineering Dept
Part 1-101
Building: 5th Floor



REFERENCE PURCHASE ORDER NUMBER: 310552-00
SUPPLIER: Transamerica Delaval, Inc.

WE HEREBY CERTIFY THAT THE PRODUCTS OR SERVICES SET FORTH ON THE ABOVE
REFERENCE PURCHASE ORDER MEET THE REQUIREMENTS OF THE APPLICABLE DRAWINGS
AND/OR SPECIFICATIONS.

- ☐ PARTS LISTED ON THE ATTACHED PACKING LIST ARE SPECIFICALLY COVERED BY THIS CERTIFICATE.
- ☒ PARTS LISTED BELOW ARE SPECIFICALLY COVERED BY THIS CERTIFICATE.
- ☐ DOCUMENTATION IN MANUFACTURERS FILE TO BE SUBMITTED AS REQUIRED AT A LATER DATE.
- ☐ DOCUMENTATION ATTACHED/SHIPPED SEPARATELY.
- ☒ PART NUMBER(S) 17003 W-11 83-31-04-11 IS/ARE EQUAL TO OR BETTER THAN THAT WHICH WAS ORIGINALLY ORDERED.

R. Q. Mills
R. L. MILLS Manager -
Quality Engineering
TRANSMERICA DELAVAL, INC. REPRESENTATIVE

11-11-83
DATE

11/11
CUSTOMER REPRESENTATIVE

11/11
DATE

RECEIVED 11-11-83

LI 030001
R-33615

P.O. Box 2101
Oakland, California 94621
(415) 577-7400 Telex 255-364

MAIL TO:
LONG ISLAND LIGHTING CO.
C/O STONE & WEBSTER ENG. CORP.
P.O. BOX 604
KADING RIVER, N.Y. 11792

5415

SHIP TO:
LONG ISLAND LIGHTING CO.
SHOREHAM NUCLEAR POWER STATION
1/2 MI. EAST OF WILLIAMS FLOYD
PARKWAY, HIGHWAY 25A
SHOREHAM, L.I. NEW YORK 11795

ATTN:

ORDER

R-33615

CUSTOMER

REV. 1

DATE ENTERED

11/10/83

310552-2152	11-11-83
NET 30 DAYS	FACTORY DARNING
AIR FREIGHT	

DATE MOOD

DSR-49

SERIAL NUMBER

74010 12

REV. 01-11-00-03 C.G. G.P.S.
ITEMS 1-8, ADD ITEM 7. TOTAL.
CHG. CUST. P.O. & REQ. DATE.

INVOICE CUSTOMER FOR FREIGHT

- 1 104 03-341-04-AC
- 2 104 03-341-04-AD
- 3 26 03-341-04-AE
- 4 104 03-341-04-AF
- 5 104 GC-023-000
- 6 104 03-341-04-AB
- 7 100 GC-002-005

COLLAR, THRUST
LOK-TAG
SKIRT
GUIDE, SPRING
GRINDER, PIN
STUD
CUTTER PIN

ACCOUNTING INFORMATION

65.201 N-344-3



ITEM (3) ONLY

3,732.00
717.60
144,000.00
52,075.40
104.00
9,001.20
100.00
133,621.00

ORDER WRITER
LP

We hereby certify that these goods were produced in accordance with all applicable regulations and orders of the United States Department of Labor pursuant to Section 18 of the Fair Labor Standards Act as amended, and contingent upon strikes, fires, accidents or other delays beyond our control. Goods proving defective will be replaced. No claims for damages or labor will be allowed. We are not responsible for loss of patterns due to fire.

The Attached "Conditions Of Sale" Are Part Of This Contract.

PAGE NUMBER

1

P-8-37

03-341A



The Americas Deava Inc
 Engine and Compressor Division
 550 50th Avenue
 P.O. Box 2161
 Oakland California 94621
 415. 577.7400

Tag R.F. 20-74107
CC C. in. Mahesh 100
= C. 20-210 100

KK (orig)
WAM
MHM
CKS
E Rogers
C walls

2.22 / File
4 Early / 11 Early

Subject: Shoshone Nuclear Power Station - Unit 1
Standby Diesel Generator Sets 7-01-12
Lone Island Lighting Company
W080-48923

Gentlemen:

Should you have questions or comments, please feel free to contact us.

Very truly yours,

TRANSAMERICA DELAVAL INC.
Engine & Compressor Division

NOTED MAR 24 1966 A.L. ARSHINE

John P. Gee
Project Engineer

'FG:ind

func 1: 4

cc: N. Boyer
N. Yang
V. Silverthorn

**Transamerica
Delaval**



CERTIFICATE OF COMPLIANCE

REFERENCE: SPECIFICATION NO. SH1-89

Stone & Webster Engineering Corp.

FOR Shoreham Nuclear Power Station

Unit #1 Long Island Lighting Company

Long Island, New York

SUPPLIER: Transamerica Delaval Inc. - Engine & Compressor Division

COMPONENTS: Emergency Diesel Generator Engines fitted with:

- 3 ea. 1A-7046 Crankshaft Assembly
- 24 ea. 03-341-04-AE Skirts, Piston
- 24 ea. 1A-5718 Con Rod Assembly
- 48 ea. 03-340-05-AE Shells, Con Rod
- 2 ea. 03-310-03-AE Shell, Rear Main .080" O.S. on O.D.
- 24 ea. 03-441-01-OP Pipe, Cyl. Head to A/S Manifold
- 96 ea. 02-390-01-OJ Rocker Arm Shaft Bolt
- 3 ea. AK-007-000 Coupling
- 3 ea. 03-402-04-AA Coupling Adapter
- 3 ea. 03-402-04-AR Governor Drive Coupling
- 3 ea. 102568 Idler Gear Locknut (Field Rework).

We have reviewed the above drawings and made comparisons to those originally supplied. Since the engine generator system as originally supplied was covered by a Certificate of Compliance, this document will address only the above listed parts.

As detailed in the attachments, we conclude that the new components either retain or improve on their functional and seismic adequacy over those originally supplied. The attachments consist of eleven pages.

Roland T.M. Yang
Manager, Applied Mechanics

Date 3-6-84

G.E. Trussell
Manager, Engineering & Customer Service

Date 3-6-84

NOTED MAR 24 1984 A.I. ASSIGNED



Transamerica Engine Calculations Delaval

74010

ENGINE

ASSY

NO

COMPARISON OF AS DELIVERED ENGINE COMPONENTS WITH
REPLACEMENT ENGINE COMPONENTS

SHEET 1 OF 2

DATE January 9, 1984

PART NO.

PISTON SKIRT

BY David Beck

The engine components compared will be denoted as:

Old = As delivered engine components

New = Replacement engine components

Old:

03-340-04-AF

Wall thickness at ring grooves: .75"

Boss radius at piston pin: 4.375"

Pin bore hardness: 217-270-BHN

New:

03-341-04-AE

Wall thickness at ring grooves: .97"

Boss radius at piston pin: 4.5"

Pin bore hardness: 255-293 BHN

Material is the same for both piston skirts. Changes were made to improve rigidity, reduce stress and facilitate casting:

Section C-C on drawing 03-341-04-AE shows the boss outside radius to be 4-1/2", (from 4-3/8" for the old design). This was done to eliminate the rib in the old design and still maintain structural integrity.

Section Y-Y on drawing 03-341-04-AE shows the increased "Tie" between the bolt boss and the skirt. This was done to improve the bolt boss rigidity and reduce stress concentration.

Section C-C on drawing 03-341-04-AE shows a tapered rib to the left of the piston pin centerline. This tapered rib was added to improve the rigidity of the piston skirt.

The nodular iron skirt has passed through several design changes. The following identifies and describes several design iterations of the piston skirts:

1. "AF" piston, 03-340-04-AF

- a. This design was supplied in the LILCO/Shoreham, Southern California Edison/San Onofre and Mid South Energy/Grand Gulf engines.

During field testing several "AF" modified skirts at LILCO were found to have linear indications and one was found to have a crack near a stud bore. This crack finding is the reason for our LOCFR21 letter of November 16, 1983. At this writing, four (4) skirts have been examined at Grand Gulf where linear casting indications were found on two (2) skirts. The indications were easily removed by light grinding and polishing. There is absolutely no evidence of cracks with any depth.

Linear indications should not be taken lightly, however they should not be regarded indiscriminately as "failures". Indications may be casting surface imperfections, scratches, or machining marks. They could contribute to fatigue cracks and should therefore be tested by grinding or polishing. Generally faint indications are not crack contributors and through experience may be left as found. Overly zealous inspections with very sensitive instruments often mislead one to assume there are cracks where none exist.

NOTED PAR 2 4 100

A. L. ARDING



Transamerica Engine Calculations Delaval

74010
ENGINE

ASSY

NO

COMPARISON OF AS DELIVERED ENGINE COMPONENTS WITH
REPLACEMENT ENGINE COMPONENTS.

SHEET 2 OF 2

DATE January 9, 1984

PART NO.

PISTON SKIRT

BY David Beck

2. All "AF" style piston skirts were cast using the following heat treatment.

- a. Heat to 1750 degrees F. (near the upper critical temperature) for 3 hours. Normalized (air cooled) in still air. Result: a pearlitic structure and 100,000 PSI tensile strength.
- b. Re-heat to 1050 degrees F. (slightly below the lower critical temperature) for 3 hours and cool in still air. This is a tempering process used to produce the desired ductility in the nodular iron.

3. "AE" 03-341-04-AE

This is the present standard R-4 piston skirt design. The design incorporates the knowledge we have gained through our field experience on the R-4 series engine as well as from our uprated R-5 series engine, just concluding research and development testing.

All "AE" skirts are heat treated to product stress relieved 100,000 PSI tensile strength nodular iron. Successful operating experience with the "AE" skirts includes a 16 cylinder R-4 unit rated 7000 kw, 450 rpm, 225 bmepl which has accumulated over 7000 hours of operating without a problem, and 667 hours operation on the R-5 test engine at 514 rpm, and 302 bmepl.

The "AE" style skirt is interchangeable with existing R-4 piston crown and requires only minor hardware changes.

The connection of the bolt boss to the skirt wall with a more substantial section on piston skirt "AE" is an improvement designed to eliminate the indications found in this area on skirt "AF".

The new piston skirt's adequacy is improved as noted above and offers a substantial refinement in the "AE" skirt design.