P-9-1

Engine Cylinder Pressure Logs

EDG 101, 102, 103

Pre-crankshaft Failure

TABLE V

Data Reviewed by W.J. Cook 7/5/83

ENGINE CYLINDER PRESSURE LOG

Step Number Date/Time	6/19/83 STEP 8.8.2							
ENGINE CYLINDER PRESSURE								
1	~~1530~~ 1500							
2	1500							
3	1540							
4	1550							
5	1560							
6	1550							
7	1570							
8	1530							
LOAD								

Data reviewed by [signature] 6/29/83

TABLE V

ENGINE CYLINDER PRESSURE LOG

Step Number Date/Time	8.82				
ENGINE CYLINDER PRESSURE					
1	1550				
2	1610				
3	1600				
4	1540				
5	1620				
6	1630				
7	1680				
8	1670				
LOAD	3.5mw				

19.P.9-H

LILCO QA REVIEWED BY [illegible] DATE 7/8/82

LILCO QA REVIEWED BY [illegible] DATE 7/5/83

[illegible] For Information Only

PT 20[illegible]

TCI [illegible]

TABLE V

UNCONTROLLED
For Information Only

ENGINE CYLINDER PRESSURE LOG

Step Number / Date/Time	Step 6.8.2		
ENGINE CYLINDER PRESSURE			
1	1550 ~~1600~~		
2	1490		
3	1520		
4	1530		
5	1580		
6	1500		
7	1500		
8	1510		
LOAD	3.5 mw		

M.D. Quaff
6/23/83

Engine Cylinder Pressure Logs

EDG 101, 102, 103

Post-crankshaft Replacement

APPENDIX F

ENGINE CYLINDER PRESSURE LOG

Step No.	8.8.2	
Date	4/11/89	
Time	2200	
ENGINE/CYLINDER PRESSURE (PSIG)	EDG 101	
1	1720	
2	1640	
3	1640	
4	1640	
5	1650	
6	1700	
7	1680	
8	1700	
Gen. Load (KW)	3500	
Var Loading (KVAR)	2700	

Data taken by: [signature]

JTG APPROVED NOV 8 1989

APPENDIX F

ENGINE CYLINDER PRESSURE LOG

Step No.	8.14.2	
Date	3-17-84	
Time	02:25	
ENGINE CYLINDER PRESSURE (PSIG)		
1	1620	
2	1630	
3	1650	
4	1650	
5	1620	
6	1600	
7	1650	
8	1620	
GEN Load (KW)	3528	
Var Loading (KVAR)	2625	

Data taken by: [signature]

APPENDIX F

ENGINE CYLINDER PRESSURE LOG

Step No.	8.8.2	
Date	4-10-84	
Time	0655	
ENGINE CYLINDER PRESSURE (PSIG)		
1	1620	
2	1640	
3	1680	
4	1500	
5	1590	
6	1680	
7	1550	
8	1670	
Gen Load (KW) PC	3595	
Var Loading (KVAR) CR	2675	
Data taken by:	[illegible]	

RACK SETTING
43.0 MM
#3 DIESEL TEST

12

Sample Preoperational Test Procedure

P-9-10

UNCONTROLLED
For Information Only

SHOREHAM I
NUCLEAR POWER STATION
STARTUP FORM 8.3

Oct. 1, 1975
REVISION 0

Preoperational Test Results Review and Approval

1. System No. R43A
2. Preoperational Test No. PT.307.004.A-2
3. System EDG 101 Qualification Preoperational Test
4. Test Engineer William J. Cook
5. Lead Startup Engineer M.W. Herlihy
6. Attached for your review are:

Preoperational Test Results and Analysis

William J Cook 4/19/84
Prepared By/Performed By

FC Clifford 4/19/84
Reviewed By

[signature] 4/19/84
Reviewed By

[signature] 4/23/84
Startup Manager Approval, Date

Preoperational Test Approval/Release For Performance (Startup #8.1)

System Checkout & Initial Operations Tests

Test Change Notice(s) (Startup #8.2)

7. Preoperational Test Results attached are Approved by the JTG

[signature] 4/23/84
SB Site Operations Manager

William M. Matyok 4/23/84
S&W Advisory Operations Engineer

[signature] 4/23/84
Startup Manager

W Kleing
JTG Chairman

4/23/84
Date

A13522

SHOREHAM
NUCLEAR POWER STATION

July 29, 1982
REVISION 17

START-UP FORM 8.3 PT. 307.004A-2

8. Preoperation Test Results attached are DISAPPROVED for the following reasons: _____

_____

_____

_____

_____

JTG Chairman: Date

9. Authorization granted to STARTUP MANAGER to review complete system status and area status for purpose of negotiating system turnover to Production Department.

JTG Chairman: Date

10. System described herein has been thoroughly reviewed regarding testing, status of outstanding items, etc., and is ACCEPTED by the Production Department for conditional operation.

Startup Manager Date

Plant Manager Date

Distr: Original - Preoperational Test Procedures
Copies - JTG Chairman
Startup Manager
Lead Startup Engineer
Test Engineer
S&W Lead Advisory Engineer
GE Operations Manager
Vice President - Nuclear
OQA Engineer

P-9-12

UNCONTROLLED
For Information Only

TRANSMITTAL RECORD

TO:	J. RIVELLO	DATE:	11/9/83
LOCATION:	SHOREHAM NUCLEAR POWER STATION - UNIT NO. 1	W.O. NO:	44430
BRIEF:	STARTUP TEST PROCEDURE	PROJECT NO.:	K.71.340

ITEM NO.	NO. OF COPIES	BILLS OF MATERIAL, DRAWINGS, SPEC. PERMITS, ETC.	TITLE
	2U	PT.302.004A-2	EMERGENCY DIESEL GENERATOR QUALIFICATION TEST

Remarks: Controlled copy issued to responsible Test Engineer, must be returned to PRC, as Test Engineers responsibility changes.

TCN #1 4/6/84 C. Slater

	TYPE	ITEMS
G. BISHOP (G.E.)	U	1 Ea.
L. BETTENHAUSEN (NRC)	U	1 Ea.
C. SLATER (PRC)	U	2 Ea.
C. SLATER (PRC)	O	1 Ea.
E.J. YOUNGLING /T.E.	C	1 Ea.
M.W. HERLIHY /L.S.E.C	C	1 Ea.

O - ORIGINAL C - CONTROLLED
WC - WORKING COPY U - UNCONTROLLED

Department: LILCO STARTUP
By: C. SLATER
Transmittal Number: 1021 9

Forwarded To:	By:	Date:
Remarks:		

FC-7017 4

A13524

P-9-13

UNCONTROLLED
For Information Only

SHOREHAM I
NUCLEAR POWER STATION
STARTUP FORM 8.1

REVISION 0

Preoperational Test Approval/Release

For Performance

1. System No. R43A
2. Preoperational Test No. PT.307.004A-2
3. System: Emergency Diesel Generator 101
   Qualification Preoperational Test
4. Test Engineer: William J. Cook
5. Lead Startup Engineer: M. W. Herlihy
6. Attached Preoperational Test Procedure is submitted for your Approval of content, format, acceptability and/or revision.

   JTG Meeting Date Scheduled — Startup Manager — Date

7. Preoperational Test Approved by Operational Q.A.

   Operational QA Engineer — Date

8. Preoperational Test Approved by JTG for content, format, acceptability and/or revision.

   G.E. Site Operations Mgr.

   S&W Advisory Operations Engr

   Startup Manager

   Approval: JTG Chairman — Date
   (constitutes JTG approval)

   Disapproval: JTG Chairman

   Date

Remarks

A13525

9. Attached Preoperational Test Procedure and completed Check-out & Initial Operations Tests with pertinent documents and comments are submitted for your "RELEASE FOR PERFORMANCE".

William J Cook — Test Engineer
4/7/84 — Date

10. Preoperational Test attached RELEASED FOR PERFORMANCE.

Approval: _____
Lead Startup Engineer

4/9/84
Date

Disapproval: _____
Lead Startup Engineer

_____
Date

Remarks*: _____

*Recommendations For Partial Preop. Test, Revisions, Clarification, etc.

Distr: Original - Startup Manager
Copies - Plant Manager, S&W Lead Advisory Engineer, GE Operations Manager, Lead Startup Engineer, LILCO Operational Q.A.

P-9-15

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For Information Only

PROCEDURE REVISION TRANSMITTAL - ATTACHMENT 2
PT.307.004A-2

September 12, 1983

E. J. Youngling

RECOMMENDATION TO VOID EDG PREOPERATIONAL TEST RESULTS
Shoreham Nuclear Power Station - Unit 1
W. O. No. 44430/48923

In view of the recent crankshaft failure of the 102 emergency diesel generator, a recovery program has been established to teardown and inspect all three (3) emergency diesel generators. This is being done to determine the extent of the crankshaft problems with these engines. This requires that all three (3) engine/generators be removed from their rooms, be totally disassembled, reassembled with the appropriate new parts and reinstalled back into their respective rooms.

Based on the above scope of work, it is recommended that the following preoperational test results be voided:

PT.307.001A-1	EDG-101 Mechanical Preop Test
PT.307.001B-1	EDG-102 Mechanical Preop Test
PT.307.001C-1	EDG-103 Mechanical Preop Test
PT.307.003A-1	EDG-101 Electrical Preop Test
PT.307.003B-1	EDG-102 Electrical Preop Test
PT.307.003C-1	EDG-103 Electrical Preop Test
PT.307.004A-1	EDG-101 Reliability Qualification
PT.307.004B-1	EDG-102 Reliability Qualification
PT.307.004C-1	EDG-103 Reliability Qualification
PT.307.005A	EDG-101 Load Test
PT.307.005B	EDG-102 Load Test
PT.307.005C	EDG-103 Load Test

These preoperational test results should be maintained on file with their cover sheets marked void or some suitable means to identify this action. It is also recommended that the above preoperational tests be revised accordingly to incorporate, as required, the many test change notices and exceptions taken against them.

In closure, I suggest that the above recommendations be presented to the full Joint Test Group for consideration. The minutes of this meeting would provide the formal direction to the Startup Organization for proceeding with these actions in accordance with the Startup Manual.

William M. Matejek
Project Advisory Engineer

WMM:eom
cc: W. R. Klein
M. W. Herlihy

JTG APPROVED NOV 8 1983

A13527

P-9-16

Revision 17
July 29, 1982

UNCONTROLLED
For Information Only

PROCEDURE REVISION TRANSMITTAL

Messrs: Startup Manager
Plant Manager
S&W Lead Advisory Engineer
GE Operations Manager
Operating Quality Assurance Engineer

Date: October 12, 1983

Procedure Type: Preoperational Test

Approved Procedure # PT.307.004A-1

Revised Procedure # PT.307.004A-2

Procedure Title: EMERGENCY DIESEL GENERATOR QUALIFICATION TEST

Shoreham Nuclear Power Station - Unit 1

The subject approved procedure has been revised (the new revision number is indicated above) and is being transmitted for your review in black on pink form. The procedure changes are identified in the margin. Listed below are the changes and the reasons for the changes. See attachments to this letter.

This transmittal will serve as the approval form and will be routed to OQA, if required, for signoff before being submitted to the JTG for approval.

After the change has been approved, revised pages will be issued in black on white form.

Should you have any comments, please notify the undersigned before: October 26, 1983

E. J. Youngling
Test Engineer/Date 10/12/83

Not Required: _____
Lead Startup Engineer

OQA Approved: 11/7/83 Required: 11/7/83
Lead Startup Engineer

11/8/83
GE Operations Manager

Approved: 11/8/83
JTG CHAIRMAN Date

William M. Mateyka 11/8/83
S&W Lead Advisory Engineer

Remarks: _____

R. Russell for EJY 11-8-83
Startup Manager

FIGURE 4.16

JTG APPROVED NOV 8 1983

A13528

P-9-17

PT.307.004A-2

PROCEDURE REVISION TRANSMITTAL
ATTACHMENT 1
PT.307.004A-2

Revision 2 to PT.307.004A incorporates TCN numbers 1 and 2 and appropriate exceptions taken against Revision 1. In addition, certain procedural requirements were added such as requirements to perform cylinder head leak check at 4, 8, and 12 hours after shutdown, update references, measure diesel room humidity before and during testing, and document baseline diesel generator performance at 0.8 power factor.

P-9-18

UNCONTROLLED
For Information Only

TRANSMITTAL RECORD

	J. RIVELLO	DATE 04-06-83
LOCATION:	SHOREHAM NUCLEAR POWER STATION - UNIT NO. 1	W.O. NO: 44430
BRIEF:	STARTUP TEST PROCEDURE	PROJECT NO.: K.71.340

ITEM NO.	NO. OF COPIES	BILLS OF MATERIAL, DRAWINGS, SPEC, PERMITS, ETC.	TITLE
	2U	PT.307.004A-1	EMERGENCY DIESEL GENERATOR QUALIFICATION

Remarks: Controlled copy issued to responsible Test Engineer, must be returned to PRC, as Test Engineers responsibility changes.

TCN #1 @ 6/13/83
TCN #2 @ 6/15/83

	TYPE	ITEMS
G. BISHOP (G.E.)	U	1 Ea.
L. BETTENHAUSEN (NRC)	U	1 Ea.
C. SLATER (PRC)	U	2 Ea.
C. SLATER (PRC)	O	1 Ea.
W.H. COOK /T.E.	C	1 Ea.
W.H. KEHM /L.S.E.C		1 Ea.

O - ORIGINAL
WC - WORKING COPY
C - CONTROLLED
U - UNCONTROLLED

Department: LILCO STARTUP
By: C. SLATER / J. BARONE
Transmittal Number: 9942

Forwarded To:	By:	Date:
Remarks:		

A13530

UNCONTROLLED
For Information Only

Revision 17
July 29, 1982

PROCEDURE REVISION TRANSMITTAL

Date: 2/22/83

Messrs: Startup Manager
Plant Manager
S&W Lead Advisory Engineer
GE Operations Manager
Operating Quality Assurance Engineer

17

Procedure Type: Preoperational Test

Approved Procedure # PT.307.004A

Revised Procedure # PT.307.004A-1

Procedure Title: Emergency Diesel Generator Qualification

Shoreham Nuclear Power Station - Unit 1

The subject approved procedure has been revised (the new revision number is indicated above) and is being transmitted for your review in black on pink form. The procedure changes are identified in the margin. Listed below are the changes and the reasons for the changes.

This transmittal will serve as the approval form and will be routed to OQA, if required, for signoff before being submitted to the JTG for approval.

After the change has been approved, revised pages will be issued in black on white form.

Should you have any comments, please notify the undersigned before: March 4, 1983

William J Cook 2/22/83
Test Engineer/Date

17

Not Required: _____
Lead Startup Engineer

OQA Approved: [signature] 4/5/83 Required: W. R. Klein 4/5/83
Lead Startup Engineer

[signature] 4/5/83
GE Operations Manager

Approved: [signature] 4/5/83
JTG CHAIRMAN Date

William M Mateyek 4/5/83
S&W Lead Advisory Engineer

Remarks:

VOID

[signature] 4/5/83
Startup Manager

FIGURE 4.16

P-9-20

✓ UNCONTROLLED
For Information Only

TRANSMITTAL RECORD

TO: J. RIVELLO	DATE 11/9/81
LOCATION: SHOREHAM NUCLEAR POWER STATION - UNIT 1	W.O. NO 4430
BRIEF: STARTUP TEST PROCEDURE	PROJECT NO K.71.340

ITEM NO.	NO. OF COPIES	BILLS OF MATERIAL, DRAWINGS, SPEC, PERMITS, ETC.	TITLE
2U		PT.307.004A	EMERGENCY DIESEL GENERATORS QUALIFICATION

Remarks: Controlled copy [illegible]d to responsible Test Engineer, must be returned to PRC Test Engineers responsibility changes.

	TYPE	ITEMS
✓ R. PULSIFER (G.E.)	U	1 Ea.
✓ L. Bettenhausen (NRC)	U	1 Ea.
✓ C. Slater (PRC)	U	2 Ea.
✓ C. Slater (PRC)	O	1 Ea.
✓ Wm J. Cook /T.E.	C	1 Ea.
✓ Wm R. Klein /L.S.E.	C	1 Ea.

O - ORIGINAL C - CONTROLLED
WC - WORKING COPY U - UNCONTROLLED

Department: LILCO STARTUP
By: C. SLATER
Transmittal Number: 9536

Forwarded To:	By:	Date:
Remarks:		

PC-2012-4

A13532

P-9-21

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For Information Only

SHOREHAM I
NUCLEAR POWER STATION
STARTUP FORM 8.1

Oct. 1, 1975
REVISION 0

Preoperational Test Approval/Release

For Performance

1. System No. R43
2. Preoperational Test No. PT 307.004A
3. System: EMERGENCY DIESEL GENERATORS QUALIFICATION
4. Test Engineer: William J Cook
5. Lead Startup Engineer: William R [illegible]
6. Attached Preoperational Test Procedure is submitted for your Approval of content, format, acceptability and/or revision.

   November 9, 1981 — JTG Meeting Date Scheduled

   [signature] — Startup Manager — 11/2/81 — Date

7. Preoperational Test Approved by Operational Q.A.

   [signature] — Operational QA Engineer — 11/2/81 — Date

8. Preoperational Test Approved by JTG for content, format, acceptability and/or revision.

   [signature] — S.E. Site Operations Mgr. — 11/9/81

   [signature] — S&W Advisory Operations Engr — 11-9-81

   [signature] — Startup Manager — 11-9-81

   Approval: [signature] — JTG Chairman — 11/9/81 — Date
   (constitutes JTG approval)

   Disapproval: _____ — JTG Chairman

   _____ — Date

Remarks _____

JTG APPROVED NOV 9 1981
A13533

P-9-22

UNCONTROLLED
For Information Only
REVISION 0

9. Attached Preoperational Test Procedure and completed Checkout & Initial Operations Tests with pertinent documents and comments are submitted for your "RELEASE FOR PERFORMANCE".

Lead Startup Engineer/Test Engineer _____ Startup Manager _____ Date

10. Preoperational Test attached RELEASED FOR PERFORMANCE.

G.E. Site Operations Mgr

S&W Advisory Operations Engr

Startup Manager

Approval: _____
JTG Chairman
(constitutes JTG approval)

Date

Disapproval: _____
JTG Chairman

Date

Remarks*: _____

*Recommendations For Partial Preop. Test, Revisions, Clarification, etc.

Distr: Original - Startup Manager
Copies - Plant Manager, S&W Lead Advisory Engineer, GE Operations Manager, Lead Startup Engineer, LILCO Operational Q.A.

JTG APPROVED NOV 9 1981

A13534

P-9-23

PT.307.004A-2

TEST ENGINEER'S ANALYSIS REPORT

EMERGENCY DIESEL GENERATOR 101 QUALIFICATION PREOP TEST

This revised Qualification Preoperational Test was "released for performance" on April 9, 1984 subsequent to the crankshaft replacement in the fall of 1983. The purpose of this test was to meet the testing requirements of USNRC Regulatory Guide 1.108, Rev. 1 section C.2.a (9) i.e. to demonstrate the ability of EDG101 to start, accept load, maintain load (greater than 50% of rated load) and to shutdown, without trips, 23 consecutive times.

Documentation of test parameters was accomplished via the use of General Electric's Transient Recording System (GETARS) which monitored and plotted start times and system parameters. GETARS produced numerical data (histograms) at selected periods during each of the 23 engine runs (i.e. start of 1 hour run, ½ hr. interval and 1 hour interval). GETARS plotted all engine shutdowns to verify no anomalies occurred which could have been interpreted as a failure of EDG101. Also during each engine run, operational logs (Appendix D) were maintained utilizing the process computer print out as the instrument of record for KW loads and GETARS as the instrument of record for all other electrical parameters (except Generator Field Voltage and Current) and engine speed. The remaining operating parameters were taken from local and control room indicators. or M&TE instruments. During engine operation, the Run Log (Appendix D) intervals were determined by use of a stop watch (M&TE) and not the engine hour meter.

All twenty-three (23) starts were completed in a successful consecutive manner. The "Quick Start" requirements (engine loaded $>$ 3500 KW $\leq$ 60 seconds) were met during Start 13, as a loading time of 21.4 seconds was obtained. All engine parameters were acceptable for operating conditions and no other items of concern were notes.

There were nine (9) exceptions taken against this procedure. These are summarized below. Full details of these exceptions are contained within the body of the procedure.

EXCEPTIONS 1; 5, 7, 9

These exceptions were taken to identify typographical errors, minor deviations from procedural step, and references that were updated. The "intent" of this procedure was not violated by these exceptions.

A13535

P-9-24

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For Information Only

EXCEPTIONS 2 & 3

These exceptions were taken to identify recorded values (Appendix D) which did not meet acceptable limits (Normal Operating Parameters (Table 1)). Since, these deviations, within acceptable limits, were only slight, they were dispositioned "accept as is" because test results were not impacted.

EXCEPTION 4

This exception was taken to identify that temporary test equipment was not removed because of additional testing requirements. The removal of temporary test equipment is to be tracked by Step 9.2 of PT.307.002-2 (IET) and is not an open item to this procedure.

EXCEPTION 6

This exception was taken to explain that TCN #1 was voided because additional testing requirements will be performed as part of PT.307.003A-2 (EDG101 Electric Preop).

EXCEPTION 8

This exception clarified the interpretation of the Technical Specification surveillance requirement criteria regarding engine loading to 3500 KW in less than 60 seconds (Quick Start).

Based on the results of this test and the above analysis, it is this test engineer's opinion that twenty-three (23) starts were successfully completed in accordance with Regulatory Guide 1.108 Rev. 1 Section C.2.a (9).

William J Cook 4/19/84
William J. Cook
Test Engineer

Francis C Clifford 4/19/84
Francis C. Clifford
Test Results Reviewer

WJC/FCC:jl

A13536

8-9-25

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For Information Only

SHOREHAM I.
NUCLEAR POWER STATION
STARTUP FORM 8.2

May 15, 1980
REVISION 11

TEST CHANGE NOTICE #1 Exception #6

1. System Number: R43
2. Test Procedure Number: PT.307.004A-2
3. System Description: Emergency Diesel Generator 101 Qualification Test
4. Prepared By: R. I. Samson [signature] 4/6/84
   Cognizant System Test Engineer — Date
5. Approved By: [signature] 4/6/84
   Lead Startup Engineer — Date

Item	Test Step and Procedure Page Number Affected	Modification Reason	LILCO System Test Engineer/ Date
1	Insert pages 16a & 16b	Adding Section 8.9 for Post Outage load run.	[signature] 4/10/84
2	Remove page 18. Insert new page 18.	Provide Acceptance Criteria for Section 8.9.	[signature] 4/10/84

6. This form is attached to the original master copy of the test procedure.

Distribution:
ORIGINAL: Project Resource Center
COPY TO: Test Procedure (Test Engineer Copy)
Cognizant Lead Startup Engineer
Startup Manager
JTG (For JTG approved procedures only)

Approval Initials (if required): WMM 4/6/84 [signature] 4/6/84
[signature] 4/6/84 JTR 4/6/84
[signature] 4/6/84

A13537

10.0 ACCEPTANCE CRITERIA

10.1 The Emergency Diesel Generator 101 successfully completed 23 consecutive valid tests with no failures as defined in Regulation Guide 1.108, Rev. 1 paragraph C.2.e. A valid test shall be defined as achieving a successful start, followed by a loading to at least 50% of continuous rating and continued operation for at least one hour, as per reference 2.26.

Verified Date

OQA Witness Date

NOTE: All charts will be available to backup readings of Appendix D. These charts will be submitted to the PRC with the approved procedure.

PER TCN # 1

P-9-27

EMERGENCY DIESEL GENERATOR QUALIFICATION PREOPERATIONAL TEST

Section	Description	Page
1.0	Purpose	1
2.0	References	1
3.0	Prerequisites	4
4.0	Precautions	5
5.0	Initial Conditions	7
6.0	Environmental Conditions	13
7.0	Test Equipment	13
8.0	Procedure	14
9.0	System Return to Normal	17
10.0	Acceptance Criteria	18
11.0	Exception Sheet	19
Table I	EDG Normal Operating Parameters	20
Table II	EDG Shutdown/Prestart Parameters	21
Table III	Test Equipment Log	22
Appendix A	Valve Line-up Sheet	23
Appendix B	System Component Power Supply Checklist	27
Appendix C	EDG Qualification Test Start Sign Off Sheet	29
Appendix D	EDG Qualification Log	32
Appendix E	Diesel Generator Run Log	35
Appendix F	Engine Cylinder Pressure Log	37

2

TOTAL PAGES 37

P-9-28

1.0 PURPOSE

1.1 The purpose of this procedure is to verify the qualification of emergency diesel generator 101 with respect to starting and loading reliability following repairs due to the failure of the crankshaft. | 2

1.2 This procedure will consist of starting the diesel, loading the diesel to at least 1,750 kW, and operating the diesel at load for at least one hour 23 consecutive time without a failure.

1.3 This procedure in conjunction with PT.307.003A-2 and PT.307.002 satisfies the intent of Regulatory Guide 1.108 (August 1977), Periodic Testing of Diesel Generator Units used as On-Site Electrical Power Systems at Nuclear Power Plants. | 2

1.4 At least one of the qualification runs will be used to demonstrate that the diesel generator is capable of performing its monthly surveillance requirement per Reference 2.27. | 2

NOTE: All equipment mark numbers are prefixed by 1R43, unless otherwise noted.

2.0 REFERENCES

2.1 FSAR Sections 8.3 and 14.1.3.7.24

2.2 FM-44A-15, Fuel Oil Transfer System

2.3 FM-44B-4, Diesel Generator Air Start System

2.4 LILCO Startup Manual

2.5 LILCO Safety Manual

2.6 ESK-5R2209-14, Elementary Diagram, Emergency Bus Normal Supply ACB 101-1

2.7 ESK-5R2210-15, Elementary Diagram, Emergency Bus Reserve Supply ACB 101-2 | 2

2.8 ESK-5R4301-19, Elementary Diagram, Emergency Generator Breaker ACB 101-8

2.9 ESK-6R4301-6, Elementary Diagram, G-101 Starting Air Compressors

2.10 ESK-6R4304-11, Elementary Diagram, G-101 Fuel Oil Transfer Pump

JTG APPROVED NOV 8 1983

A135.10

2.11 ESK-6R4307-~~5~~6, Elementary Diagram, G-101 Before and After Lube Oil Pump and Heater

2.12 ESK-6R4310-~~5~~6, Elementary Diagram, G-101 Jacket Water Heater and Pump

2.13 ESK-6R4313-2, Elementary Diagram, Diesel Generator G-101 Protection

2.14 ESK-8R4301-~~13~~14, Elementary Diagram, Emergency Diesel Generator G-101 Protection

2.15 ESK-8R4304-7, Elementary Diagram, Emergency Diesel Synchronizing Circuit

2.16 ESK-8R4305-~~11~~13, Elementary Diagram, G-101 Voltage Regulator

2.17 ESK-11R4301-~~6~~7, Elementary Diagram, Emergency Diesel Generator 101 Sheet 1

2.18 ESK-11R4302-~~12~~14, Elementary Diagram, Emergency Diesel Generator 101 Sheet 2

2.19 ESK-11R4307-~~5~~7, Elementary Diagram, Fuel Booster Pump

2.20 Manufacturer's Drawings

2.20.1 11600.02-1.12-5H, Lube Oil Piping Schematic

2.20.2 11600.02-1.12-6M, Starting Air Piping Schematic

2.20.3 11600.01-1.12-7~~L~~N, Jacket Water Piping Schematic

2.20.4 11600.02-1.12-74M, Engine Pneumatic Schematic

2.20.5 11600.02-1.12-75~~L~~M, Panel Pneumatic Schematic

2.20.6 11600.02-1.12-~~91C~~73J, Panel Installation

2.20.7 11600.02-1.12-93~~L~~M, Panel Electrical Schematic

2.20.8 11600.02-1.12-94P, Panel Electrical Schematic

2.20.9 11600.02-1.51-94J, Front View Layout for BOP Main Control Board

2.20.10 11600.02-1.12-43G, Wiring Diagram Static Exciter

2.21 System Description (S/D 1020.307), Emergency Diesel Generators Revision 1

2

A135-11

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2.22 Operating Procedure (SP.23.307.01), Emergency Diesel Generators Revision ~~5~~ 8 ATS

EXCEPTION #1

2.23 Operating Procedure (SP.23.309.01), 4,160 V Emergency Bus Distribution Revision 4

2.24 Shoreham Specification SH1-89, Diesel Generator Sets, Revision 2, January 26, 1983

2.25 Manufacturer's Instruction Manual, R43-1 Volume I, II and III

2.26 Regulator Guide 1.108 "Periodic Testing of Diesel Generator Units as on site Electrical Power Systems at Nuclear Plant". Rev. 1 August, 1977. (Paragraphs C.2.a.9 and C.2.e)

2.27 SNPS Proof and Review Copy Tech Spec 3.8.1.1 and 4.8.1.1.2 dated July 22, 1983.

2.28 Operating Procedure (SP.27.307.02) Emergency Diesel Generator Cylinder Head Leak Detection Test, Revision 1.

NOTE: All personnel signing this procedure must fill out the following information for future reference: 2

Name (Written/Printed)	Initials (Written/Printed)	Title/ Organization	Level of Qualification I, II, III
[illegible] / L. DiRocco	L.D / L.D	TE/LSU	II
[illegible] / A.J. Semma	AJS / ATS	TE/LSU	II
[illegible] / H. Raymond Salk	HRS / H.R.S.	TE/LSU.	II
[illegible] / E. Hassell	EH / E.H.	OQA	II
[illegible] / C. Nowinski	CSN / CSN	OQA	II
[illegible] / M.D Bove'	MDB / MDB	TE/LSU	II
[illegible] / James A. Mah[illegible]	JAM / JAM	OQA	II
Raymond A Vanderwerf [illegible]	RAV / RAV	TE/LSU	II
[illegible] / K.Y.A[illegible]	KYA / KYA	TE/LSU	II
[illegible] E.S. Willingham[illegible]	ESL / ESL	TE/LSU	II
F.C. Clifford / F.C. Clifford	FCC / FCC	TE/LSU	II

A13542

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P-9-31

PT. 307.004A-2

NAME (printed)	NAME (signed)	INITIALS PRINTED/WRITTEN	TITLE	LEVEL OF QUALIFICATION
MICHAEL M GIORGIANNI	[signature]	MMG / MMG	OQA	II
Terry Moreland	[signature]	TM / TM	Tech / ESU	I
Stephen Cumming	[signature]	SC / SC	Tech LSU	I
Tony C. Massetti	[signature]	TCM / TCM	Tech LSU	I
Al MEYER	[signature]	AM / AM	TECH LSU	I
RAYMOND SIMON	[signature]	RS / RS	Tech LSU	I
PAUL WARNTZ	[signature]	P.W / P.W	TECH LSU	I
ROBERT T SMITH JR	[signature]	RTS / RTS	TECH LSU	I
Richard T. Quit	[signature]	RTQ RTQ	Tech LSU	I
DOUGLAS E. Campbell	[signature]	DEC DEC	Foreman Techs. / LSU	II
WILLIAM P. Yerkes	[signature]	WPY / WPY	TECH / LSU	I
REGINALD A VANDERMAS	[signature]	RAV RAV	Tech LSU	II
A. C. Tucker	[signature]	AT [illegible]	OQA	III

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A13543

3.0 PREREQUISITES

3.1 The master punch list contains no deficiencies that will affect this test. List any exceptions in Section 11.0. | 2

Verified 4/10/84 Date

3.2 Verify applicable C&IO tests have been performed, and have been approved.

Verified 4/10/84 Date

3.3 The Lead Startup Engineer has released test for performance (SU Form 8.1).

Verified 4-10-84 Date

3.4 Emergency Diesel Generator Mechanical Preoperational Test Procedure PT.307.001A-2 and the Emergency Diesel Generator Electrical Preoperational Test Procedure PT.307.003A-2 have been completed. | 2

Verified 4/10/84 Date

3.5 Notify the Watch Engineer and OQA prior to performing test.

Verified 4-3-84 Date

3.6 Notify the LILCO System Operator prior to performing test.

Verified 4-10-84 Date

3.7 Notify DeLaval representative that this procedure is about to commence.

Verified 4-13-84 Date

3.8 Establish communication between an operator at the Emergency Diesel Control Panel and an operator in the Main Control Room at the Emergency Diesel Generator portion of Panel 1H11*MCB-01.

Verified 4-10-84 Date

3.9 Diesel engine inputs to the process computer need not be verified if the computer is not available.

Computer (is)/is not available.

B. J. Sommer 4-10-84
Verified Date

3.10 Ensure all documents used at time of this test are of the latest revision.

Exception #1
Verified Date

3.11 Verify valve lineup in accordance with Appendix A.

B. J. Sommer 4-10-84
Verified Date

4.0 PRECAUTIONS

4.1 A sudden increase in lubrication oil temperature and amount of vapor from the crankcase ventilating discharge can indicate some overheated internal part of the engine. This could signal an approaching piston seizure and a possible crankcase explosion. A sudden increase in lube oil temperature requires immediate unloading and shutdown of the diesel.

4.2 Sustained operation of the diesel below 875 KW (critical load) should be avoided. However, when unloading unit, reduce load between 100 - 200 KW prior to opening diesel generator output breaker.

4.3 Sustained operation of the diesel in the range of 250 to 400 rpm (critical speed) should be avoided.

4.4 When starting a cool engine after shutdown, observe the manufacturer's starting procedure in Section 4 of Volume I of the manufacturer's instruction manual.

4.5 Ear protection should be worn by personnel in the Diesel Generator Room during diesel operation.

4.6 An operator should continuously monitor the operation of the diesel and auxiliary equipment throughout the entire test. At least one set of log readings should be taken whenever the diesel is started.

4.7 Diesel Room air temperature and humidity should be frequently monitored during diesel testing (especially in the vicinity of the air dryers and fuel oil day tanks).

4.8 Any fuel oil or lube oil spills should be wiped up as soon as possible to avoid fire hazards.

4.9 Portable fire extinguishing equipment should be readily available during diesel testing.

4.10 When leaving a diesel generator room, ensure that the fire doors between individual diesel generator rooms are closed.

4.11 Lube oil strainers should be cleaned when the differential pressure across them reaches 20 psid.

4.12 Lube oil filters should be changed when the differential pressure across them reaches 20 psid.

4.13 Fuel oil strainers should be cleaned when the differential pressure across them reaches 2.0 psid.

4.14 Fuel oil filters should be changed when the differential across them reaches 20 psid.

4.15 Lube oil pressure should not exceed 65 psig, or drop below 50 psig.

4.16 Jacket water pressure should not exceed 30 psig, or drop below 20 psig.

4.17 Fuel oil pressure should not exceed 35 psig.

4.18 Lube oil and jacket water temperatures should not exceed 200°F.

4.19 The exhaust temperature limits for sustained operation is 150°F between any two cylinders at full load. The maximum temperature limit at any load is 1100°F. Should these limits be reached, reduce load and notify Test Engineer.

4.20 For sustained operation, 200 psig is maximum firing pressure difference between any two cylinders at any load. Should these limits be reached, reduce load and notify Test Engineer.

4.21 Turbocharger lube oil pressure should not drop below 25 psig.

4.22 If the diesel is to be shutdown for greater than 4 hours during any portion of this test, perform a cylinder head leakage surveillance per Reference 2.28 (SP.27.307.02). 2

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5.0 INITIAL CONDITIONS

5.1 Engine 101 is shutdown ready for testing and its output breaker 1R22*SWGR101-8 ACB is open.

A.J. Sommer 4-10-84
Verified Date

5.2 Verify equipment is energized in accordance with Appendix B, System Component Power Supply Checklist, by initialing next to each step.

A.J. Sommer 4-10-84
Verified Date

5.3 Service Water System is in operation to supply cooling water to the Jacket Water Cooler.

A.J. Sommer 4-10-84
Verified Date

5.4 Emergency Diesel Generator 101 HVAC System is in operation.

A.J. Sommer 4-10-84
Verified Date

5.5 Fire Protection (Cardox System) is available in diesel room 101, or Fire Watch has been provided in case of fire.

A.J. Sommer 4-10-84
Verified Date

5.6 Verify *ENG101 has been barred over using barring device within one hour of first diesel start, and no presence of water was found.

A.J. Sommer 4-10-84
Verified Date

5.7 Diesel Generator Fuel Oil Storage and Transfer System is in operation.

A.J. Sommer 4-10-84
Verified Date

5.8 At emergency switchgear 1R22*SWG101, check the following at diesel generator supply breaker ACB 101-8 compartment:

5.8.1 Local control switch midposition.

A.J. Sommer 4-10-84
Verified Date

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5.8.2 Circuit Breaker closing springs charged.

A.J. Sonnma 4-10-84
Verified Date

5.8.3 GREEN (Open) indication shown for breaker.

A.J. Sonnma 4-10-84
Verified Date

5.8.4 Primary protection lockout relay 86P-101-8 reset.

A.J. Sonnma 4-10-84
Verified Date

5.8.5 Backup protection lockout relay 86B-101-8 reset.

A.J. Sonnma 4-10-84
Verified Date

5.9 Place or check the following switches at the emergency diesel generator *G101 local diesel control panel *PNL-DG1 in the positions indicated:

5.9.1 Mode selector switch in REMOTE.

A.J. Sonnma 4-10-84
Verified Date

5.9.2 Before and after LO pump/heater (*P-226A) and *H-015A in AUTO.

A.J. Sonnma 4-10-84
Verified Date

5.9.3 Fuel booster pump *P-109A in AUTO.

A.J. Sonnma 4-10-84
Verified Date

5.9.4 Jacket Water pump/heaters (*P-238A and *H-014A and D in AUTO.

A.J. Sonnma 4-10-84
Verified Date

5.9.5 Both starting air compressors *C-003A and *C-004A in AUTO.

~~[illegible]~~ A.J. Sonnma 4-10-84
Verified Date

JTG APPROVED NOV 8 1983

A13548

5.9.6 Primary fuel oil transfer pump *P-201A in AUTO.

A J Somma 4-16-84
Verified Date

5.9.7 Secondary fuel oil transfer pump *P-202A in AUTO.

A J Somma 4-16-84
Verified Date

5.9.8 White control power available light ON.

A J Somma 4-16-84
Verified Date

5.10 Verify starting air pressure as indicated on local diesel control panel *PNL-DG1 is greater than 220 psig.

A J Somma 4-16-84
Verified Date

5.11 Verify Before and After Lube Oil Pump *P-226A is operating.

A J Somma 4-16-84
Verified Date

5.12 Verify Jacket Water Heater Circulating Pump *P-238A is operating.

A J Somma 4-16-84
Verified Date

5.13 Verify lube oil temperature is above 140°F.

A. J. Somma 4-16-84
Verified Date

5.14 Verify jacket water standpipe level is greater than 10 o'clock and jacket water temperature is greater than 140°F. 2

A J Somma 4-16-84
Verified Date

5.15 At diesel generator *G-101 hydraulic actuator/governor, record the following settings:

5.15.1 Speed Droop (0 - 10) 0 Initials AJS

A13519

5.15.2 Load Limit Max Initials AJS
(Fuel Setting)
(Min - Max)

5.15.3 Speed Setting 14.08 Initials AJS
(0 - 23)

5.16 Check air dryers *AD-002A and *AD-003A to ensure they are both running and that the cooling fin air passages are not blocked.

A.J. Somma 4-10-84
Verified Date

5.17 Ensure the fire doors between the diesel generator rooms are closed.

A.J. Somma 4-10-84
Verified Date

5.18 At the diesel generator *G-101 section of control room control panel 1H11*MCB-01, place or verify the following switches are in the positions indicated:

5.18.1 Diesel generator *G-101 start control switch in AUTO.

A.J. Somma 4-10-84
Verified Date

5.18.2 *G-101 governor speed changer in mid position.

A.J. Somma 4-11-84
Verified Date

5.18.3 Bus 101 program reset to RESET.

A.J. Somma 4-10-84
Verified Date

5.18.4 Bus 101 program test switch in NORMAL.

A.J. Somma 4-10-84
Verified Date

5.18.5 *G101 voltage regulator control switch in mid position.

A.J. Somma 4-10-84
Verified Date

5.18.6 Jacket Water cooler *E-013A outlet valve 1P41*AOV-016A in AUTO.

A. J. Somma 4-10-84
Verified Date

5.18.7 125V Bus A dc volts greater than or equal to 125 volts.

A. J. Somma 4-10-84
Verified Date

Earl Howell 4/10/84
OQA Witness Date

5.18.8 125V dc Bus A battery ground detector lights are both dim and alarm point 0357 (125V Bat A Ground) is not annunciated.

A. J. Somma 4-10-84
Verified Date

Earl Howell 4/10/84
OQA Witness Date

5.19 Verify emergency bus 101 is being supplied from the NSST (101-1 closed) ✓ or RSST (101-2 closed) _____. Check one. | 2

A. J. Somma 4-10-84
Verified Date

5.20 Verify the Honeywell Visi recorder and/or the GE Transient Analysis Response Computer is connected to record the following 7 inputs as follows: | 2

Channel 1 - Engine Speed (RPM) @ output of tachometer
Channel 2 - Generator AC Voltage @ *PNLGP1
Channel 3 - Generator AC Current (Amps) @ 1H11*MCB01
Channel 4 - Generator Load (Watts) @ 1H11*MCB01
Channel 5 - Generator ACB 101-8 closure @ SWGR 101-8
Channel 6 - Diesel start from start circuit Exception #7
Channel 7 - Generator freq. from 1H11*MCB01

Indicate: Visirecord _____, GETARS ✓ or Both _____ recording inputs. | 2

A. J. Somma 4-10-84
Verified Date

5.21 Wire a temporary selector switch (capable of handling 6 RTD's) to the Generator Winding RTD's. Connect the output off the selector switch to a digital volt meter. This setup will be used to determine the hottest Generator winding temperature. Record temporary hookup in SNPS lifted lead and jumper program.

[signature] 4/10/84 | 2
Verified Date

5.22 Verify no abnormal alarms are initiated, which would prevent a successful start.

[signature] 4-10-84
Verified Date

5.23 Connect a micromite to the output of the generator pedestal bearing RTD to permit measurement of bearing temperature. Record any necessary temporary connections in the lifted lead and jumper program. | 2

[signature] 4/10/84
Verified Date

5.0 ENVIRONMENTAL CONDITIONS

6.1 Diesel room temperature below 120°F.

6.2 Diesel room humidity below 80% relative humidity.

At start of test:

Diesel Room Temperature: 90 °F

Diesel Room Humidity : 18 %

Q/S 4-10-84
Verified Date

2

7.0 SPECIAL TEST EQUIPMENT

7.1 Stop watches.

7.2 High speed visirecorder with at least 7 channels.

7.3 Getars computer (if available).

7.4 Temporary RTD measuring switch box.

7.5 Psychrometer

7.6 Digital Voltmeter

7.7 Micromite

2

NOTE: All above used test equipment should be recorded on Table III.

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8.0 PROCEDURE

NOTE: All KVAR values specified are lagging vars. | 2

8.1 All prerequisites in Section 3.0 and initial conditions in Section 5.0 have been satisfied. Any exceptions are listed in the Exception Section, Section 11.0.

Verified 4-10-84
Date

QQA Witness 4-10-84
Date

8.2 Verify that the emergency diesel shutdown parameters were recorded on Appendix D just prior to the next diesel start, are within tolerances per Table II, and engine is ready to be restarted. (If engine has been shutdown for more than 12 hours the initial conditions of paragraph 5.0 have been reverified).

8.3 Start emergency diesel generator 101 and load to at least 1750KW and 700 KVars.

8.4 Run the diesel generator at load for at least one (1) hour while completing all the data in Appendix D. The one (1) hour run at load shall be timed using a stop watch.

NOTE: The time to start, load and shutdown the engine shall not be included in the one hour. | 2

8.5 Reduce generator load to 100 - 200 KW, run at this load for 2 min to allow unit cooldown, open its output breaker 101-8 and then shutdown the diesel engine by depressing stop pushbutton.

NOTE: Prior to shutdown from the 23rd start, perform step 8.8.

8.6 Verify that the engine was successfully started, loaded to constitute a valid test and that the data recorded on Appendix D conforms to the ranges of Table I and Table II.

8.7 Repeat steps 8.2 through 8.6 until twenty three consecutive successful starts and qualification runs are accomplished.

NOTE 1: Sign-off of the above steps will be done in Appendix C. Should a start be considered a failure (per reference 2.26) indicate such on Appendix C, correct the problem and begin the first qualification start again. Any failures will be explained as an exception in Section 11.0.

P-9-43

8.7 - continued

Exception #8

NOTE 2: At least one of the 23 consecutive starts should verify the diesel generator is capable of being ~~started~~, synchronized, loaded to greater than or equal to 3500KW/1500KVars in less than or equal to 60 seconds, and operated with this load for at least 60 minutes.

8.8 Final Baseline Data at Various Diesel Load Levels

8.8.1 Verify the emergency diesel generator is running at approximately full load (3500KW/2625 K Vars) then record running data in Appendix E. | 2

Verified 4/11/84 Date

QQA Witness 4/11/84 Date

8.8.2 While still at full load, record cylinder pressure data in Appendix E. | 2

Verified 4/11/84 Date

QQA Witness 4/11/84 Date

8.8.3 Reduce load to approximately 75% load, (2600KW/2000 K Vars) long enough for parameters to stabilize, then record data in Appendix E. | 2 | 2

Verified 4/11/84 Date

QQA Witness 4/11/84 Date

8.8.4 Reduce diesel generator load to approximately 50% (1750 KW/1300 K Vars), run long enough to stabilize parameters, then record data in Appendix E. | 2 | 2

Verified 4/11/84 Date

QQA Witness 4/11/84 Date

8.8.5 Reduce diesel generator load to approximately 25% (900 KW/650 K Vars), run long enough to stabilize parameters, then record data in Appendix E. | 2

Verified 4/11/84 Date | 2

QA Witness 4/11/84 Date

8.8.6 Shutdown diesel generator in accordance with SP.23.307.01, paragraph 8.1.6 and leave engine in standby or as directed by test engineer.

Verified 4/11/84 Date

TCN #1

PT.307.004A-2

8.9 Post Outage Load Run (5 hours)

8.9.1 Start the Diesel Generator and parallel to its emergency bus. Load the Diesel to approximately 3500KW and 2000 KVARS as monitored by the main control room meters. Establish engine equilibrium conditions prior to continuing test.

Verified ____________ Date

OQA Witness ____________ Date

8.9.2 Block the governor load limit setting on the hydraulic actuator. Raise the electric speed setting above 4000KW. Slowly raise the load limit until the load stabilizes at 3900KW + 0.25% - 1.0% (i.e. load between 3861KW and 3910KW) as measured by the watt hour meter over a minimum three minute time interval. The control room operator should simultaneously increase the Var loading to obtain a final reading between 2800 KVARS - 2900KVARS.

Verified ____________ Date

OQA Witness ____________ Date

Voided Except 6 JCC 4/12/84

OQA 4/16/84 EX#6 Noted

A13557

P-9-46

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TCN #1

PT.307.004A-2

8.9.3 Run at this load for one hour, recording all parameters in Appendix E every 15 minutes. Cross out the existing step numbers on Appendix E and fill in step no. 8.9.3 for this run. Ensure generator field current does not exceed 305 amps and field resistance is less than .395 ohms.

Verified ______ Date

OQA Witness ______ Date

8.9.4 Reduce load to a value greater than or equal to 3500KW and 1900KVAR. Run at this load for at least four hours. Record all parameters listed in Appendix E every 20 minutes for the first two hours. For the remaining two hours record data every 30 minutes. Cross out the existing step numbers on Appendix E and fill in step no. 8.9.4 for this run.

Verified ______ Date

OQA Witness ______ Date

8.9.5 At the end of the 4 hour run, change the diesel load or shut down the diesel engine as directed by the Test Engineer.

Verified ______ Date

OQA Witness ______ Date

Voided by Except (x)

FCC 4/12/84

OQA 4/16/84

EX#6 NOTED

A13558

9.0 SYSTEM RETURN TO NORMAL

9.1 Place the diesel generator in its normal standby condition as directed by Test Engineer.

Verified 4/12/84 Date

OQA Witness 4/12/84 Date

9.2 Indicate in Appendix A the as left condition of each valve at the completion of this test.

Verified 4/12/84 Date

OQA Witness 4/12/84 Date

9.3 Ensure all temporary test equipment has been removed.

Exception #4 Verified 4/12/84 Date

OQA Witness 4/12/84 Date

9.4 Perform a cylinder head leakage surveillance per SP.27.307.02 (Ref. 2.28) at 4, 8 and 12 hours after shutdown.

After 4 hours: sat ✓ unsat ____

Verified 4/12/84 Date

OQA Witness 4/12/84 Date

After 8 hours: sat ✓ unsat ____

Verified 4/12/84 Date

OQA Witness 4/12/84 Date

After 12 hours: sat ✓ unsat ____

Verified 4/12/84 Date

OQA Witness 4/12/84 Date

2

P-9-48

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TCN #1

PT.307.004A-2

10.0 ACCEPTANCE CRITERIA

10.1 The Emergency Diesel Generator 101 successfully completed 23 consecutive valid tests with no failures as defined in Regulation Guide 1.108, Rev. 1 paragraph C.2.e. A valid test shall be defined as achieving a successful start, followed by a loading to at least 50% of continuous rating and continued operation for at least one hour, as per reference 2.26.

A.J. Lomma 4-12-84
Verified Date

4/16/84
QQA Witness Date

NOTE: All charts will be available to backup readings of Appendix D. These charts will be submitted to the PRC with the approved procedure.

10.2 During the post outage load run, the diesel generator ran continuously for 5 hours at loads of 3900KW (1 hour), and 3500KW (4 hours), (Section 8.9).

TCN #1

Verified Date

Q.A. Noted 4/16/84
QQA Witness Date

Voided by Exception 6 Tec 4/12/84

A13560

11.0 EXCEPTION SHEET

Item	Description of Exception	Initial/ Date	Disposition	Initial/ Date
EXCEPTED #1	STEP 3.10			
	References indicated on		Updated references	
	pages 2 and 3 of		as indicated on pages	
	procedure are not of		2 and 3 of	
	the latest Revision		procedure for test effective Test	
	number.	AJS 4-10-84	Result Accept as is AJS 4-10-84	
EXC. #2	QUAL RUN #'s 12, 13, 14, Data Sheets	MJB	UCCO Grid feed was	
	STEP 8.6 -	4/11/84	transferred from the NST	
	Generator Voltage out of		The RST to support	
	spec per Table I		plant maintenance on	
			The NST. Grid disturbances	
			on the RST feed caused	
			the Generator Voltage	
			to be slightly high	
			No effect on testing.	
			Since this voltage can	
			only be changed by	
			UCCO System load	
			dispatcher, it will be	
			accepted as is MJS 4/11/84	
			[illegible] 4/11/84	

11.0 EXCEPTION SHEET

Item	Description of Exception	Initial/ Date	Disposition	Initial/ Date
Exc #3	Qual Run #14 Data sheets	[illegible]	Due to the small initial	
	Step 8.6	4/11/84	loading (only about 600 KW)	
	JW temp slightly out of		on the Auto UV start	
	spec per Table 5		the JW did not heat up.	
			After syncing to grid and	
			loading to 2000 KW and	
			running at this load the	
			JW temp came into spec	
			Accept as is	[illegible]
			[illegible] 4/16/84	4/11/84
Exc #4	PT 307.004 A-2 page 17	[illegible]	Temporary	
	step 9.3; All Temporary	4/12/84	test equip-	
	~~test equipment~~ will	[illegible]	ment is being	
	not be removed at this		left installed	
	Time.		to support the	
			Integrated Elec.	
			Test (PT 307.002-2)	
			and will be removed	
			when the IET has	
			been successfully	
			Completed	[illegible]
				4/17/84
			TEMPORARY TEST EQUIPMENT [illegible]	
			TO BE REMOVED [illegible]	

UF PT 307.002 [illegible] Shaft [illegible]

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A13582

PT.307.004A-2

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11.0 EXCEPTION SHEET

Item	Description of Exception	Initial/ Date	Disposition	Initial/ Date
5	App D page 2 of 3 / App E page 2 of 2.			
	The Generator Winding Temp	FCC	Typo, description (App D E)	
	is being monitored by RTD	4/12/84	changed to indicate the	
	and the Bearing Temp is		correct temp monitoring	
	being monitored by TE072A		device. Accept as is, does	
			not affect test results	
			FCC	4/16/84
			OQA	4/19/84
6	PT.307.004A-2 TCN #1 page 2 of 4			
	Section 8.9 'Post Outage Load Run (5 hrs)		Post Outage Load Runs	
	The referenced section will not	FCC	will be performed by	
	be performed as part of the	4/12/84	Step/Restart FC and	
	Qual Test (PT.307.004A-2)		TCN #4 to PT.307.004A-2	
			(Engine Electrical Prerequisites)	
			These additional engine runs	
			will be reviewed and	
			approved with PT.307.004A-2	
			Accept as is, Post Outage	
			load runs were initiated	
			by Lilco action to verify the reliability requirements. This is not an open item for this procedure	FCC 4/16/84
			OQA	4/16/84

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A13563

11.0 EXCEPTION SHEET

Item	Description of Exception	Initial/ Date	Disposition	Initial/ Date
7	Step 5.20 Channel #6			
	GETARS did not monitor the diesel start automatically	[illegible]	GETARS operator will coordinate all DG starts with Control Room operator and will manually initiate an event marker to indicate when start occurred. Accept as is [illegible]	[illegible] 6/19/84

11.0 EXCEPTION SHEET

Item	Description of Exception	Initial/ Date	Disposition	Initial/ Date
8	Step 8.7 Note 2:			
	The start time is	[illegible]	The Tech Spec	
	incorrectly included in	4/17/94	Surveillance Requirements	
	the "Quick Start"		(Section 4.8.1.1.2.a.5)	
	(60sec.) criteria.		do not include the	
			start time in the	
			"Quick Start" requirements	
			as attached sheet.	
			[illegible] 4/19/94	
			[illegible] 4/19/94	

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Test Procedure # PT.307.004A-2

EXCEPTION SHEET
Test Procedure Section # 11.0
Page 6 of 6

Description of Exception	Init./ Date	Disposition	Init./ Date
Exception 9			
Appendix A & B			
TK 802 Fill and Drain Valve have incorrectly referenced valve number	JEC 4/10/94	Typo, the correct valve are #02V-0218A (Fill) and #02V-3216A (Drain). Accept as is, Ref Drawing 1.12-74 JEC 4/10/94	#'s
P201A Discharge valve has incorrectly referenced valve number	JEC 4/10/94	Typo, the correct valve # is #02V-0202A. Accept as is, Ref Drawing MPSL-448-9 JEC 4/10/94	
Power Supply for PNL-A1 and 1R22#SUCR101 is incorrectly referenced. CKT 5 for 125 V DC for DC-101 ACB 101-8 is incorrect.	JEC 4/10/94	Typo, the correct power supply designation is 1R82# PNL-A1. CKT 11 is correct for 125 V DC for DC-101 ACB 101-8. Accept as is, Ref Drawing FE's F-9 JEC 4/10/94	

A13566

P-9-55

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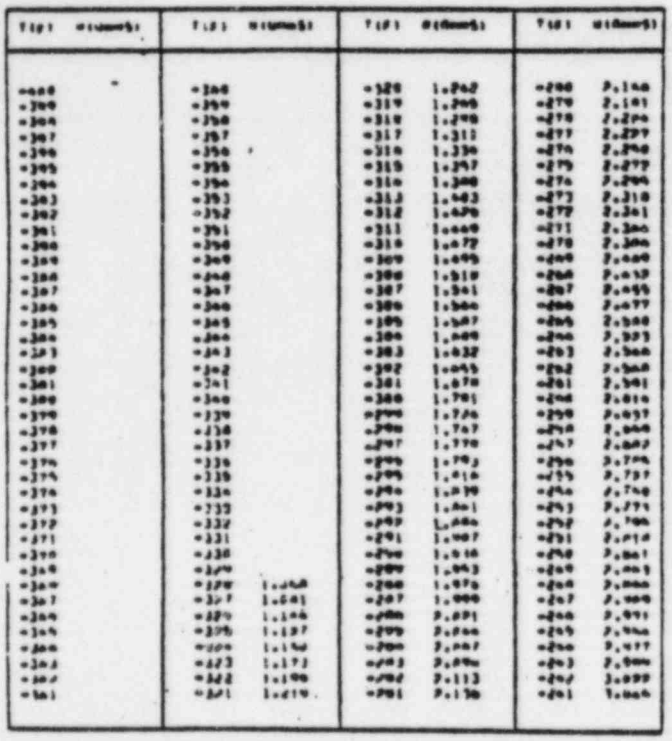
EXC #

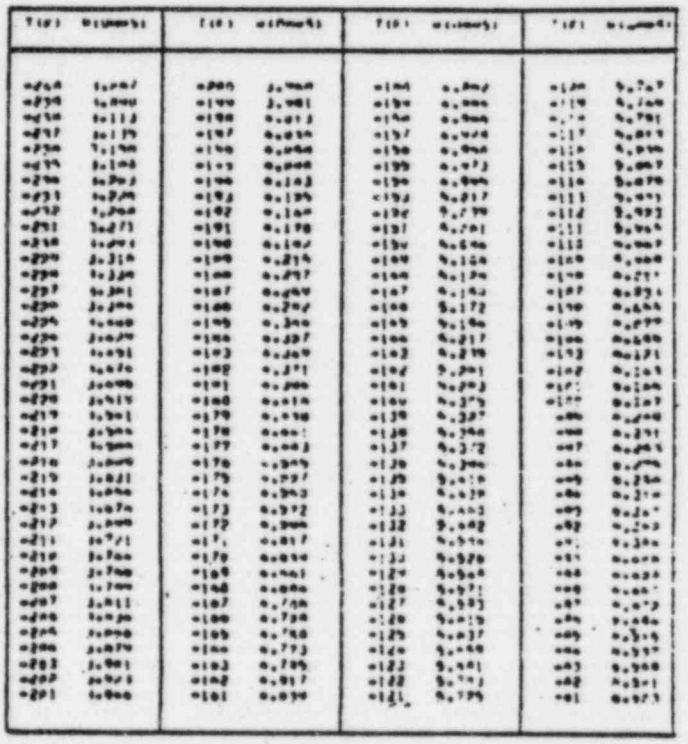
RESISTANCE TEMPERATURE TABLE
COPPER
RESISTANCE THERMOMETER
9.035 OHMS AT 32°F.

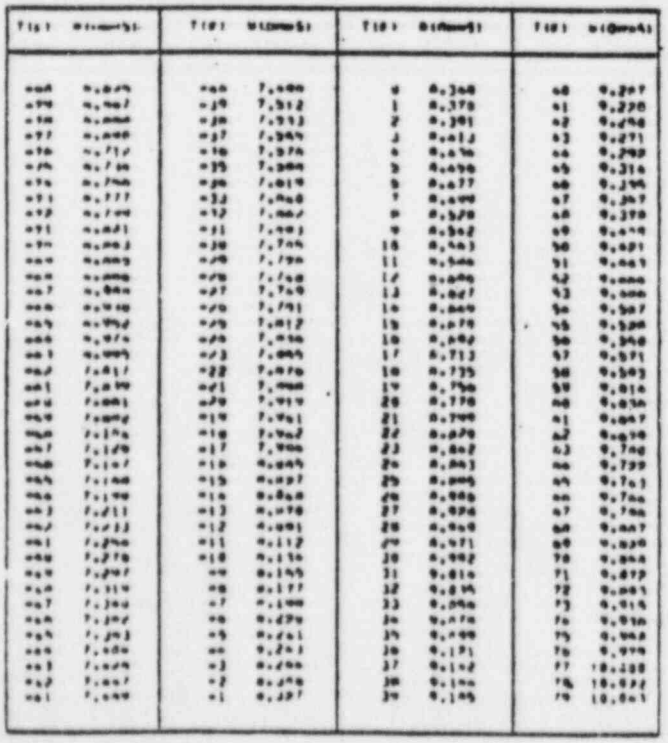
MINCO

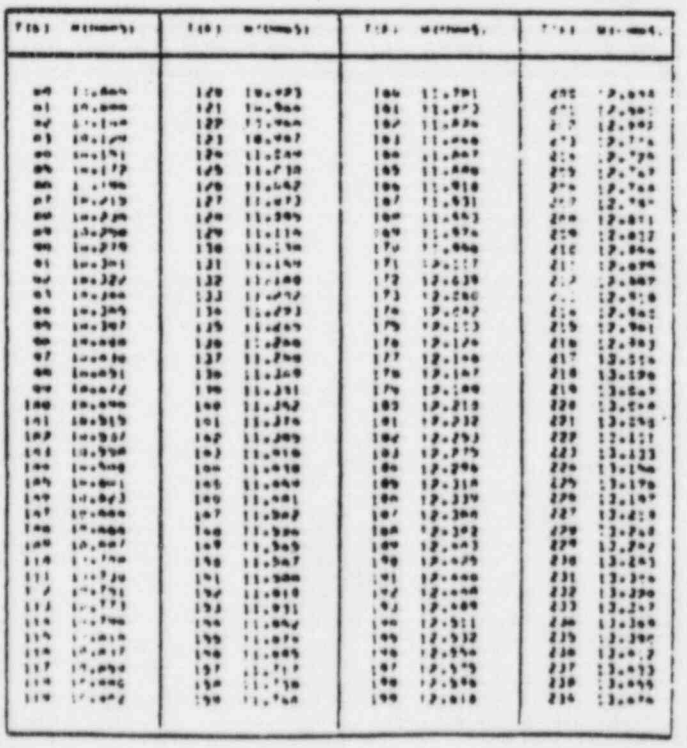
TABLE
17-9

7300 Commerce Lane | Minneapolis, Minnesota 55432 | TWX: 910-576-2648 | Telephone: (512) 788-3121









A13567

P-9-56

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments and indicated power availability, and

b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring, manually and automatically, unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each of the above required diesel generators shall be demonstrated OPERABLE:

a. In accordance with the frequency specified in Table 4.8.1.1.2-1 on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the day tank.

2. Verifying the fuel level in the fuel storage tank.

3. Verifying the fuel transfer pump starts and transfers fuel from the storage system to the day tank.

4. Verifying the diesel starts from ambient condition and accelerates to at least 450 rpm in less than or equal to 13 seconds. The generator voltage and frequency shall be 4160 ± 420 volts and 60 ± 3.0 Hz within 10 seconds after the start signal. The diesel generator shall be started for this test by using one of the following signals:

(a) Manual
(b) Simulated loss of offsite power by itself
(c) Simulated loss of offsite power in conjunction with an ESF actuation test setpoint
(d) An ESF actuation test signal by itself Exception 4.8

5. Verifying the diesel generator is synchronized, loaded to greater than or equal to 3500 kw in less than or equal to 60 seconds, and operates with this load for at least 60 minutes.

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

7. Verifying the pressure in all diesel generator air start receivers to be greater than or equal to 215 psig.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tank.

A13568

Edition #4

9.0 SYSTEMS RETURN TO NORMAL

9.1 Inform the Watch Engineer that the Integrated Electrical Test is complete and that the plant may be returned to Normal in accordance with station procedure at his direction.

Verified _____ Date _____

9.2 Remove all temporary test equipment installed by section 5.10 and initial those portions of Appendix C. Attach a completed copy of Repair/Rework R43-713 to APPENDIX C as attachment C2.

Verified _____ Date _____

9.3 Remove temporary test fixture installed in step 5.9 via Repair/Rework E32-67 and initial Appendix C. Attach completed copies of Repair/Rework E32-67 and MWR 83-0851 to Appendix C as attachment C1.

Verified _____ Date _____

OQA Witness _____ Date _____

9.4 Return LOCA level transmitter isolation valves to normal service position and initial as required:

1H21*PNL-04	INITIAL/DATE	1H21*PNL-05	INITIAL/DATE
1B21*LT-155A	_____	1B21*LT-155C	_____
1B21*LT-154A	_____	1B21*LT-154C	_____
1B21*LT-157A	_____	1B21*LT-155D	_____
1B21*LT-157C	_____	1B21*LT-154D	_____
1B21*LT-154B	_____	1B21*LT-157B	_____
1B21*LT-155B	_____	1B21*LT-157D	_____

CAUTION: When returning transmitter to service operate instrument valves slowly to preclude spurious LOCA signals.

Verified _____ Date _____

Exception #4

5.9 The loss of offsite power (LOOSP) event is initiated by simultaneously tripping the NSS and RSS transformer Primary Protection.

The loss of coolant (LOCA) event is initiated by simulating HIGH DRYWELL PRESSURE for Test 8.1 and by simulating LOW reactor water level for tests 8.2 through 8.5. Both LOOSP and LOCA events are selectable at the TEMPORARY TEST FIXTURE to be used as follows: The event must be selected by enabling LOOSP or LOCA or both. The event is then initiated by placing the event switch to the INITIATE position. Verify circuit modification is installed according to MWR #83-0851 and Repair/Reworks E32-067 (Appendix C) and initial Appendix C.

Verified _____ Date _____

QQA Witness _____ Date _____

5.10 Verify temporary cables for instrumentation are installed in accordance with Repair/Rework R43-713 (APPENDIX C2) and temporary test instrumentation test results (Appendix E2) to provide temporary GETARS computer points listed in Appendix A2 and initial Appendix C.

Verified _____ Date _____

QQA Witness _____ Date _____

5.11 Calibrate the GETARS computer points listed in Appendix A2 and attach the calibration data as Attachment E4.

Verified _____ Date _____

QQA Witness _____ Date _____

P-9-59

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Exception #4

SHOREHAM 1
NUCLEAR POWER STATION
STARTUP FORM 7.6

February 18, 1981
Revision 12

Shoreham Nuclear Power Station - Unit 1

REPAIR/REWORK REQUEST

1. Request: R43-713 Initiated By: WMalone 1/19/83 Test Engineer/Date System # : R43

Work performed under jurisdiction of: ( ) Unico Construction (X) LILCO Startup

Work to be performed by: ( ) Unico Construction (X) LILCO Startup 1/19/83

Quality Assurance function to be performed by: (X) OQA ( ) FQC (X) Work Supervisor

System or Subsystem Description: INTEGRATED ELECTRICAL TEST

QA Category: I Completion Date Required:

Perform the following work: INSTALL TEMPORARY CABLES AND REMOVE AFTER TEST

Reason for Work: TO SUPPORT PT 307.002

2. Work to be performed in accordance with the following applicable construction or maintenance procedure: TEST ENGINEER DIRECTION AND ATTACHED SHEETS

3. Notify WMalone 3735 OQA 83-307 prior to performing work.
Startup Engineer

4. Request Approved: 1/19/83 Lead Startup Engineer / Date 1/19/83 S&W Lead Advisory Eng./Date

5. This form must be signed and returned to the party requesting the work when the work is completed.

The above work has been completed. A work summary and necessary documentation is attached.

Supervisor/Date Field QC or Operational QA/Date

6. The following retest(s) are required and completed:

LILCO Operational QA Engineer/Date Startup Engineer/Date

DISTRIBUTION: Original to: Organization Performing Work: ( ) Unico Construction Superintendent (via Turnover Coordinator), or (X) LILCO Startup.

Copies To: Organization Not Performing Work: (X) Unico Construction Superintendent (via Turnover Coordinator), or ( ) LILCO Startup
Operational QA

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P-9-60

TABLE I

EDG NORMAL OPERATING PARAMETERS

Parameter	Range
Generator Voltage	4,160 + 190 volts, -310 volts
Generator Frequency	60 ± 1.2 Hz
Lube Oil Pressure	50 to 65 psig
Turbo Oil Pressure	25 to 35 psig
Jacket Water Pressure	20 to 30 psig
Fuel Oil Pressure	20 to 35 psig
Lube Oil Temperature (Outlet)	170°F to 180°F
Jacket Water Temperature (Outlet)	160°F to 170°F
Generator Winding Temperature	less than 320°F
Generator Bearing Temperature	less than 180°F
Generator Load	greater than 1750 KW
Generator Vars	greater than 700 KVar
Generator Current	greater than 250 Amps
Combustion Air Pressure	greater than 20" Hg
Diesel Generator Room Temperature	less than 120°F
Diesel Generator Room Humidity	less than 80% relative humidity

2

TABLE II

EDG SHUTDOWN/PRESTART PARAMETERS

Parameter	Range
Lube Oil Inlet Temperature	140°F - 170°f
Lube Oil Level	less than 10" from S/D mark
Jacket Water Inlet Temperature	140°F - 170°F
Jacket Water Level	9 - 1 o'clock
Starting Air Pressure	greater than 200 PSIG
Group I Shutdown Pressure	greater than 50 PSIG

TABLE III

TEST EQUIPMENT LOG

Test Equipment Used	cal. due M&TE#/ date	Procedure Parameter Measured/Step No.
STEP 5.21 Digital Voltmeter	613 / 8-8-89	Gen Winding Temp. / STEP 5.21
STEP 5.23 Micromite	315 / 12-4-87	Gen Brgs Std. Temp / Step 5.23
STOP WATCH	457 / 5-22-89	Running Time / 8.3
psychrometer	218 / 3-16-85	Relative humidity App. D Sht 3

2