



Engine Cylinder Pressure Logs

EDG 101, 102, 103

Pre-crankshaft Failure

8412140380 840910
PDR ADOCK 05000322
G PDR

PT.307.004A-1

EDG 101

Page 10 of 10

TCN #1

TABLE V

*Data Reviewed
by W. Cook
7/5/83*ENGINE CYLINDER PRESSURE LOG

	6/19/83								
Step Number	STEP								
Date/Time	P.E.2								
ENGINE CYLINDER									
PRESSURE									
1	1530								
2	1500								
3	1520								
4	1550								
5	1560								
6	1550								
7	1570								
8	1530								
LOAD									

Data recorded by J. H. 6/19/83

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PT. 30" 011B-1

TCF 1

TABLE V

ENGINE CYLINDER PRESSURE LOG

Step Number	
Date/Time	8.82
ENGINE CYLINDER	
PRESSURE	
1	1550"
2	1610"
3	1600"
4	1540"
5	1628"
6	1638"
7	1688"
8	1678"
LOAD	3.5mm

179.29

LILCO OIL
REVIEWED
BY *[Signature]*
DATE 7/8/82

LILCO OIL
REVIEWED
BY *[Signature]*
DATE 7/15/82

ENCLOSURE ONLY

DP 307,004C-

TCI

TABLE V

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Eng Information Only

ENGINE CYLINDER PRESSURE LOG

Step Number
Date/Time
ENGINE CYLINDER
PRESSURE

STEP 6.2

1	1550 1400				
2	1490				
3	1520				
4	1530				
5	1580				
6	1500				
7	1500				
8	1510				
LOAD	3.5mm				

M. D. Quaff
9/23/83

Engine Cylinder Pressure Logs

EDG 101, 102, 103

Post-crankshaft Replacement

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PT.307.004A-2

EDG 101

APPENDIX F

ENGINE CYLINDER PRESSURE LOG

Step No.	8.8.2	
Date	4/11/84	
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 1983

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:	<i>John A. Smith, J. M. Smith</i>	

STG APPROVED JAN 26 1984

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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:	Wm J. J. J. J.	

RACK SETTING
43.0 mm
#3 DIESEL TEST

Sample Preoperational Test Procedure

UNCONTROLLED
For Information OnlyOct. 1, 1975
REVISION 0SHOREHAM I
NUCLEAR POWER STATION
STARTUP FORM 8.3Preoperational 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. Harlihy
6. Attached for your review are:

Preoperational Test Results and Analysis

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

FC Chaffin 4/19/84
Reviewed By

M. W. Harlihy 4/19/84
Reviewed By

W. J. Cook 4/23/84
Startup Manager Approval, Date

Preoperational Test Approval/Release For Performance
(Startup 18.1)

System Checkout & Initial Operations Tests

Test Change Notice(s) (Startup 18.2)

7. Preoperational Test Results attached are Approved by the JTG

William J. Cook 4/23/84
Site Operations Manager

William J. Cook 4/23/84
S&W Advisory Operations Engineer

W. J. Cook 4/23/84
Startup Manager

W. J. Cook
JTG Chairman

4/23/84
Date

A13522

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For Information OnlySHOREHAM
NUCLEAR POWER STATION

July 29, 1982

REVISION 17

START-UP FORM 8-3

PT. 307.00 4A-2 *WPK*

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

TRANSMITTAL RECORD

UNCONTROLLED
For Information Only

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.
<u>E.J. YOUNGLING</u> / T.E.	C	1 Ea.
<u>M.W. HERLIHY</u> / L.S.E.C	C	1 Ea.

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

Department: LILCO STARTUP

By: C. SLATER

Transmittal Number: 10219

Forwarded To:	By:	Date:
Remarks:		

SHOREHAM I
NUCLEAR POWER STATION
STARTUP FORM 8.1

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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.

- | | | |
|-----------------------------------|------------------------|-------------|
| <u>JTG Meeting Date Scheduled</u> | <u>Startup Manager</u> | <u>Date</u> |
|-----------------------------------|------------------------|-------------|
7. Preoperational Test Approved by Operational Q.A.

- | | |
|--------------------------------|-------------|
| <u>Operational QA Engineer</u> | <u>Date</u> |
|--------------------------------|-------------|
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 _____

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January 28, 1982
REVISION 16

SHOREHAM I
NUCLEAR POWER STATION
STARTUP FORM 8.1

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 4/7/84
Test Engineer Date

10. Preoperational Test attached RELEASED FOR PERFORMANCE.

Approval: [Signature]
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.

UNCONTROLLED
For Information OnlyPROCEDURE 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

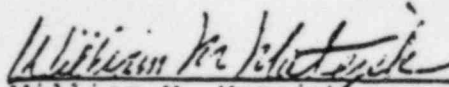
In view of the recent crankshaft failure of the 102 emergency diesel generator, a recovery program has been established to teardown and inspect all three (3) emergency diesel generators. This is being done to determine the extent of the crankshaft problems with these engines. This requires that all three (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. Matejka
Project Advisory Engineer

WMM:com

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

JTG APPROVED NOV 8 1983

A13527

Revision 17 / UNCONTROLLED
 July 29, 1982 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

Not Required:

OQA Approved:

Required:

Lead Startup Engineer

Lead Startup Engineer

GE Operations Manager

Approved:

JTG CHAIRMAN

Date

S&W Lead Advisory Engineer

Remarks:

Startup Manager

PT.307.004A-2

CONTROLLED
BY INFORMATION CTR.PROCEDURE REVISION TRANSMITTALATTACHMENT 1PT.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.

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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: Controller 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.
WH. COOK /T.E.	C	1 Ea.
WH. KZELAT /L.S.E.C		1 Ea.

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WC - WORKING COPY

C - CONTROLLED
U - UNCONTROLLED

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

Forwarded To:	By:	Date:
Remarks:		

A13530

Revision 17
July 29, 1982

UNCONTROLLED
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PROCEDURE REVISION TRANSMITTAL

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

Date: 2/22/83

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

Not Required: _____
OQA Approved: W. R. Klein 4/5/83 Required: W. R. Klein 4/5/83
Lead Startup Engineer

John D. [Signature] 4/5/83 Approved: J. Powell 4/5/83
GE Operations Manager JTG CHAIRMAN Date
William M. Matlock 4/5/83 Remarks: _____
S&W Lead Advisory Engineer
[Signature] 4/5/83
Startup Manager

VOID

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TRANSMITTAL RECORD

TO: J. RIVELLO	DATE: 11/9/81
LOCATION: SHOREHAM NUCLEAR POWER STATION - UNIT 1	W.D. 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 returned to PRC. d to responsible Test Engineer, must be 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: ILICO STARTUP
By: C. SLATER
Transmittal Number: 9536

Forwarded To:	By:	Date:
Remarks:		

SHOREHAM I
NUCLEAR POWER STATION
STARTUP FORM 8.1

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Oct. 1, 1975
REVISION 2

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. Kai
6. Attached Preoperational Test Procedure is submitted for your Approval of content, format, acceptability and/or revision.
November 9, 1981 E. J. Murphy 11/2/81
 JTG Meeting Date Scheduled Startup Manager Date
7. Preoperational Test Approved by Operational Q.A.
AR Moller 11/2/81
 Operational QA Engineer Date
8. Preoperational Test Approved by JTG for content, format, acceptability and/or revision.
John J. Sweeney 11/9/81
 JTG Chairman (constitutes JTG approval)
William R. Kai 11-9-81
 SSW Advisory Operations Engr
E. J. Murphy 11-9-81
 Startup Manager Date

Remarks _____

JTG APPROVED NOV 9 1981
A13533

SHOREHAM I
NUCLEAR POWER STATION
STARTUP FORM 8.1

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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.

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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, 1/4 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 < 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 noted.

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

Page 2

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 1.109 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

SHOREHAM I.
NUCLEAR POWER STATION
TARTUP FORM 8.2

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MAR 7 1980
REVISION 11

Page 1 of 4

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 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.	J. D. Kuo 4/10/84
2	Remove page 18. Insert new page 18.	Provide Acceptance Criteria for Section 8.9.	J. D. Kuo 4/10/84

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

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

WFOA Initials (if required): WFOA 4/6/84 4/6/84

8-25

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.

V

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.

O

PER

TCN #

1 D

EMERGENCY DIESEL GENERATOR QUALIFICATION
PREOPERATIONAL TEST

<u>Section</u>	<u>Description</u>	<u>Page</u>
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

TOTAL PAGES 37

JTG APPROVED NOV 8 1983

A13539

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PT.307.004A-2

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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
- 2.8 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

PT.307.004A-2

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- 2.11 ESK-6R4307-⁶8, Elementary Diagram, G-101 Before and After Lube Oil Pump and Heater
- 2.12 ESK-6R4310-⁶8, Elementary Diagram, G-101 Jacket Water Heater and Pump
- 2.13 ESK-6R4313-2, Elementary Diagram, Diesel Generator G-101 Protection
- 2.14 ESK-8R4301-¹⁴23, Elementary Diagram, Emergency Diesel Generator G-101 Protection
- 2.15 ESK-8R4304-7, Elementary Diagram, Emergency Diesel Synchronizing Circuit
- 2.16 ESK-8R4305-¹³11, Elementary Diagram, G-101 Voltage Regulator
- 2.17 ESK-11R4301-⁷6, Elementary Diagram, Emergency Diesel Generator 101 Sheet 1
- 2.18 ESK-11R4302-¹⁴12, Elementary Diagram, Emergency Diesel Generator 101 Sheet 2
- 2.19 ESK-11R4307-⁷8, 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^NL, Jacket Water Piping Schematic
- 2.20.4 11600.02-1.12-74M, Engine Pneumatic Schematic
- 2.20.5 11600.02-1.12-75^MZ, Panel Pneumatic Schematic
- 2.20.6 11600.02-1.12-⁷³91C, Panel Installation
- 2.20.7 11600.02-1.12-93^MZ, 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

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PT.307.004A-2

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- 2.22 Operating Procedure (SP.23.307.01), Emergency Diesel Generators Revision 5 ²⁵ _{4/10/84}
- 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:

Name (Written/Printed)	Initials (Written/Printed)	Title/ Organization	Level of Qualification I, II, III
<i>A. K. K. / L. D. L.</i>	<i>L.D. / L.D.</i>	<i>TE/LSU</i>	<i>II</i>
<i>A. L. L. / A. L. L.</i>	<i>A.L. / A.L.</i>	<i>TE/LSU</i>	<i>II</i>
<i>A. L. L. / H. R. S.</i>	<i>H.R. / H.R.S.</i>	<i>TE/LSU</i>	<i>II</i>
<i>A. L. L. / G. H.</i>	<i>G.H. / G.H.</i>	<i>OQA</i>	<i>II</i>
<i>A. L. L. / C. S. N.</i>	<i>C.S. / C.S.N.</i>	<i>OQA</i>	<i>II</i>
<i>A. L. L. / M. D. B.</i>	<i>M.D. / M.D.B.</i>	<i>TE/LSU</i>	<i>II</i>
<i>A. L. L. / J. A. M.</i>	<i>J.A. / J.A.M.</i>	<i>OQA</i>	<i>II</i>
<i>A. L. L. / R. A. V.</i>	<i>R.A. / R.A.V.</i>	<i>TE/LSU</i>	<i>II</i>
<i>A. L. L. / S. Y. A.</i>	<i>S.Y. / S.Y.A.</i>	<i>TE/LSU</i>	<i>II</i>
<i>A. L. L. / E. S. L.</i>	<i>E.S. / E.S.L.</i>	<i>TE/LSU</i>	<i>II</i>
<i>A. L. L. / F. C. L.</i>	<i>F.C. / F.C.L.</i>	<i>TE/LSU</i>	<i>II</i>

PT. 307.004A-2

NAME (printed)	NAME (signed)	INITIALS PRINTED/WRITTEN	TITLE	LEVEL OF QUALIFICATION
MICHAEL F. GORFANI	<i>Michael F. Gorfani</i>	MMG / AUG	OGPA	IV
LENNY MORIAD	<i>Lenny Moriad</i>	LM /	TECH / BSU	I
Stephen Cunningham	<i>Stephen Cunningham</i>	SC / DC	Tech LSU	I
Tony C. Massaro	<i>Tony C. Massaro</i>	TCM /	Tech LSU	I
AL MEYER	<i>Al Meyer</i>	AM /	TECH LSU	I
RAYMOND SIMON	<i>Raymond Simon</i>	RS /	Tech LSU	I
PAUL WARNTZ	<i>Paul Warntz</i>	PW /	TECH LSU	I
ROBERT T. SMITH	<i>Robert T. Smith</i>	RTS /	TECH LSU	I
Richard T. Quitt	<i>Richard T. Quitt</i>	RTR /	Tech LSU	I
DOUGLAS E. Campbell	<i>Douglas E. Campbell</i>	DEC /	ARMY TECHS. / LSU	II
WILLIAM P. HICKMAN	<i>William P. Hickman</i>	WH /	TECH / LSU	I
REEDMAN VANDERBEEK	<i>Reedman Vanderbeek</i>	RV /	TECH LSU	II
AL C. TOLSON	<i>Al C. Tolson</i>	AT /	CQA	III

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PT.307.004A-2

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

[Signature] 4/10/84
Verified Date

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

[Signature] 4/10/84
Verified Date

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

A. J. Sonoma 4-10-84
Verified 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

[Signature] 4/10/84
Verified Date

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

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

- 3.6 Notify the LILCO System Operator prior to performing test.

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

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

A. J. Sonoma 4-10-84
Verified 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.

A. J. Sonoma 4-10-84
Verified 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. Vanna 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. Vanna 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).

PT.307.004A-2

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

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

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

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

- 5.4 Emergency Diesel Generator 101 HVAC System is in operation.

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

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

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

PT.307.004A-2

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5.8.2 Circuit Breaker closing springs charged.

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

5.8.3 GREEN (Open) indication shown for breaker.

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

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

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

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

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

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

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

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

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

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

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

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

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

PT.307.004A-2

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

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

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

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

- 5.9.8 White control power available light ON.

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

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

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

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

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

- 5.13 Verify lube oil temperature is above 140°F.

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

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

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

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

5.15.1 Speed Droop 0 Initials AJS
(0 - 10)

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PT. 307.004A-2

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

5.15.3 Speed Setting 14.08 Initials AGS
(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. Summa 4-10-84
Verified Date

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

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

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

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

5.18.3 Bus 101 program reset to RESET.

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

5.18.4 Bus 101 program test switch in NORMAL.

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

5.18.5 *G101 voltage regulator control switch in mid position.

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

JTG APPROVED NOV 8 1993

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

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

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

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

E. J. Hassell 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. Sumner 4-10-84
Verified Date

E. J. Hassell 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. Sumner 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 @ *PNLGPI
Channel 3 - Generator AC Current (Amps) @
1H11*MCB01
Channel 4 - Generator Load (Watts) @ 1H11*MCB01
Channel 5 - Generator ACB 101-8 closure @ SWGR 101-2
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. Sumner 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.

A. J. Sumner 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.

A. J. Sumner 4/10/84 2
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 °FDiesel 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

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

2

PT.307.004A-2

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NOTE: All KVAR values specified are lagging vars.

- 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.

A. J. Simon 4-10-84
Verified Date
Carl J. Prange 4-10-84
QA Witness 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.

- 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.

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8.7 - continued

NOTE 2:

Exception #8
At least one of the 23 consecutive starts should verify the diesel generator is capable of being ~~started~~ *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.

Verified

Date

QA Witness

Date

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

Verified

Date

QA Witness

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.

Verified

Date

QA Witness

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.

Verified

Date

QA Witness

Date

PT.307.004A-2

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- 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.

W.D. Bove
Verified4/11/84
Date12
12James A. Murphy
QA Witness4/11/84
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.

W.D. Bove
Verified4/11/84
Date

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Page 2 of 4

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
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4/12/84
OQA
EX #6 NOTED
4/16/84

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Page 3 of 4

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
Free
1/12/84
OQA 4/16/84
EX#6 NOTED
16b

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PT.307.004A-2

9.0 SYSTEM RETURN TO NORMAL

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

[Signature] 4/12/84
Verified Date

[Signature] 4/12/84
OQA Witness Date

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

[Signature] 4/12/84
Verified Date

[Signature] 4/12/84
OQA Witness Date

- 9.3 Ensure all temporary test equipment has been removed.

[Signature] 4/12/84
Verified Date

[Signature] 4/12/84
OQA Witness 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 ☐
[Signature] 4/12/84
Verified Date

[Signature] 4/12/84
OQA Witness Date

After 8 hours: sat ☒ unsat ☐
[Signature] 4/12/84
Verified Date

[Signature] 4/12/84
OQA Witness Date

After 12 hours: sat ☒ unsat ☐
[Signature] 4/12/84
Verified Date

[Signature] 4/12/84
OQA Witness Date

Page 4 of 4

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.

<i>A. Louma</i>	4-12-84
Verified	Date
<i>[Signature]</i>	4/6/84
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.

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);

Verified	Date
<i>[Signature]</i>	4/11/84
OQA Witness	Date

*Voided by
Exception
JFC
4/12/84*

TCN #1

11.0 EXCEPTION SHEET

Item	Description of Exception	Initial/ Date	Disposition	Initial/ Date
EXC#1 *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 to include Test	
	number.	AJS 4-10-84	Result Accept as is. AJS 4-10-84	
EXC#2	QUAL RUN #12,13,14, Data Sheets	NSB	UCCO Grid feed was	
	STEP 86.	4/11/84	transferred from the NST	
	Generator Voltage out of		The NST to support	
	spec per Table I		plant maintenance on	
			the NST. Grid disturbances	
			on the NST 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. NSB	
			QPA 4/12/84	

11.0 EXCEPTION SHEET

Item	Description of Exception	Initial/ Date	Disposition	Initial/ Date
Exc 3	Qual Run 14. Data sheets Step 8.6 JW temp slightly out of spec per Table 2	MAJ 4/11/84	Due to the small initial loading (only about 2000 lbs) on the Auto UV start the JW did not heat up. After sything to grid and loading to 2000 lbs and running at this load the JW temp came into spec Accept as is M/O Brie' DPA 4/16/84 4/16/84	
Exc 4	PT 307.004A-2 page 17 step 9.3; All Temporary test-equipment will not be removed at this time.	JYA 4/12/84 MAJ	Temporary test equip- ment is being left installed to support the Integrated Elec. Test (PT 307.002-2) and will be removed when the IET has been successfully completed	
			TEMPORARY TEST EQUIPMENT TO BE REMOVED AT THE END OF UP PT 307.002-2. See attached sheet. 4/12/84	

PT.307.004A-2

UNCONTROLLED
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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 Greater Working Temp is being monitored by PTD #12/84 and the Bearing Temp is being monitored by TFO72A	JTC 4/12/84	Type, description (App D/E) changed to indicate the correct temp monitoring device. Accept as is, does not affect test results JTC 4/12/84 OQA 4/19/84	
6	PT.307004A-2 TCN #1, page 2 of 4 Section 8.9 Post Outage Load Run (SLR) The refueling section will not be performed as part of the Qual Test (PT.307004A-2)	JTC 4/12/84	Post Outage Load Run will be performed by SLR/Post-outage #5 and TCN #4 to PT.307004A-2 (EOL) Electrical Prep These addition section will be reviewed and approved with PT.307004A-2 Accept as is, Post Outage Load Run were initiated by field to verify eligibility requirements. This is an on open item to this procedure. JTC 4/16/84 OQA 4/16/84	

Test Procedure # PT. 307,004A-2UNCONTROLLED
For Information OnlyEXCEPTION SHEET
Test Procedure Section # 11.0
Page 1 of 6

Description of Exception	Init./ Date	Disposition	Init./ Date
Exception 9			
Appendix A & B			
TR 802 Fill and Drain Valve	JTC	Type, the correct valve #s	
have incorrectly referenced	4/1/74	are 202V-0218A (Fill) and	
valve number		202V-3216A (Drain). Accept as	
		is, Ref Drawing 112-74	
		JTC 4/1/74	
P201A Discharge valve has	JTC	Type, the correct valve # is	
incorrectly referenced valve	4/1/74	202V-0202A. Accept as is.	
number		Ref Drawing MFSE-44A-9	
		JTC 4/1/74	
Power Supply for PNL-A1	JTC	Type, the correct power supply	
and 1R22*50CR101 is	4/1/74	Designation is 1R22*PNL-A1.	
incorrectly referenced.		CET 11 is correct for 125VDC	
CET 5 for 125VDC for		for D-101 ACR 101-8. Accept as	
D-101 ACR 101-8 is		is, Ref Drawing FE'0F-4	
incorrect.		JTC 4/1/74	

EXC# UNCONTROLLED
For Information Only**MINCO****RESISTANCE TEMPERATURE TABLE
COPPER****RESISTANCE THERMOMETER
9.035 OHMS AT 32°F.****TABLE
17-9**

7300 Commerce Lane | Minneapolis, Minnesota 55432 | TWX: 910-576-2848 | Telephone: (512) 766-3121

T(°F)	W(ohms)	T(°F)	W(ohms)	T(°F)	W(ohms)	T(°F)	W(ohms)
-400		-300	1.262	-200	2.140	-100	3.018
-390		-290	1.260	-190	2.141	-90	3.019
-380		-280	1.258	-180	2.142	-80	3.020
-370		-270	1.256	-170	2.143	-70	3.021
-360		-260	1.254	-160	2.144	-60	3.022
-350		-250	1.252	-150	2.145	-50	3.023
-340		-240	1.250	-140	2.146	-40	3.024
-330		-230	1.248	-130	2.147	-30	3.025
-320		-220	1.246	-120	2.148	-20	3.026
-310		-210	1.244	-110	2.149	-10	3.027
-300		-200	1.242	-100	2.150	0	3.028
-290		-190	1.240	-90	2.151	10	3.029
-280		-180	1.238	-80	2.152	20	3.030
-270		-170	1.236	-70	2.153	30	3.031
-260		-160	1.234	-60	2.154	40	3.032
-250		-150	1.232	-50	2.155	50	3.033
-240		-140	1.230	-40	2.156	60	3.034
-230		-130	1.228	-30	2.157	70	3.035
-220		-120	1.226	-20	2.158	80	3.036
-210		-110	1.224	-10	2.159	90	3.037
-200		-100	1.222	0	2.160	100	3.038
-190		-90	1.220	10	2.161	110	3.039
-180		-80	1.218	20	2.162	120	3.040
-170		-70	1.216	30	2.163	130	3.041
-160		-60	1.214	40	2.164	140	3.042
-150		-50	1.212	50	2.165	150	3.043
-140		-40	1.210	60	2.166	160	3.044
-130		-30	1.208	70	2.167	170	3.045
-120		-20	1.206	80	2.168	180	3.046
-110		-10	1.204	90	2.169	190	3.047
-100		0	1.202	100	2.170	200	3.048
-90		10	1.200	110	2.171	210	3.049
-80		20	1.198	120	2.172	220	3.050
-70		30	1.196	130	2.173	230	3.051
-60		40	1.194	140	2.174	240	3.052
-50		50	1.192	150	2.175	250	3.053
-40		60	1.190	160	2.176	260	3.054
-30		70	1.188	170	2.177	270	3.055
-20		80	1.186	180	2.178	280	3.056
-10		90	1.184	190	2.179	290	3.057
0		100	1.182	200	2.180	300	3.058
10		110	1.180	210	2.181	310	3.059
20		120	1.178	220	2.182	320	3.060
30		130	1.176	230	2.183	330	3.061
40		140	1.174	240	2.184	340	3.062
50		150	1.172	250	2.185	350	3.063
60		160	1.170	260	2.186	360	3.064
70		170	1.168	270	2.187	370	3.065
80		180	1.166	280	2.188	380	3.066
90		190	1.164	290	2.189	390	3.067
100		200	1.162	300	2.190	400	3.068
110		210	1.160	310	2.191	410	3.069
120		220	1.158	320	2.192	420	3.070
130		230	1.156	330	2.193	430	3.071
140		240	1.154	340	2.194	440	3.072
150		250	1.152	350	2.195	450	3.073
160		260	1.150	360	2.196	460	3.074
170		270	1.148	370	2.197	470	3.075
180		280	1.146	380	2.198	480	3.076
190		290	1.144	390	2.199	490	3.077
200		300	1.142	400	2.200	500	3.078
210		310	1.140	410	2.201	510	3.079
220		320	1.138	420	2.202	520	3.080
230		330	1.136	430	2.203	530	3.081
240		340	1.134	440	2.204	540	3.082
250		350	1.132	450	2.205	550	3.083
260		360	1.130	460	2.206	560	3.084
270		370	1.128	470	2.207	570	3.085
280		380	1.126	480	2.208	580	3.086
290		390	1.124	490	2.209	590	3.087
300		400	1.122	500	2.210	600	3.088
310		410	1.120	510	2.211	610	3.089
320		420	1.118	520	2.212	620	3.090
330		430	1.116	530	2.213	630	3.091
340		440	1.114	540	2.214	640	3.092
350		450	1.112	550	2.215	650	3.093
360		460	1.110	560	2.216	660	3.094
370		470	1.108	570	2.217	670	3.095
380		480	1.106	580	2.218	680	3.096
390		490	1.104	590	2.219	690	3.097
400		500	1.102	600	2.220	700	3.098
410		510	1.100	610	2.221	710	3.099
420		520	1.098	620	2.222	720	3.100
430		530	1.096	630	2.223	730	3.101
440		540	1.094	640	2.224	740	3.102
450		550	1.092	650	2.225	750	3.103
460		560	1.090	660	2.226	760	3.104
470		570	1.088	670	2.227	770	3.105
480		580	1.086	680	2.228	780	3.106
490		590	1.084	690	2.229	790	3.107
500		600	1.082	700	2.230	800	3.108
510		610	1.080	710	2.231	810	3.109
520		620	1.078	720	2.232	820	3.110
530		630	1.076	730	2.233	830	3.111
540		640	1.074	740	2.234	840	3.112
550		650	1.072	750	2.235	850	3.113
560		660	1.070	760	2.236	860	3.114
570		670	1.068	770	2.237	870	3.115
580		680	1.066	780	2.238	880	3.116
590		690	1.064	790	2.239	890	3.117
600		700	1.062	800	2.240	900	3.118
610		710	1.060	810	2.241	910	3.119
620		720	1.058	820	2.242	920	3.120
630		730	1.056	830	2.243	930	3.121
640		740	1.054	840	2.244	940	3.122
650		750	1.052	850	2.245	950	3.123
660		760	1.050	860	2.246	960	3.124
670		770	1.048	870	2.247	970	3.125
680		780	1.046	880	2.248	980	3.126
690		790	1.044	890	2.249	990	3.127
700		800	1.042	900	2.250	1000	3.128

T(°F)	W(ohms)	T(°F)	W(ohms)	T(°F)	W(ohms)	T(°F)	W(ohms)	T(°F)	W(ohms)
700	3.129	800	3.130	900	3.131	1000	3.132	1100	3.133
710	3.130	810	3.131	910	3.132	1010	3.133	1110	3.134
720	3.131	820	3.132	920	3.133	1020	3.134	1120	3.135
730	3.132	830	3.133	930	3.134	1030	3.135	1130	3.136
740	3.133	840	3.134	940	3.135	1040	3.136	1140	3.137
750	3.134	850	3.135	950	3.136	1050	3.137	1150	3.138
760	3.135	860	3.136	960	3.137	1060	3.138	1160	3.139
770	3.136	870	3.137	970	3.138	1070	3.139	1170	3.140
780	3.137	880	3.138	980	3.139	1080	3.140	1180	3.141
790	3.138	890	3.139	990	3.140	1090	3.141	1190	3.142
800	3.139	900	3.140	1000	3.141	1100	3.142	1200	3.143
810	3.140	910	3.141	1010	3.142	1110	3.143	1210	3.144
820	3.141	920	3.142	1020	3.143	1120	3.144	1220	3.145
830	3.142	930	3.143	1030	3.144	1130	3.145	1230	3.146
840	3.143	940	3.144	1040	3.145	1140	3.146	1240	3.147
850	3.144	950	3.145	1050	3.146	1150	3.147	1250	3.148
860	3.145	960	3.146	1060	3.147	1160	3.148	1260	3.149
870	3.146	970	3.147	1070	3.148	1170	3.149	1270	3.150
880	3.147	980	3.148	1080	3.149	1180	3.150	1280	3.151
890	3.148	990	3.149	1090	3.150	1190	3.151	1290	3.152
900	3.149	1000	3.150	1100	3.151	1200	3.152	1300	3.153
910	3.150	1010	3.151	1110	3.152	1210	3.153	1310	3.154
920	3.151	1020	3.152	1120	3.153	1220	3.154	1320	3.155
930	3.152	1030	3.153	1130	3.154	1230	3.155	1330	3.156
940	3.153	1040	3.154	1140	3.155	1240	3.156	1340	3.157
950	3.154	1050	3.155	1150	3.156	1250	3.157	1350	3.158
960	3.155	1060	3.156	1160	3.157	1260	3.158	1360	3.159
970	3.156	1070	3.157	1170	3.158	1270	3.159	1370	3.160
980	3.157	1080	3.158	1180	3.159	1280	3.160	1380	3.161
990	3.158	1090	3.159	1190	3.160	1290	3.161	1390	3.162
1000	3.159	1100	3.160	1200	3.161	1300	3.162	1400	3.163
1010	3.160	1110	3.161	1210	3.162	1310	3.163	1410	3.164
1020	3.161	1120	3.162	1220	3.163	1320	3.164	1420	3.165
1030	3.162	1130	3.163	1230	3.164	1330	3.165	1430	3.166
1040	3.163	1140	3.164	1240	3.165	1340	3.166	1440	3.167
1050	3.164	1150	3.165	1250	3.166	1350	3.167	1450	3.168
1060	3.165	1160	3.166	1260	3.167	1360	3.168	1460	3.169
1070	3.166	1170	3.167	1270	3.168	1370	3.169	1470	3.170
1080	3.167	1180	3.168	1280	3.169	1380	3.170	1480	3.171
1090	3.168	1190	3.169	1290	3.170	1390	3.171	1490	3.172
1100	3.169	1200	3.170	1300	3.171	1400	3.172	1500	3.173
1110	3.170	1210	3.171	1310	3.172	1410	3.173	1510	3.174
1120	3.171	1220	3.172	1320	3.173	1420	3.174	1520	3.175
1130	3.172	1230	3.173	1330	3.174	1430	3.175	1530	3.176
1140	3.173	1240	3.174	1340	3.175	1440	3.176	1540	3.177
1150	3.174	1250	3.175	1350	3.176	1450	3.177	1550	3.178
1160	3.175	1260	3.176	1360	3.177	1460	3.178	1560	3.179
1170	3.176	1270	3.177	1370	3.178	1470	3.179	1570	3.180
1180	3.177	1280	3.178	1380	3.179	1480	3.180	1580	3.181
1190	3.178	1290	3.179	1390	3.180	1490	3.181	1590	3.182
1200	3.179	1300	3.180	1400	3.181	1500	3.182	1600	3.183
1210	3.180	1310	3.181	1410	3.182	1510	3.183	1610	3.184
1220	3.181	1320	3.182	1420	3.183	1520	3.184	1620	3.185
1230	3.182	1330	3.183	1430	3.184	1530	3.185	1630	3.186
1240	3.183	1340	3.184	1440	3.185	1540	3.186	1640	3.187
1250	3.184	1350	3.185	1450	3.186	1550	3.187	1650	3.188
1260	3.185	1360	3.186	1460	3.187	1560	3.188	1660	3.189
1270	3.186	1370	3.187	1470	3.188	1570	3.189	1670	3.190
1280	3.187	1380	3.188	1480	3.189	1580	3.190	1680	3.191
1290	3.188	1390	3.189	1490	3.190	1590	3.191	1690	3.192
1300	3.189	1400	3.190	1500	3.191	1600	3.192	1700	3.193
1310	3.190	1410	3.191	1510	3.192	1610	3.193	1710	3.194
1320	3.191	1420	3.192	1520	3.193	1620	3.194	1720	3.195
1330	3.192	1430	3.193	1530	3.194	1630	3.195	1730	3.196
1340	3.193	1440	3.194	1540	3.195	1640	3.196	1740	3.197
1350	3.194	1450	3.195	1550	3.196	1650	3.197	1750	3.198
1360	3.195	1460	3.196	1560	3.197	1660	3.198	1760	3.199
1370	3.196	1470	3.197	1570	3.198	1670	3.199	1770	3.200
1380	3.197	1480	3.198	1580	3.199	1680	3.200	1780	3.201
1390	3.198	1490	3.199	1590	3.200	1690	3.201	1790	3.202
1400	3.199	1500	3.200	1600	3.201	1700	3.202	1800	3.203
1410	3.200	1510	3.201	1610	3.202	1710	3.203	1810	3.204
1420	3.201	1520	3.202	1620	3.203	1720	3.204	1820	3.205
1430	3.202	1530	3.203	1630	3.204	1730	3.205	1830	3.206
1440	3.203	1540	3.204	1640	3.205	1740	3.206	1840	3.207
1450	3.204	1550	3.205	1650	3.206	1750	3.207	1850	3.208
1460	3.205	1560	3.206	1660	3.207	1760	3.208	1860	3.209
1470	3.206	1570	3.207	1670	3.208	1770	3.209	1870	3.210
1480	3.207	1580	3.208	1680	3.209	1780	3.210	1880	3.211
1490	3.208	1590	3.209	1690	3.210	1790	3.211	1890	3.212
1500	3.209	1600	3.210	1700	3.211	1800	3.212	1900	3.213
1510	3.210	1610	3.211	1710	3.212	1810	3.213	1910	3.214
1520	3.211	1620	3.212	1720	3.213	1820	3.214	1920	3.215
1530	3.212	1630	3.213	1730	3.214	1830	3.215	1930	3.216
1540	3.213	1640	3.214	1740	3.215	1840	3.216	1940	3.217
1550	3.214	1650	3.215	1750	3.216	1850	3.217	1950	3.218
1560	3.215	1660	3.216	1760	3.217	1860	3.218	1960	3.219
1570	3.216	1670	3.217	1770	3.218	1870	3.219	1970	3.220
1580	3.217	1680	3.218	1780	3.219	1880	3.220	1980	3.221
1590	3.218	1690	3.219	1790	3.220	1890	3.221	1990	3.222
1600	3.219	1700	3.220	1800	3.221	1900	3.222	2000	3.223
1610	3.220	1710	3.221	1810	3.222	1910	3.223	2010	3.224
1620	3.221	1720	3.222	1820	3.223	1920	3.224	2020	3.225
1630	3.222	1730	3.223	1830	3.224	1930	3.225	2030	3.226
1640	3.223	1740	3.224	1840	3.225	1940	3.226	2040	3.227
1650	3.224	1750	3.225	1850	3.226	1950	3.227	2050	3.228
1660	3.225	1760	3.226	1860	3.227	1960	3.228	2060	3.229
1670	3.226	1770	3.227	1870	3.228	1970	3.229	2070	3.230
1680	3.227	1780	3.228	1880	3.229	1980	3.230	2080	3.231
1690	3.228	1790	3.229	1890	3.230	1990	3.231	2090	3.232
1700	3.229	1800	3.230	1900	3.231	2000	3.232	2100	3.233
1710	3.230	1810	3.231	1910	3.232	2010	3.233	2110	3.234
1720	3.231	1820	3.232	1920	3.233	2020	3.234	2120	3.235
1730	3.232	1830	3.233	1930	3.234	2030	3.235	2130	3.236
1740	3.233	1840	3.234	1940	3.235	2040	3.236	2140	3.237
1750	3.234	1850	3.235	1950	3.236	2050	3.237	2150	3.238
1760	3.235	1860	3.236	1960	3.237	2060	3.238	2160	3.239
1770	3.236	1870	3.237	1970	3.238	2070	3.239	2170	3.240
1780	3.237	1880	3.238	1980	3.239	2080	3.240	2180	3.241
1790	3.238	1890	3.239	1990	3.240	2090	3.241	2190	3.242
1800	3.239	1900	3.240	2000	3.241	2100	3.242	2200	3.243
1810	3.240	1910	3.241	2010	3.242	2110	3.243	2210	3.244
1820	3.241	1920	3.242	2020	3.243	2120	3.244	2220	3.245
1830	3.242	1930	3.243	2030	3.244	2130	3.245	2230	3.246
1840	3.243	1940	3.244	2040	3.245	2140	3.246	2240	3.247
1850	3.244	1950	3.245	2050	3.246	2150	3.247	2250	3.248
1860	3.245	1960	3.246	2060	3.247	2160	3.248	2260	3.249
1870	3.246	1970	3.247	2070	3.248	2170	3.249	2270	3.250
1880	3.247	1980	3.248	2080	3.249	2180	3.250	2280	3.251
1890	3.248	1990	3.249	2090	3.250	2190	3.251	2290	3.252
1900	3.249	2000	3.250	2100	3.251	2200	3.252	2300	3.253
1910	3.250	2010	3.251	2110	3.252	2210	3.253	2310	3.254
1920	3.251	2020	3.252	2120	3.253	2220	3.254	2320	3.255
1930	3.252	2030	3.253	2130	3.254	2230	3.255	2330	3.256
1940	3.253	2040	3.254	2140	3.255	2240	3.256		

SURVEILLANCE REQUIREMENTS

GROUP 1: UNCONTROLLED
For Information Only

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 4.9.1.1.2-1 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 to*
 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.

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Exemption #4

PT.307.002-2

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:

<u>1H21*PNL-04</u>	<u>INITIAL/DATE</u>	<u>1H21*PNL-05</u>	<u>INITIAL/DATE</u>
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

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Exception #4

PT.307.002-2

- 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

OQA 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

OQA Witness

Date

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

Verified

Date

OQA Witness

Date

JTG APPROVED MAR 16 1984

A13570

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February 18, 1981
Revision 12

SHOREHAM 1
NUCLEAR POWER STATION
STARTUP FORM 7.6

Shoreham Nuclear Power Station - Unit 1

REPAIR/REWORK REQUEST W. L. Cook

1. Request: R43-713 Initiated By: W. Maloney 1/19/83 System #: R-3
Test Engineer/Date

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

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

Quality Assurance function to be performed by: ☒ QA () FQC () 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 W. Maloney 373 E OQA 83-307 prior to performing work.
Startup Engineer

4. Request Approved: W. L. Cook 1/19/83 W. L. Cook 1/19/83
Lead Startup Engineer / Date Saw 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 ☒ LILCO Startup.
Copies To: Organization Not Performing Work: ☒ Unico Construction Superintendent (via Turnover Coordinator), or () LILCO Startup Operational QA

TABLE I
EDG NORMAL OPERATING PARAMETERS

<u>Parameter</u>	<u>Range</u>
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

TABLE II

EDG SHUTDOWN/PRESTART PARAMETERS

<u>Parameter</u>	<u>Range</u>
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

PT.307.004A-2

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TABLE III

TEST EQUIPMENT LOG

[illegible]