

A-136

GPC II-136

PROCEDURE NO. VEGP 00057-C	REVISION 5	PAGE NO. DOCKETED 28 of 37
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USNRC

Sheet 1 of 10

'95 JUL 27 P4:44

DATA SHEET 1

OFFICE OF SECRETARY  
DOCKETING & SERVICE  
Report Page of 22  
BRANCH

EVENT REPORT

EVENT TITLE: DG 2A Start Failure  
 REPORT NUMBER: 2-90-005  
 DATE(S) OF EVENT: 7-11-90  
 EVENT CLASSIFICATION: B

Names of  
EVENT REVIEW TEAM MEMBERS

Ed Kozinsky  
George Frederick  
Paul Kochery  
Ken Stokes  
Charles Coursey  
Joe D'Amico

Signature of  
EVENT REVIEW TEAM LEADER

Glenn A. McCauley

DATE COMPLETED

7-19-90

MANAGEMENT REVIEW AND APPROVAL

Jim Greene

PRB Review Required YES  NO

Jim Greene  
 PRB Chairman

96-112 8-31-90  
 Meeting No./ Date

NUCLEAR REGULATORY COMMISSION  
 EXHIBIT NO. GPC II-136  
 Docket No. 50-424/425-OLA-3  
 In the matter of Georgia Power Co. et al., Vogtle Units 1 & 2  
 Staff  Applicant  Intervenor  Other  
 Identified  Received  Rejected  
 Date 7/19/95 Witness Mesbanaul Reporter KHW

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EVENT REPORT NO. 2-90-05

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\* ERTL TO NUMBER EACH PAGE OF THE REPORT AND ENTER APPROPRIATE PAGE NUMBERS. ADDITIONALLY, THE ERTL WILL ENSURE THE EVENT REPORT NUMBER APPEARS ON EACH PAGE OF THE REPORT.

\*\* INFORMATION WILL BE PRESENTED ON THE INDICATED FIGURE.

UNIT STATUS -

Unit 2 was at 80% power at the time of the 2A diesel start failure. Unit 1 was at 100% power. No equipment related to the diesel test out of service.

EVENT DESCRIPTION

On July 11, 1990, diesel generator 2A was being tested during a routine surveillance per procedure 14980-2. The right air bank was isolated for the July test of the left air bank. When the engine start button was pushed by the control room operator, the engine began to roll with starting air. The engine rolled twice and stopped, according to the local operator in the diesel room. The engine failed to start. The diesel was declared inoperable and the Technical Specification action statement was initiated.

On July 5, 1990 a similar event occurred when diesel generator 1B failed to start. The causes and corrective actions of this event are consistent with the DG 2A incident of July 11, 1990.

## TROUBLE SHOOTING

The seizing of these air start valves was discovered by a "pop test" performed under the manufacturer's direction. This test applies approximately 100 psi of air to the starting air valve at the engine subcover. An audible sound can be heard on valve opening and closing, if the valve is not sticking. All valves initially noted to be sticking were machined to a tolerance of 0.002 to 0.003 and retested with no problems found.

The engine was started and loaded to 100% and maintained until temperatures stabilized. The "pop test" was re-performed with seven air start valves still indicating problems. One cap stud was untorqued during cap removal for inspection when we heard the piston pop open. A few other caps were loosened with the same results. All caps were removed on the problem cylinders and placed on a true flat surface. Some were found to be warped and all had irregular bore surfaces. All caps were replaced and pistons machined to approximately 0.003.

2-90-05

## ROOT CAUSE:

Diesel generator 2A failures to start due to starting air valve piston seizure within its associated cap assembly appears to be the result of marginal clearance between the piston and cap. This condition exists apparently due to manufacturer machining process which allow uneven bore conditions on the cap and in some cases caps with flanged surfaces which are not flat. Secondly, the tolerances specified by the manufacturer were 0.001 to 0.003 between piston and cap. This clearance may have been sufficient for ambient temperature but did not allow for expansion of the piston inside the cap during engine standby or operating conditions or to overcome any machining irregularities.

The event critique team determined that ineffective corrective actions exists with respect to the ability to resolve Diesel Generator start problems. The July 11, 1990 start failure of DG 2A was the fourth occurrence of this problem. A troubleshooting MWO had been written but not yet implemented. The third failure of DG 2A occurred on April 20, 1990. An event critique team was not convened after this failure contrary to the policy established as a result of the SAE event critique.



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## CORRECTIVE ACTIONS

All Diesel Generator 2A air start pilot valve pistons have been verified to move freely inside the cylinder walls. Pop tests are to be performed immediately on Diesel Generators 2B, 1A and 1B to demonstrate freedom of movement. Any sticking conditions noted will be appropriately corrected. Additionally, Maintenance Procedures 28714, 28713, 28575, and 28576 are being revised to include provisions for pop tests during each refueling outage.

To minimize the possibility of sticking, Engineering is assessing the gap minimum clearance distance between the piston and cylinder walls. Any changes in the desired minimum gap clearance will be reviewed against recorded gap distances for Diesel Generator 1A, 1B, and 2B for possible replacement. Also, changes to the minimum gap clearance will be incorporated into Maintenance Procedures 28714, 28713, 28575 and 28576.

During the next scheduled tear down of Diesel Generators 1A, 1B, and 2B, the surfaces of the air start pilot valves will be checked for machining irregularities that could lead to sticking conditions. Replacement or reconditioning will be performed as necessary.

To correct the problem of ineffective corrective actions noted as a result of four Diesel Generator failures to start, the event critique team recommends that the policy of having event critiques for Diesel Generator failures should be continued until plant management determines that Diesel Generators are sufficiently reliable. This policy was established as a corrective action from the 3/20/90 SAE event.

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#### IV. ANALYSIS OF EVENT

Diesel Generator 2A is one of two independent power sources that provide power to class 1E busses. During the time the 2A diesel engine was under investigation, the redundant 2B diesel generator was capable of performing its intended function. The plant entered an action statement for technical specification 3.8.1.1 which requires initiating a plant shutdown if the diesel cannot be made operable within 72 hours.

Prior failures of this engine may not have been fully investigated to ensure the causes of the failures were found and corrected. The results of this investigation indicate that there existed a manufacturing or installation error that resulted in deformed air start pilot valve cylinder. The deformity revealed itself in a random pattern. The effects of the deformity could only be observed on an engine start after the engine had been shut down from a previous run and the engine stopped with a particular combination of faulty pilot valve and crankshaft position alignment. There were a total of 7 cylinders with questionable air start pilot valves.

On a normal attempted restart with the air start pilot valve malfunctioning, the 5 second burst of air was not adequate to start the engine rolling over. The burst of air was adequate to change the alignment of crankshaft position and faulty pilot valves so that any subsequent attempt to start the engine would be successful.

Based on the availability of the redundant 2B diesel at the time the 2A diesel was declared inoperable and the fact that the 2A diesel should have started under emergency conditions, there was no adverse effect on plant safety or the health and safety of plant staff or the general public.

DATA SHEET 1  
EVENT DATA COLLECTION

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- EVENT DESCRIPTION  
EVENT DATE 7/11/90 UNIT 2 EVENT TIME 0326 EDT  
DEFICIENCY CARD NUMBER 2-90-067  
(IF REQUIRED)
- TYPE OF EVENT  

A. REACTOR TRIP ( )	F. RADIOACTIVE SPILL/ UNCONTROLLED RELEASE ( )
B. FORCED REDUCTION ( )	G. LIQUID INVENTORY LOSS ( )
C. PLANT TRANSIENT ( )	H. OTHER SIGNIFICANT EVENT ( <input checked="" type="checkbox"/> )
D. ESPAS ( )	
E. PERSONNEL CONTAMIN ( )	
- EVENT REVIEW TEAM CALLED OUT: TIME 0300  
SAER INFORMED: TIME \_\_\_\_\_  
CORPORATE DUTY MANAGER INFORMED: TIME \_\_\_\_\_
- DATA COLLECTION ASSIGNMENT JD WILLIAMS
- DATA: FOR REACTOR TRIPS COMPLETE 10006-C, AND GIVE A COPY TO THE EVENT REVIEW TEAM. FOR ALL OTHER EVENTS, COMPLETE THE SECTION 5 THROUGH 16 AND PERSONAL STATEMENTS.

SHIFT PERSONNEL	ACTIVITY PERFORMED AT THE TIME OF THE EVENT	STATEMENT ATTACHED YES OR NA
SS <u>JD WILLIAMS</u>	<u>ROUTINE SHIFT DUTIES</u>	<u>N/A</u>
USS <u>E. M. THORNTON</u>		<u>N/A</u>
SSS <u>W. P. STEPHENS</u>		<u>N/A</u>
RO <u>L. OVERBY</u>		<u>N/A</u>
PO <u>S. DYER</u>		<u>N/A</u>
STA <u>JD WILLIAMS</u>	<u>ROUTINE SHIFT DUTIES</u>	<u>N/A</u>
OTHERS INVOLVED		<u>N/A</u>
<u>A. SWEAT</u>	<u>COMMON P/</u>	<u>YES</u>
<u>L. ADAMS</u>	<u>U2 CAO</u>	<u>YES</u>
<u>J. COBB</u>	<u>U1 CAO</u>	<u>YES</u>

- DATA TO BE COLLECTED (SHIFT SUPERINTENDENT TO CHECK ITEMS)  
NOTE: REMOVE THE DISK PACK AFTER A TRIP/SI.

PLANT COMPUTER ALARM PRINTOUT ( )	PLANT COMPUTER EVENT LOGS ( )
ATSI PRINTOUT ( )	ERF COMPUTER EVENT LOGS ( )
FAULT RECORDER PRINTOUT ( )	ERF COMPUTER TREND PRINTS ( )
CHART RECORDERS (LIST)	

COPIES OF:

USS LOGS ( )	NRC-OC NOTIFICATION WORKSHEET ( )
TURBINE BLDG LOG ( )	AUX BLDG OPERATOR LOG ( )
CONTROL BLDG OPERATOR LOG ( )	RWO LOG ( )
OUTSIDE OPERATOR LOG ( )	ELECTRICAL LOG ( )
CHEMISTRY	UNIT CONTROL ( )
HP	
MWO'S	



7. PLANT CONDITION WHEN APPROPRIATE

	PRE-EVENT	MAXIMUM/MINIMUM VALUE	POST EVENT
MODE	_____	/	_____
REACTOR POWER	_____	/	_____
BORON CONCENTRATION	_____	/	_____
STEAM GENERATOR LEVEL 1*	_____	/	_____
* Use NR or WR, 2*	_____	/	_____
whichever is 3*	_____	/	_____
indicating 4*	_____	/	_____
GENERATOR OUTPUT	_____	/	_____ MWE
PRESSURIZER LEVEL	_____	/	_____

8. PLANT CONFIGURATION

8.1 OFF NORMAL STATUS OF PLANT SYSTEMS ACCUM PUMP 2 ODS

\_\_\_\_\_

\_\_\_\_\_

8.2 TESTS AND SURVEILLANCES IN PROCESS 14980-2, DG

OPERABILITY TEST

\_\_\_\_\_

\_\_\_\_\_

8.3 OTHER OPERATIONS IN PROGRESS AT THE TIME OF THE EVENT

NORMAL SHIFT ROUTINE

\_\_\_\_\_

\_\_\_\_\_

9. FOR ESFAS ACTUATION OR FAILURE AUTOMATIC ( ) MANUAL ( ) N/A ( )

9.1 LIST CHANNEL ACTUATED/FAILED \_\_\_\_\_

\_\_\_\_\_

EXPLAIN SYSTEM RESPONSE \_\_\_\_\_

\_\_\_\_\_

9.2 DID THE ESFAS COMPONENTS OPERATE CORRECTLY? YES ( ) NO ( )  
 WITHOUT UNDUE DELAY? YES ( ) NO ( )

9.3 EXPLAIN ANY ABNORMAL SYSTEM ESFAS RESPONSES. WHY? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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9.4 DESCRIBE ANY OTHER MALFUNCTIONS NOTICED: \_\_\_\_\_  
\_\_\_\_\_

9.5 APPARENT EVENT CAUSE WAS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

10. CORRECTIVE ACTIONS

10.1 WHAT IMMEDIATE CORRECTIVE ACTIONS WERE TAKEN AS A RESULT OF THE EVENT?

PERFORMED 14230-2 OFF-SITE SOURCE  
VERIFICATION & ENTERED LOG 2-90-243

10.2 WHAT SUBSEQUENT CORRECTIVE ACTIONS ARE IN PROGRESS AS A RESULT OF THE EVENT? LOG 2-90-243

10.3 WHAT FURTHER CORRECTIVE ACTIONS ARE RECOMMENDED? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

11. LIST CORRECTIVE ACTION TAKEN FOR EACH ABNORMAL OCCURRENCE OR EQUIPMENT MALFUNCTION THAT ACCOMPANIED THE EVENT (STATE WHETHER COMPLETED, IN PROGRESS, OR PROPOSED).

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

12. WERE PROCEDURES USED ADEQUATE? YES ( ) NO ( )  
WHY NOT? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

13. DID THE OPERATORS AND OTHER PERSONNEL HANDLE THE EVENT CORRECTLY? EXPLAIN. DISCUSS CORRECTIVE ACTION TO DATE.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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14. WAS AN EMERGENCY PLAN EAL REACHED? DESCRIBE LEVEL INVOLVED (NOUE, ALERT, SITE AREA, GENERAL). \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

15. LIST LCO'S ENTERED

LCO NO.	DESCRIPTION	INITIALS
2-70 243	DG 2A FAILED TO START § 3.7.13	JW
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

16. LIST ANY SAFETY LIMITS EXCEEDED. TECH SPEC AND DESCRIPTION  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_





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2-10-03

DATA SHEET 1 Event Report No. 2-10-03  
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INVESTIGATION QUESTIONS

A. GENERAL

1. DOES THE EVENT REPRESENT A PREVIOUSLY UNFORESEEN ACCIDENT SEQUENCE? YES/NO
2. DOES THE FAILURE DIRECTLY OR THROUGH INTERACTION WITH OTHER SYSTEMS DEGRADE THE PERFORMANCE OF ANY SAFETY-RELATED EQUIPMENT? YES/NO
3. DOES THE FAILURE DIRECTLY OR THROUGH INTERACTION WITH OTHER SYSTEMS INCREASE THE PROBABILITY OF AN ACCIDENT? YES/NO
4. DOES THIS FAILURE CHALLENGE OR ACTIVATE SAFETY SYSTEMS? YES/NO
5. DOES THE EVENT INCREASE THE PROBABILITY OF TRANSIENT OCCURRENCES AND/OR REACTOR TRIPS? YES/NO
6. DURING THE EVENT, DID THE OPERATIONS STAFF RESPOND CORRECTLY? YES/NO
7. ARE TRAINING KNOWLEDGE OBJECTIVES, PERFORMANCE TASKS AND CONTROLS ADEQUATE TO PROMOTE THE PROPER PERFORMANCE OF THE OPERATIONS STAFF UNDER SIMILAR CIRCUMSTANCES? YES/NO
8. BASED ON A COMPARISON OF THIS EVENT WITH PREVIOUS EVENT REPORTS AND/OR FSAR ANALYSES, WERE THERE ANY ABNORMAL OR DEGRADED INDICATIONS? YES/NO
9. BASED ON COMPARISON OF RELATED SIMILAR INDUSTRY AND IN-HOUSE EVENTS, IS THIS EVENT A REOCCURRENCE OF A PREVIOUS EVENT: YES/NO *2<sup>nd</sup> occurrence*
10. DURING THIS EVENT, DID ALL AFFECTED SYSTEMS RESPOND AS EXPECTED? YES/NO
11. DID THE INITIAL EVENT PRODUCE UNANTICIPATED SECONDARY EFFECTS WHICH COMPLICATED OR INCREASED THE CONSEQUENCES OF THE EVENT? YES/NO



DATA SHEET 1 Event Report No. 29003  
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INVESTIGATION QUESTIONS (CONT'D)

12. BASED ON COMPARISON OF SIMILAR INDUSTRY AND IN-HOUSE EVENTS WERE PREVIOUS CORRECTIVE ACTIONS/IMPLEMENTATION EFFECTIVE? YES/NO *NO effective appears to have occurred from previous events corrective action*
13. IF QUESTIONS 1, 2, 3, 4, 5, 8, 9, OR 11 ARE ANSWERED YES, DESCRIBE THE REASON IN DETAIL IN THE EVENT REPORT.
14. IF QUESTION 6, 7, 10, OR 12 ARE ANSWERED NO, DESCRIBE THE REASON IN DETAIL IN THE EVENT REPORT.

B. PERSONNEL ERRORS

1. WERE JOB ENVIRONMENT CONDITIONS SUCH AS LIGHTING, VENTILATION, EXTREME TEMPERATURE OF PHYSICAL ACCESS TO THE TASK CONTRIBUTING FACTORS? YES/NO
2. WERE PROPER TOOLS AVAILABLE AND USED? YES/NO *NA 7-13-90*
3. WERE WRITTEN APPROVED PROCEDURE AVAILABLE AND PROPERLY FOLLOWED? YES/NO
4. IF THE PROCEDURE WERE FOLLOWED, WAS PROCEDURE COMPLIANCE A CONTRIBUTORY CAUSE? YES/NO
5. WERE ADEQUATE INSTRUCTIONS GIVEN AND COMPREHENSION VERIFIED? YES/NO
6. WERE THE PERSONNEL INVOLVED IN THE PROPER PHYSICAL CONDITION? YES/NO
7. DID THE PERSONNEL INVOLVED HAVE ERRONEOUS IDEAS AND/OR CONCEPTS ABOUT THE SYSTEM INVOLVED? YES/NO
8. DID THE PERSONNEL INVOLVED HAVE PREVIOUS EXPERIENCE AND/OR TRAINING ON THE SYSTEM INVOLVED? YES/NO
9. DID THE PERSONNEL RECEIVE A BRIEFING OF THE EVOLUTION PRIOR TO STARTING? YES/NO *NA Briefing for this event is in 15542*
10. WERE COMMUNICATIONS ADEQUATE FOR THE EVOLUTION? YES/NO
11. WERE COMMUNICATIONS TESTED PRIOR TO STARTING? YES/NO *NA 15542*

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## INVESTIGATION QUESTIONS (CONT'D)

12. WAS SUPERVISION INVOLVEMENT ADEQUATE FOR THE EVOLUTION BEING CONDUCTED? YES/NO
13. WERE THE PERSONNEL THAT INITIATED OR ADVERSELY CONTRIBUTED TO THE EVENT QUALIFIED TO PERFORM THEIR ACTIVITIES PRIOR TO AND DURING THE EVENT? YES/NO
14. IF QUESTIONS 1, 4 OR 7 ARE ANSWERED YES, DESCRIBE IN DETAIL IN THE EVENT REPORT.
15. IF QUESTIONS 2, 3, 5, 6, 8, 9, 10, 11, 12 OR 13 ARE ANSWERED NO, DESCRIBE IN DETAIL IN THE EVENT REPORT.

Event Report No. 2-90-25  
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EVENT PERSONAL STATEMENT\*

1. a. FOR THE PERIOD PRIOR TO, DURING, AND AFTER THE EVENT, SUMMARIZE THE SEQUENCE OF EVENTS THAT YOU OBSERVED, AND YOUR SPECIFIC ACTIONS TAKEN BASED ON INDICATIONS.

Eight Ann Alarms - 1st on (CR) performed the  
INITIATE CHECK IN THE ZACHSEL. THE FLAMELUX CS  
ISOLATED WHILE PERFORMING I/E (OPERABILITY) TEST (14550).  
EVERYTHING IN THE PROCEDURE WENT AS EXPECTED UNTIL  
THE CONTROL ROOM TRIED TO START THE DIESEL GENERATORS  
1. FAILED STARTING AIR - GENERATOR TROUBLE - FAILURE TO START (CR)  
IN FAILURE TO START AS FLASHING WE NOTIFIED CR AND TOOK NO FURTHER

b. List alarms that illuminated and/or were reset.

1. Failed starting air - GENERATOR TROUBLE  
3. FAILURE TO START - FAILURE TO START LIGHT RESET - 14550  
TRIP + TROUBLE - 14550 - 14550 - 14550 - 14550

2. DID ANY AUTOMATIC SYSTEMS OR EQUIPMENT MALFUNCTION REQUIRE ANY OPERATOR INTERVENTION? (Describe)

NO

3. DID THIS EVENT REVEAL ANY PROCEDURAL INADEQUACIES? (Describe)

NO (I.E. SC, NOT RELEVANT AT THIS TIME)

FIGURE 2 EXAMPLE

Event Report No. 2-10-40

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4. IF THIS EVENT OCCURRED AGAIN, WHAT WOULD YOU DIFFERENTLY?

nothing  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. ARE THERE ANY LESSONS LEARNED FROM THIS EVENT THAT YOU BELIEVE SHOULD BE INCLUDED IN TRAINING? (Describe)

no  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. COMMENTS:

Diesel generator in the ~~CP~~ BOX 2 Revolution  
during the start attempt. Inspiring air was  
around the di when observed after the start  
start  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

SIGNATURE

John Cobb

TITLE

PEO

DATE

7-11-40

\* For reactor trips the personnel statement form in Procedure 10006-C may be used in lieu of this form.

FIGURE 2 (CONT'D.) EXAMPLE



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## EVENT PERSONAL STATEMENT\*

1. a. FOR THE PERIOD PRIOR TO, DURING, AND AFTER THE EVENT, SUMMARIZE THE SEQUENCE OF EVENTS THAT YOU OBSERVED, AND YOUR SPECIFIC ACTIONS TAKEN BASED ON INDICATIONS.

see attached memo

- b. List alarms that illuminated and/or were reset.

on attached memo

2. DID ANY AUTOMATIC SYSTEMS OR EQUIPMENT MALFUNCTION REQUIRE ANY OPERATOR INTERVENTION? (Describe)

no

3. DID THIS EVENT REVEAL ANY PROCEDURAL INADEQUACIES? (Describe)

In the event it is determined I failed to hold the DC start push button long enough. Some guidance is required on how long to hold push button.



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Event Report No. 2-90-03  
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4. IF THIS EVENT OCCURRED AGAIN, WHAT WOULD YOU DIFFERENTLY?

*nothing*

5. ARE THERE ANY LESSONS LEARNED FROM THIS EVENT THAT YOU BELIEVE SHOULD BE INCLUDED IN TRAINING? (Describe)

*unknown at this time*

6. COMMENTS:

*none*

SIGNATURE

*[Signature]*

TITLE

*[Signature]*

DATE

*7-11-90*

\* For reactor trips the personnel statement form in Procedure 1000-C may be used in lieu of this form.

FIGURE 2 (CONT'D.) EXAMPLE

# Memo—Long Form

2-90-00

DATE  
7-11-90

FROM: Al Swant

TO:

TO:

TO:

- NOTE AND FILE
- NOTE AND RETURN TO ME
- RETURN WITH MORE DETAILS
- NOTE AND SEE ME ABOUT THIS
- PLEASE ANSWER
- FOR YOUR APPROVAL
- PREPARE REPLY FOR MY SIGNATURE
- TAKE APPROPRIATE ACTION
- PER YOUR REQUEST
- SIGNATURE
- FOR YOUR INFORMATION
- INVESTIGATE AND REPORT

COMMENTS:

While performing OSP-14980-2 DG 2A monthly operability test the DG failed to start. The following info was received in the Control room. I was on step 5.1.12 in procedure OSP-14980-2 and had depressed the DG start push button I heard the DG start to roll over the headset and heard the local alarm go off along with the Control room Annunciations. I released the push button (All in about 1 sec.). Steve Dyer and I had the stopwatches in hand timing the few volt & frag. After about a couple of seconds when I realized something was wrong I looked up to see the following Control room Annunciations.

ALB 34	DOB	2ADT	Trouble	} alarm for start
ALB 34	DOB	2AD12	Trouble	
ALB 34	FOR	2AD11	Trouble	

ALB 35 FOR DF low starting alarm this alarm was in place to start because per the procedure step 5.1.8.1 we had received #1 isolated with 2-2403-64765. Due to delays in starting this Annunciation was in place to starting the DG. but a/c

Memo—Long Form

2-90:05

DATE 7-11-90

FROM \_\_\_\_\_

TO \_\_\_\_\_

TO \_\_\_\_\_

TO \_\_\_\_\_

TO \_\_\_\_\_

- NOTE AND FILE
- NOTE AND RETURN TO ME
- RETURN WITH MORE DETAILS
- NOTE AND SEE ME ABOUT THIS
- PLEASE ANSWER
- FOR YOUR APPROVAL
- PREPARE REPLY FOR MY SIGNATURE
- TAKE APPROPRIATE ACTION
- PER YOUR REQUEST
- SIGNATURE
- FOR YOUR INFORMATION
- INVESTIGATE AND REPORT

COMMENTS

pressure was heard in Receiver #2 per local operations. This would be considered normal for present lineup.

ALB 35 FO1 DG 2A Trouble. Local indication showed this to be in because of the field ground relay. This is a normal alarm.

The following data were received which are not normal

ALB35 F05 DG 2A Failed to start  
 ALB36 F03 Iso device Pul Tran "A"  
 Q1P1 Trouble

The local operations said they received the same DG message control room. They also reported the DG only made approx. 2 revolutions before stopping. No DG trips announcements were received at either locations and other conditions were normal. Receiver pressures after start attempt were #1 26 psig #2 210 psig with comp #2 running. These pressures were read at the PDX-1 panel.



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**ROOT CAUSE DETERMINATION WORKSHEET**

UNIT 2 SHEET 1 OF     

1. EVENT INVESTIGATED: DG 2A Failure to start on 2-11-90

2. EVALUATOR(S)/INVESTIGATOR(S): ERTL

3. RESULTS OF INVESTIGATION/REVIEW (Include references and attach continuation sheets if needed)

a. CAUSE: Poor Specification  
Lower end of specification gap (for air start valve assembly) does not allow for adequate expansion.

ROOT CAUSE CATEGORY/EVENT CODE: 2114E

b. RECOMMENDED CORRECTIVE ACTION(s):

ENG 2/11/90  
 2/25/90  
 2/25/90  
 COMPLETE

1. Engineering should assess the gap minimum clearance distance between the piston and cylinder walls  
 2. Engineering should review the gap distance records for DG's 1A, 1B & 2B to the established min gap distance identified in item 1 above. Evaluate whether replacement is needed  
 3. Perform pop testing on DG's 1A, 1B & 2B to verify free movement of air start pilot valve pistons. Take appropriate corrective action for those found to be stuck

c. ACTIONS TO PREVENT RECURRENCE: (Complete if not included in b above)

24576  
 CGC Maintenance to revise Procedures 28714, 28713, 28575 & 28576 to include changes to minimum gap distances as determined by CGC  
 CGC Maintenance to revise Procedures 28714, 28713, 28575 & 28576 to include provisions for pop tests during each R.I. outage

Sup. Dept. Mgr. Approval: [Signature] DATE: 2-17-90  
 Estimated Completion Date: 2-22-90 OIT Number: 19200

[Signature] 1-20-90 INVESTIGATOR SIGNATURE DATE  
[Signature] 1-20-90 RESPONSIBLE MANAGER/ERTL DATE

4. OITs initiated; commitments reviewed; corrective action approved.

[Signature] 1/11/90  
 MANAGER TECHNICAL SUPPORT DATE

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CONTINUATION SHEET

a. CAUSE: Inappropriate manufacturing/installation  
some cap surface irregularities exist which contribute  
to the sticking condition

ROOT CAUSE CATEGORY/EVENT CODE: C1 14C  
b. RECOMMENDED CORRECTIVE ACTION(s):

c. ACTIONS TO PREVENT RECURRENCE: (Complete if not included in b above)

Complete  
CAE

1. During the next tear down of the DG's  
check for surface irregularities

SEE MWDs 29003147, 29003828, 19003379, 19003340,  
#9001255

Resp. Dept. Mgr. Approval: \_\_\_\_\_ DATE: \_\_\_\_\_  
Estimated Completion Date: 2-22-03 OIT Number: 12025

a. CAUSE: Management Corrective Actions LTA  
Previous corrective actions from DG start  
failures were not effective

ROOT CAUSE CATEGORY/EVENT CODE: D-1  
b. RECOMMENDED CORRECTIVE ACTION(s):

1. Continue the policy of having event critiques  
for DG failures (established as a result  
of the 3-20-90 SAG event)

c. ACTIONS TO PREVENT RECURRENCE: (Complete if not included in b above)

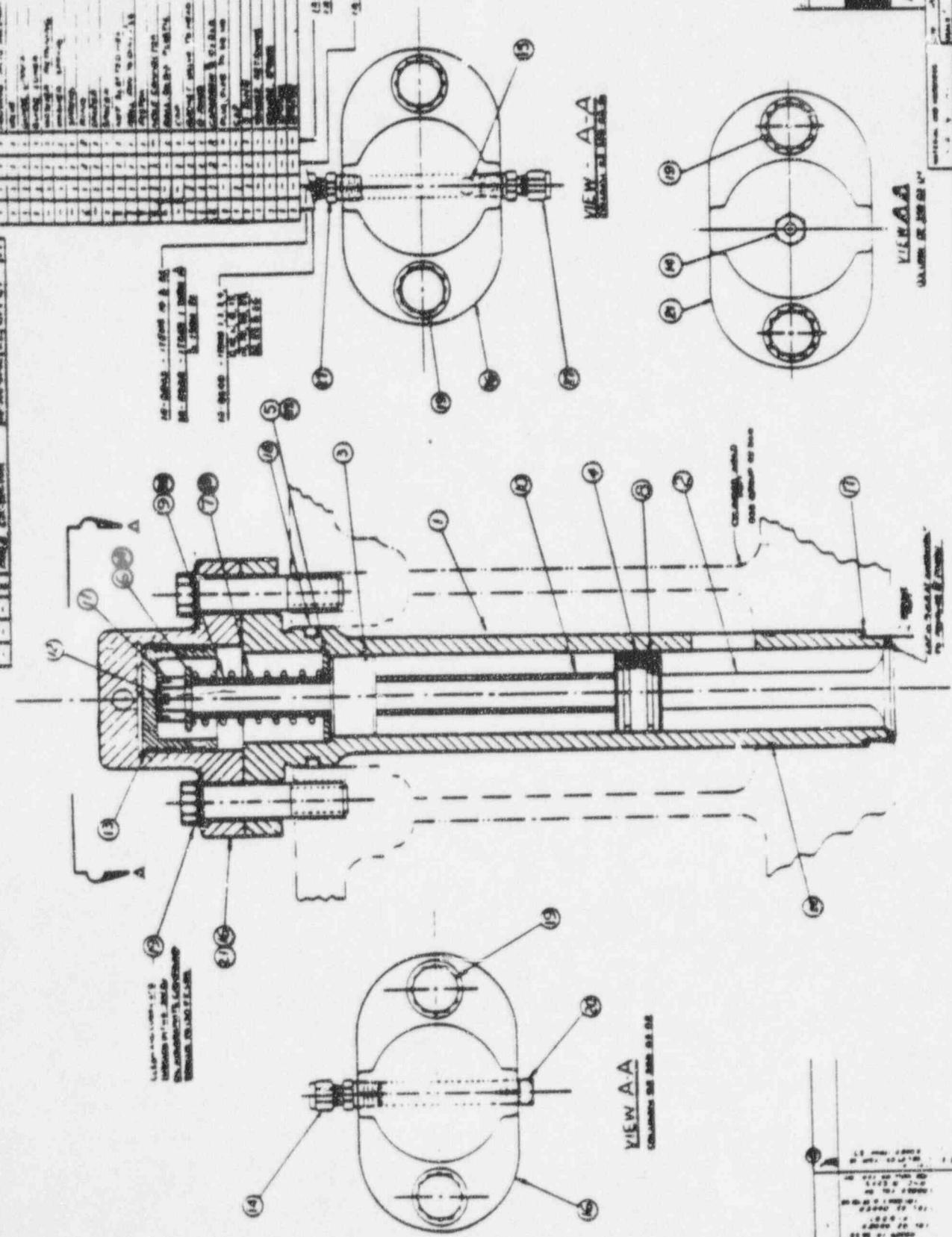
Resp. Dept. Mgr. Approval: \_\_\_\_\_ DATE: \_\_\_\_\_  
Estimated Completion Date: \_\_\_\_\_ OIT Number: \_\_\_\_\_



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## AUDIT CHECKLIST CONTINUATION SHEET

AUDIT # **OP09-90/31** ITEM #

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ON 7-5-90, THE AUDITOR SURVEILLANCE TASKS 14980-102 AND 14980-104. AUDIT CONTACTS WERE: JOE BOWLES, C.H. WILLIAMS, M.C. HENRY, T.L. MORRIS, R.K. POPE, AND G.A. OVELLETTE. THE AUDITOR VERIFIED ~~THAT~~ <sup>CMB 7/5/90</sup> THAT THE FOLLOWING PROCEDURES BEING USED WERE THE CURRENT REVISIONS: 11885-C, REV 13; 13145-1, REV 22; AND 14980-1, REV 20. NO PROBLEMS WERE NOTED. RELATIVE TO THE 1B DIESEL THE FOLLOWING <sup>WERE</sup> NOTED:

FIRST, THE AUDITOR OBSERVED A CYLINDER MOISTURE CHECK PER 13145-1 AS REQUIRED BY STEP 5.1.3 OF 14980-1. (STEPS 4.4.1 - 4.4.21 OF 13145-1)

NEXT, STEPS 5.14 THRU 5.1.9 WERE OBSERVED IN THE 1B DIESEL GENERATOR ROOM. AT 9:38 EDT, THE DIESEL GENERATOR FAILED TO START. DISCUSSIONS WITH HANK WILLIAMS AND KEITH POPE NOTED THAT A TRAINEE HAD NOT HELD THE DIESEL GENERATOR START PUSH BUTTON FOR A SUFFICIENT TIME TO START THE DIESEL. PEO MORRIS VERIFIED ALIGNMENTS AND ON THE NEXT TRY, THE DIESEL GENERATOR STARTED. (WHEN IT FAILED AT 9:38, THE FOLLOWING ANNUNCIATORS ON THE ENGINE CONTROL PANEL IN THE 1B DIESEL ROOM WERE LIT:

- GENERATOR TROUBLE
- DISABLED LOW PRESSURE STARTING AIR
- FAILED TO START

THE AUDITOR THEN WENT TO THE UNIT 1 CONTROL ROOM AND OBSERVED OVELLETTE & M. HENRY IN CONDUCTOR 14980-1.

## AUDIT CHECKLIST CONTINUATION SHEET

AUDIT # **0P09-90/31** ITEM #

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IN THE UNIT 1 Control Room, THE AUDITOR OBSERVED CONDUCT OF STEP 5.2.12 (5.2.12.1-.4 WERE N/A), IN WHICH DIESEL GENERATOR 1B WAS PARALLELED TO THE BUS, THROUGH STEP 5.2.16. ALSO, STEP 5.4 - DIESEL GENERATOR FUEL OIL TRANSFER SYSTEM TEST - WAS OBSERVED. THE AUDITOR VERIFIED THAT THE STOP WATCHES CALLED OUT IN STEP 4.2.a WERE CURRENTLY CALIBRATED. VP1272 CAL DUE DATE WAS 10/5/90 & VP1276 CAL DUE DATE WAS 10/9/90.

THE AUDITOR RETURNED TO THE 1B DIESEL GENERATOR ROOM AND OBSERVED PEO MORRIS PERFORMING 11885-C, "DIESEL GENERATOR OPERATING LOG." ALSO, THE AUDITOR OBSERVED PEO MORRIS PERFORM 14980-1, SECTION 5.5, "DIESEL GENERATOR AIR START COMPRESSOR TEST." (NOTE: THE AUDITOR ALSO OBSERVED INDEPENDENT VERIFICATION FOR THE MOISTURE CHECK - DISCUSSED ON THE PREVIOUS PAGE - PER 13145-1.) NO PROBLEMS WERE NOTED. THE AUDITOR RETURNED TO THE UNIT 1 CONTROL ROOM AND DISCUSSED THE SURVEILLANCE WITH BOWLES, HENRY, & OUELLETTE. THE AUDITOR VERIFIED THAT THE ACCEPTANCE CRITERIA OF SECTION 6.0 (14980-1) HAD BEEN MET. SINCE THE FAILURE TO START WAS ATTRIBUTED TO OPERATING ERROR AND NOT CONSIDERED TO BE A VALID TEST FAILURE (SEE TABLE 1 OF 14980-1), NO PROBLEMS WERE NOTED WITH THIS SURVEILLANCE.