



**GULF STATES UTILITIES COMPANY**

RIVER BEND STATION POST OFFICE BOX 220 ST FRANCISVILLE, LOUISIANA 70775  
AREA CODE 504 635 6094 346 8651

April 18, 1986  
RBG- 23559  
File Nos. G9.5, G9.25.1.4

Mr. Robert D. Martin, Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 1000  
Arlington, TX 76011



Dear Mr. Martin:

River Bend Station - Unit 1  
Docket No. 50-458

Enclosed is Gulf States Utilities Company's Special Report concerning a Division II Diesel Generator surveillance test at River Bend Station. This report is submitted pursuant to Technical Specification 4.8.1.1.3 and 6.9.2.

Sincerely,

*Eddie R Grant*

for J. E. Booker  
Manager-Engineering,  
Nuclear Fuels & Licensing  
River Bend Nuclear Group

*PT 3/8/86 JEB*  
JEB/TFP/DRG/BEH/je

Attachment

cc: Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

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86-412

SPECIAL REPORT

At 1526 on 3/17/86, a valid failure of the River Bend Station Division II Diesel Generator (DG) to pass its surveillance test was experienced. In accordance with Regulatory Guide 1.108, the following information is provided:

Diesel Generator Unit designation and number: Div. II, LEGS\*EG1B.

Cause of failure: The DG unit was unable to maintain its full rated speed (450 RPM) after a successful start attempt. At approximately one minute after the start, fuel oil pressure had not reached its normal operating range of 30-40 psig and the engine speed began to decrease. It was later found that the duplex fuel inlet strainer valve was improperly aligned and restricted fuel oil flow to the engine. The correct valve handle was installed on the fuel oil inlet duplex strainer assembly, but the handle was not properly installed on the valve stem. This caused misalignment of the strainer valve itself. This misalignment created a restriction of flow to the fuel oil pumps and subsequently, the engine injector system. Further investigation revealed that during corrective action of a similar fuel pressure problem on the Div. I DG on 2/14/86, the original handle from the Div. II DG strainer was removed and placed on the Div. I DG to facilitate alignment of its strainer. A new handle was then fabricated and reinstalled without proper written work authorization on the Div. II DG. It is postulated that the new handle may have been installed 90 degrees out from the position the original handle was removed from, then possibly rotated approximately 90 degrees sometime after installation, thus placing the strainer into misalignment. For more information on cause of failure reference Licensee Event Report 86-023 attached.

Corrective measures taken: Immediate corrective action was taken. The strainer was properly aligned and the fuel oil pressure was restored to its normal operating range. The DG was satisfactorily tested at 0405 on 3/18/86. The inlet fuel strainer valve stem was match marked to the strainer valve handle and proper alignment of the stem was verified by running both Division I and II DGs per the System Operating Procedure. For corrective action to prevent recurrence reference Licensee Event Report 86-023 attached.

Length of time unavailable: The exact length of time unavailable is indeterminate.

Current surveillance test interval: 31 days

Test interval conforms to Technical Specification: Yes

Number of valid failures in previous 100\* valid tests of all diesel generators at River Bend Station: Two (2) (ref. Special Report Booker to Martin dated 2/20/86).

Note: This failure, unlike the Div. 1 DG invalid failure on 2/14/86 whereby plant personnel failed to align the strainers properly due to lack of availability of the correct manufacturer's handle, represented a situation where; (1) the correct handle had been installed on the strainer assembly, (2) the strainer was assumed to be properly aligned, and (3) corrective action was felt to be completed. Therefore, this failure will be counted as a valid failure in the previous 100 valid tests.

\* Forty-seven valid tests have been previously performed on diesel generators at River Bend Station.

### LICENSEE EVENT REPORT (LER)

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TITLE (4)  
**Diesel Generator Fuel Oil Valve Misalignment**

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LICENSEE CONTACT FOR THIS LER (12)

NAME <b>D. Williamson - Operations Supervisor</b>	TELEPHONE NUMBER <b>5 0 4 6 3 5 - 6 0 9 4</b>
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

<input type="checkbox"/> YES (if you complete EXPECTED SUBMISSION DATE) <input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15): MONTH:    DAY:    YEAR:
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ABSTRACT (Limit to 1000 spaces - i.e. approximately fifteen single-spaced typewritten lines) (16)

On 3/17/86 at 1526 with the unit at 44 percent power and during a surveillance test of the Division II diesel generator, the diesel began to lose speed and was manually tripped. Investigation revealed that a misaligned fuel oil strainer valve restricted fuel oil flow to the engine. Further investigation revealed that the diesel generator may have been inoperable since 2/17/86. Technical Specifications requires a plant shutdown if one diesel generator is inoperable for greater than 72 hours. Immediate corrective action was taken to restore operability to the diesel generator by 3/18/86. Because of a similar problem earlier with the Division I diesel generator, additional corrective action was taken to prevent recurrence. There was no adverse effect on the health and safety of the public.

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NOTE: If more space is required, use additional NRC Form 200A (11/77)

Reported Condition

At 1526 on 3/17/86 with the unit at 44 percent power, the Division II Diesel Generator (DG) failed its surveillance test. The diesel started and came up to rated frequency and voltage within the required time but, approximately one minute into the run, frequency began to decrease. The annunciators "Low Fuel Pressure", "Fuel Pump 2B Running", and Fuel Pump/OS Drive Failure" alarmed. As the diesel coasted down the "Turbo Oil Pressure Low" alarm came in. The diesel was manually tripped at local panel 1EGS-PNL3B.

Prompt Maintenance Work Requests (MWRs) 18028 and 18029 were initiated to troubleshoot the failure. It was discovered that the duplex fuel inlet strainer valve was improperly aligned and restricted fuel oil flow to the engine. Furthermore, the valve handle was improperly installed in such a way as to prevent the proper operation of the valve.

The handle was re-installed in its proper configuration and at 0405 on 3/18/86 the Division II diesel generator was tested satisfactorily.

Investigation

A review of work performed on the Division II diesel generator since the last successful surveillance test on 2/15/86 identified two jobs which had the potential for misalignment of the fuel oil strainer valve. There would have been a violation of Technical Specifications if the diesel generator was inoperable for more than 72 hours.

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On 2/14/86 the Division I (A) diesel generator failed its surveillance test (ref. GSU Special Report Booker to Martin dated 3/16/86) also as a result of fuel oil strainer valve misalignment. In this case however, the fuel oil strainer valve handle was missing. The handle from the Division II DG was removed via prompt MWR 19664, placed on the Division I DG and the strainer valve re-aligned. As the missing handle could not be located, the handle now installed on the Division I DG was temporarily removed to the cold machine shop to be used as a template to machine a new handle. The new handle was then installed on the Division II fuel oil strainer valve on approximately 2/17/86.

On 3/5/86 preventative maintenance procedures ME-0233 and ME-0234 were performed and completed on the Division II DG. The purpose of these tasks are to clean the fuel oil strainer screens which are integral to the duplex strainer. No equipment deficiencies were noted on these completed tasks.

The root cause is attributed to improper implementation of administrative procedure ADM-028 "Maintenance Work Requests". The strainer valve handle was moved from one diesel to the other, a new handle was fabricated, and the handles were re-installed, all without the initiation of an MWR. Had an MWR been initiated a functional test would have been specified to verify proper alignment of the fuel oil strainer valve.

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Corrective Action

In addition to the immediate corrective action taken to restore operability to the Division II diesel generator, several corrective actions have been taken in an effort to prevent a recurrence of the deficiencies identified as a result of the two diesel generator events. These corrective actions are delineated below.

Operating procedure OSP-0012 "Daily Log Report" has been changed via Temporary Change Notices (TCNs) 86-0512 and 86-0530 to verify proper fuel oil strainer valve alignment for diesel generators A, B and C during each shift.

An inspection was performed (PMG-M-86-65 dated 4/2/86) of other plant equipment for similar duplex strainer configurations in an effort to prevent similar alignment problems. As a result some equipment was identified as having a potential for misalignment. These were the Control Building chiller oil filters, the diesel generator A and B lube oil filters, and the turbine hydrogen seal oil filter. With the exception to the DG lube oil filters, this equipment has been match marked (valve and handle) to provide for visual alignment of handle to valve. The DG lube oil filters, because of its design, was posted with a sign instead. The RCIC lube oil filter has a similar duplex configuration but, because of its design, it has been concluded that there is no potential for misalignment.

Administrative Procedure ADM-0020 "Plant Key Control" has been revised to make key control for doors a responsibility of the Security Department instead of Operations. The doors affected include the

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doors to the diesel generator rooms. To obtain these keys one must fill out a request form and obtain the Shift Supervisor's signature allowing issuance of the key from security.

A new Operations Section Procedure (OSP) is being written to provide a weekly and independent review of DG subsystems, major Emergency Core Cooling System flow paths, and primary containment isolation for proper valve alignment. This procedure is expected to be complete by 4/30/86.

The Shop Work Order (SWO) program has been deleted. As of 3/31/86 all work requested under a SWO was either completed or a Maintenance Work Request was written to continue the work. Additionally, approximately 600 SWOs written since initial criticality were reviewed by personnel from Maintenance and Compliance and a Senior Reactor Operator to ensure that the work performed was within the scope of a SWO. All SWOs reviewed were determined to be satisfactory.

The fuel oil strainer valve handles and shafts of all diesel generators have been scribed with match marks to ensure proper handle installation and allow for visual valve alignment without the valve handle (ref. Prompt MWR-7325).

All mechanics assigned to Mechanical Maintenance were directed by memorandum PMG-M-86-53 dated 3/19/86 that all work on permanent plant equipment shall be performed under a valid MWR or Preventive Maintenance (PM) document. They were also informed of the addition of match marks to the valve shaft and handle, their responsibility for ensuring that the handle is properly installed and aligned after



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performance of maintenance, and the requirements for retest. Training was also performed (TPP 22 and TR 0009) by the Training Department to reiterate the above to all mechanical maintenance personnel.

Plant preventative maintenance tasks ME-00229, 00230, 00233 and 00234 used to clean the strainer screens were revised to incorporate the reference to the match marks on the PM task card and to specify retest requirements. Retest requirements were not previously specified since it is not necessary to remove the handle in order to clean the screen and it is not possible to misalign the valve with the handle properly installed.

As an interim measure, a compliance analyst and four QA engineers were assigned full-time to perform surveillance on the Maintenance Department to ensure procedural adherence for conduct of maintenance.

In the future, the Plant Manager will ensure that condition reports, the documents initiated to identify problems, are assigned to the appropriate organizations for evaluation.

Nuclear Plant Engineering personnel were instructed via memorandum NuPE-86-447 dated 3/24/86 as to the proper method for evaluation of condition reports. The evaluation should identify the root cause of the event and fully describe any remedial or generic corrective action taken to minimize the probability of occurrence.

Administrative Procedure ADM-019 "Initiation and Processing of Condition Reports" is currently undergoing review for revision. The purpose of the revision is to standardize the form used for identification of problems and to provide explicit instructions on

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identification of root cause of the problem and corrective action, both remedial and generic, to prevent recurrence. The revision also provides for QA involvement during the evaluation and closeout review stages to provide greater assurance that the root cause has been identified and that the corrective action is adequate.

Efforts are underway to reduce the backlog of approximately 400 condition reports whose evaluation is complete but the closeout review is not yet complete. This will be done on a priority basis with the highest severity level condition reports being reviewed first. Completion of this effort is expected by 6/15/86.

Quality Assurance has developed a special surveillance for containment integrity, ECCS/ESF water system, and auxiliary power systems for the performance of system walkdowns to verify valve and breaker alignments in accordance with the applicable station operating procedures.

Safety Assessment

The potential exists that both Division I and Division II diesel generators may have been unavailable at the same time. This would have been during cold shutdown of the unit when the Division I diesel generator was taken out of service for preventative maintenance and the Division II diesel generator was potentially inoperable due to possible strainer misalignment. In this condition only one of these diesel generators is required by the Technical Specifications to be operable. There was at least one diesel generator available while the

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unit was in Operational Modes 1, 2 or 3 and River Bend Station was therefore, within the bounds of the safety analysis (assuring unavailability of the one diesel generator to be the single failure or error). There were no adverse consequences to the health and safety of the public as a result of this event.