

Jeffrey B. Archie  
Vice President, Nuclear Operations  
803.345.4214



December 22, 2006

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

Dear Sir/Madam:

Subject: VIRGIL C. SUMMER NUCLEAR STATION  
DOCKET NO. 50/395  
OPERATING LICENSE NPF-12  
10 CFR 21 NOTIFICATION – IDENTIFICATION OF DEFECT  
FAIRBANKS MORSE WOODWARD GOVERNOR

Pursuant to 10 CFR 21.21(d)(3)(ii), South Carolina Electric and Gas Company (SCE&G) is submitting a written notification on the identification of a defect that is considered to be a substantial safety hazard. This information was initially reported to the NRC Operations Center on December 5, 2006 in Event Notification No. 43031.

The attachment to this letter provides the information requested by 10 CFR 21.21(d)(4). Should there be any questions, please contact Mr. Bruce Thompson at (803) 345-5042.

Very truly yours,

Jeffrey B. Archie

CJM/JBA/cm  
Attachment

c: K. B. Marsh  
S. A. Byrne  
N. S. Carns  
J. H. Hamilton  
R. J. White  
W. D. Travers  
Ted Stevenson

R. E. Martin  
K. M. Sutton  
T. S. Fanguy  
NSRC  
RTS (CER 06-3492)  
File (818.18)  
DMS (RC-06-0225)

IE19

Attachment  
Virgil C. Summer Nuclear Station  
10 CFR 21.21(d)(3)(ii) Notification

**(i) Name and address of the individual or individuals informing the Commission.**

Mr. Jeffrey B. Archie  
Vice President, Nuclear Operations  
Virgil C. Summer Nuclear Station  
P.O. Box 88  
Jenkinsville, SC 29065

**(ii) Identification of the facility, the activity, or the basic component supplied for such facility or such activity within the United States which fails to comply or contains a defect.**

**Facility:**

Virgil C. Summer Nuclear Station  
P.O. Box 88  
Jenkinsville, SC 29065

**Basic component which fails to comply or contains a defect:**

Woodward 2301 A/DRU Governor for Fairbanks Morse Emergency Diesel Generator. The major components received under purchase order NU-02SR717446 are:

- a. Digital Reference Unit (DRU) – Part number 12998236
- b. Control Module (2301A) – Part number 12996949
- c. Magnetic Pickup Unit (MPU) – Part number P12619681
- d. Governor Actuator – Part number P12619633

**(iii) Identification of the firm constructing the facility or supplying the basic component which fails to comply or contains a defect.**

Fairbanks Morse  
701 White Ave.  
Beloit, WI 53511

**(iv) Nature of the defect or failure to comply and the safety hazard which is created or could be created by such defect or failure to comply.**

**Nature of defect:**

The Fairbanks Morse design uses a Woodward 2301 A/DRU system with a reverse acting actuator. The Control Module (2301A) and Digital Reference Unit (DRU) are connected in a "Full Authority" configuration.

In the "Full Authority" configuration, the manufacturer's failure mode effect analysis (FMEA) states that when power is lost to the DRU the speed reference signal (output signal from the DRU) will go to 0 VDC. The FMEA further states that the Control Module will respond to this 0 VDC signal and drive the Emergency Diesel Generator (EDG) to its rated speed of 514 rpm.

When this failure mode was tested, by removing the incoming 125 VDC control power, at the Virgil C. Summer Nuclear Station (VCSNS), the DRU output was found to be -4 VDC. The lower than expected voltage would cause the Control Module to drive the EDG to the low speed set point of 300 rpm (not the 514 rpm stated by Fairbanks Morse). To prevent the 2301 A/DRU system from driving the EDG to the low speed set point, the unit must be reset after power is restored.

As part of the Fairbanks Morse design for new Woodward 2301 A/DRU governor, a set of normally closed contacts called "LSA" were removed. These contacts were in parallel with the Emergency Start (ESA) contacts and were originally installed to preset the governor MOP to the rated speed set point of 514 rpm before the EDG was started. From discussions with Fairbanks Morse, these LSA contacts were approved for reinstallation at the discretion of VCSNS. The manufacturer's design was not revised to reflect the reinstallation of the LSA contacts. While not proven by VCSNS, re-installation of the LSA contacts may provide a means to automatically reset the governor upon loss of control power.

**Safety hazard which could be created by such defect:**

Both Emergency Diesel Generators at VCSNS were scheduled to have the upgraded 2301 A/DRU governor system installed during the past outage. With the defect identified during pre-installation testing it would have been possible for one or both EDG's to be incapable of operating at rated speed. The change in Governor output voltage and resultant low speed operation following any loss of input power would not be detected until start of the EDG in response to a design basis event or during performance of Technical Specification surveillances to test the performance of a EDG.

The inability of an EDG to reach rated speed during a design basis event would be considered to be a loss of safety function.

**(v) The date on which the information of such defect or failure to comply was obtained.**

The defect was initially identified during bench testing, prior to installation of the components on plant equipment, on October 16, 2006. Following recognition that there were potential failure modes that had not been identified by the supplier, VCSNS initiated a review of the non-conformance in the plant corrective action program.

The reportability evaluation resulted in a determination that the failure modes found by plant personnel had not been recognized by the supplier and that they were considered to be a potential substantial safety hazard. The position that the defect was reportable under 10CFR21 was approved by the Vice President Nuclear Operations on December 4, 2006. The initial NRC notification was made by phone, followed by facsimile, on December 5, 2006.

**(vi) In the case of a basic component which contains a defect or fails to comply, the number and location of all such components in use at, supplied for, or being supplied for one or more facilities or activities subject to the regulations in this part.**

VCSNS purchased 4 Woodward 2301 A/DRU governor assemblies from Fairbanks Morse under purchase order NU-02SR717446 for use on the plant EDGs. The defect was found prior to installation of the new governors during the past outage completed in November 2006; therefore, there are no units installed at our facility.

**(vii) The corrective action which has been, is being, or will be taken; the name of the individual or organization responsible for the action; and the length of time that has been or will be taken to complete the action.**

Following identification of the defect, VCSNS management removed the planned installation of the new units from the outage schedule. The new governors will not be installed at our plant until the defect has been corrected by the supplier.

**(viii) Any advice related to the defect or failure to comply about the facility, activity, or basic component that has been, is being, or will be given to purchasers or licensees.**

SCE&G is not aware of the facilities that may have received these governors from Fairbanks Morse. The supplier has been notified about the failure mode and it is expected that they will notify purchasers of the defect and how to prevent interruption of the safety function.