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SOUTH CAROLINA ELECTRIC & GAS COMPANY

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E. H. CREWS, JR.  
VICE-PRESIDENT AND GROUP EXECUTIVE  
ENGINEERING AND CONSTRUCTION

May 29, 1980

Mr. James P. O'Reilly, Director  
U. S. Nuclear Regulatory Commission  
Region II  
Suite 3100  
101 Marietta Street, N. W.  
Atlanta, GA 30305

Subject: Virgil C. Summer Nuclear Station, Unit 1  
Significant Deficiency  
Failure of the Chilled Water  
Centrifugal Chiller Unit

Dear Mr. O'Reilly:

On April 30, 1980, Mr. A. G. Alvarez, Senior Engineer, Production Engineering, South Carolina Electric & Gas Company, notified NRC-OIE Region II, resident inspector Mr. Jack Skolds, of a significant deficiency under the provisions of 10CFR50.55(e) regarding the failure of the "B" York Centrifugal Chiller Unit.

On February 22, 1980, during initial startup of the "B" chiller unit, it was discovered that the chiller unit could not be fully loaded before the unit would trip out on low evaporator pressure. Investigation of the problem determined that the service water temperature was too cold, producing conditions in the chiller condenser such that R-11 pressure was inadequate to keep the evaporator from being evacuated to the setpoint of the low pressure trip. The temperature condition in the chiller condenser that causes this problem can exist when the service water discharge temperature from the chiller condenser is below 65°F, the manufacturer's recommended minimum. The service water discharge temperature, being a function of heat load on the chiller unit, can be less than 65°F whenever the water in the Service Water Pond is less than 60°F, which occurs only during the colder months, and service water flow is at the design rate. The described conditions would have a similar effect on all three chiller units.

The safety implications of this deficiency, had it gone undetected and no operator action taken, could have been the loss of the Chilled Water System which could have resulted in the possible compromise of the ambient requirements of the Control Room, Engineered Safety Features Switchgear, Charging/Safety Injection Pumps, Reactor Building Spray Pumps, Residual Heat Removal Pumps, the Component Cooling Pumps, and components served by them.

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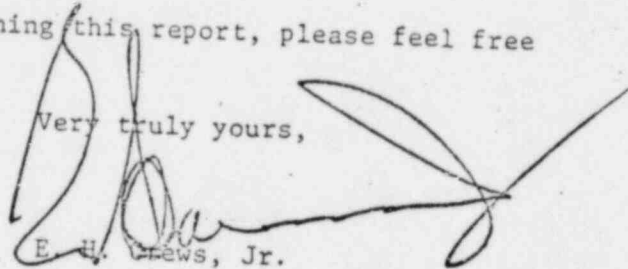
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As the condition is seasonal, the present corrective action has been the deletion of a low service water flow cutout in the service water flow to the chiller condenser, which was recommended by the chiller unit manufacturer, and administrative control of the butterfly valve in the service water return line from the chiller unit to throttle service water and maintain acceptable temperature for chiller unit operation.

In addition to the corrective action for the chiller units, an evaluation of the other systems and components served by the Service Water System is being conducted to determine if a similar susceptibility to minimum service water temperature exists. This is an interim report on the subject reportable deficiency.

If you have any questions concerning this report, please feel free to call me.

Very truly yours,

  
E. H. Crews, Jr.

MDQ:rm

CC: U. S. Nuclear Regulatory Commission  
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