



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

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U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

South Texas Project
Unit 1
Docket No. STN 50-498
Special Report, Emergency Core Cooling System
Actuation and Injection into the Reactor Coolant System

Reference: "Licensee Event Report 00-007, Manual Unit Trip with Safety Injection",
G.L. Parkey to NRC Document Control Desk, dated January 15, 2001
(NOC-AE-01000988)

On December 16, 2000, Unit 1 experienced an Emergency Core Cooling System actuation and injection of water into the Reactor Coolant System. The referenced letter discusses this event. The attached is a Special Report required by Technical Specifications 3.5.2 and 6.9.2.

If there are any questions regarding this matter, please contact Mr. S. M. Head at (361) 972-7136 or me at (361) 972-7902.


T. V. Jordan
Manager,
Engineering

kjt

Attachment: Special Report - Emergency Core Cooling System Actuation and Injection
into the Reactor Coolant System

cc:

Ellis W. Merschhoff
Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, Texas 76011-8064

John A. Nakoski
Addressee Only
U. S. Nuclear Regulatory Commission
Project Manager, Mail Stop OWFN/7-D-1
Washington, DC 20555-0001

Mohan C. Thadani
Addressee Only
U. S. Nuclear Regulatory Commission
Project Manager, Mail Stop OWFN/7-D-1
Washington, DC 20555

Cornelius F. O'Keefe
c/o U. S. Nuclear Regulatory Commission
P. O. Box 910
Bay City, TX 77404-0910

A. H. Gutterman, Esquire
Morgan, Lewis & Bockius
1800 M. Street, N.W.
Washington, DC 20036-5869

M. T. Hardt/W. C. Gunst
City Public Service
P. O. Box 1771
San Antonio, TX 78296

A. Ramirez/C. M. Canady
City of Austin
Electric Utility Department
721 Barton Springs Road
Austin, TX 78704

Jon C. Wood
Matthews & Branscomb
112 East Pecan, Suite 1100
San Antonio, Texas 78205-3692

Institute of Nuclear Power
Operations - Records Center
700 Galleria Parkway
Atlanta, GA 30339-5957

Richard A. Ratliff
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3189

R. L. Balcom/D. G. Tees
Houston Lighting & Power Co.
P. O. Box 1700
Houston, TX 77251

C. A. Johnson/R. P. Powers
AEP - Central Power and Light Company
P. O. Box 289, Mail Code: N5012
Wadsworth, TX 77483

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Washington, D.C. 20555-0001

Special Report
Emergency Core Cooling System Actuation and Injection
into the Reactor Coolant System

On December 16, 2000 with the plant operating in Mode 1 at 100% power, a manual reactor trip was initiated when all main turbine governor valves closed due to a turbine control system problem. Pressurizer spray valves opened as expected in response to the initial increase in reactor coolant temperature and pressure due to the load rejection. After the reactor was tripped, reactor coolant pressure began to drop due to primary plant cool down and pressurizer spray flow. Eighty-two seconds following the manual reactor trip, an automatic safety injection actuated at the low pressurizer pressure setpoint. After reactor coolant system pressure had lowered below the spray valve close setpoint, the spray valves were observed to still have open indication with a signal that was slightly above zero demand. The spray valve controllers were placed in manual to shut the valves. The spray valves physically shut when instrument air was removed from the actuator as a result of the containment isolation valves closing upon receipt of the safety injection signal. After taking manual control of the auxiliary feedwater system and throttling back flows as allowed per the emergency operating procedure, reactor coolant system pressure reached a minimum of 1480 psig and then began increasing. During this transient, approximately 2200 gallons of safety injection water entered the reactor coolant system from the refueling water storage tank via the high head safety injection pumps.

The pressurizer spray valves did not respond as designed for this transient. The plant safety analysis shows that pressurizer pressure stabilizes at a level above the safety injection setpoint for the expected pressurizer spray response for this transient. The root cause for automatic safety injection was partially open pressurizer spray valves. A calibration shift of the spray valve I/P converters during the transient caused these valves to be driven partially open with zero (closed) demand position. This condition resulted in a larger than expected pressure drop.

This Emergency Core Cooling System actuation was the first actuation cycle with water injection into the Reactor Coolant System to date. The current usage factor for each affected safety injection nozzle is below 0.70.