



KANSAS GAS AND ELECTRIC COMPANY

GLENN L. KOESTER
VICE PRESIDENT - NUCLEAR

July 16, 1985

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

KMLNRC 85-183
Re: Docket No. STN 50-482
Subj: Special Report 85-009

Dear Mr. Martin:

The enclosed Special Report is submitted pursuant to Technical Specifications 6.9.2 and 3.5.2.

If you have any questions concerning this matter, please contact me or Mr. Otto Maynard of my staff.

Yours very truly,


for Glenn L. Koester

Vice President - Nuclear

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Enclosure

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SPECIAL REPORT 85-009

Emergency Core Cooling System Actuations

This Special Report is being submitted pursuant to Technical Specification 3.5.2 Action Statement b. and Technical Specification 6.9.2. Contained herein are descriptions of the circumstances of three Emergency Core Cooling System (ECCS) actuations which occurred on April 28, 1985, April 30, 1985, and May 6, 1985. Also included in this report is the total accumulated actuation cycles to date and information on the current value of the Safety Injection nozzle usage factor.

The first ECCS actuation occurred on April 28, 1985, and is discussed in Licensee Event Report 85-021-00, which was transmitted via KMLNRC 85-126, dated May 24, 1985. This actuation was initiated by a low steamline pressure signal on Steam Generator (S/G) "D".

At the time of this event, the plant was in Mode 3, Hot Standby, prior to initial criticality. The Reactor Coolant System (RCS) was being maintained at 505-510 degrees F and 2100 psig. The pressurizer level was being manually controlled at approximately 27 percent. Pressurizer pressure was also being manually controlled. The steamline pressure was approximately 700 psig, with feedwater being supplied by the Motor Driven Startup Feed Pump, and the Steam Generator (S/G) "C" Power Operated Relief Valve (PORV) was open approximately 25 percent controlling temperature in the RCS. Testing was being performed on the Main Steamline Isolation Valves (MSLIV's) in accordance with surveillance procedure STS-AB-201, "Main Steam System Inservice Valve Test", and all four MSLIV's were closed. The MSLIV bypass valves had just been reopened, and the test performer requested that MSLIV AB-HV-11 be opened in order to continue with the surveillance test. The operator initiated the opening of AB-HV-11 and shortly thereafter, at approximately 1550 CDT, the Safety Injection and Main Steamline Isolation occurred due to low steamline pressure.

All Engineered Safety Features equipment required to actuate responded properly, except for the Control Room Emergency Ventilation System which was already in operation due to a Technical Specification Action Statement regarding an inoperable radiation monitor. Three minor equipment problems were noticed. BM-HV-003, a S/G "C" Blowdown Isolation Valve, leaked through following closure at approximately 7000 JPM. The status of SGL15B, a Penetration Room Cooler in the Auxiliary Building, did not display on the ESF status panel, although the cooler did function properly. Also, AL-HV-5, an auxiliary feed regulating valve on S/G "D" did not modulate smoothly.

An Unusual Event was declared and subsequently terminated in accordance with the Emergency Plan Implementing Procedures. The appropriate federal, state, and local agencies were notified.

Approximately 2000 gallons of water were injected into the RCS from the Refueling Water Storage Tank, causing pressurizer level to increase to approximately 61 percent and RCS pressure to increase to approximately 2340 psig. One Centrifugal Charging Pump was secured during this event in order to limit the RCS pressure transient. Nevertheless, the RCS pressure did reach the set point of the pressurizer Power Operated Relief Valves (PORV's), and both PORV's did lift. The temperature of the RCS decreased slightly and the Safety Injection was terminated at approximately 1557 CDT in accordance with plant procedures EMG E-0, "Safety Injection" and EMG ES-03, "SI Termination".

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The initiating signal, low steamline pressure, has been attributed to the rate-sensitive nature of the steamline pressure circuitry. The operator opened the MSLIV before the pressure had equalized through the bypass valves and the result was a rapid decrease in pressure of approximately 10-15 psig in the steamline. This decrease in steam pressure signal was fed into the logic circuits, amplified by a factor of 10, and was sufficient to reach the low steamline pressure trip setpoint.

Work Requests were initiated to investigate the equipment problems that were noted during this event. The status of SGL15B did not indicate on the ESF panel due to a warped contact block which has been replaced. BM-HV-003 and AL-HV-5 have been reworked, and demonstrated to stroke and seat properly.

Although this event has been attributed to a personnel error, the rate sensitive nature of the circuitry contributed substantially to this event. As a result of this event, more emphasis is being placed on the rate-sensitive nature of certain circuitry during Requalification Training and Hot License Training sessions.

This event was the first actuation of ECCS subsystems while the plant was at near normal operating temperature and pressure.

The second ECCS actuation occurred on April 30, 1985, and is discussed in Licensee Event Report 85-022-00, which was transmitted via KMLNRC 85-132, dated May 30, 1985. This actuation also occurred due to a low steamline pressure signal.

At the time of this actuation, the plant was in Mode 3, Hot Standby, prior to initial criticality. The RCS was at the normal operating temperature, 557 degrees F, and pressure, 2250 psig. Pressurizer level was being manually maintained at approximately 22 percent and pressure was being maintained automatically. The secondary side was being maintained in steady state conditions by dumping steam to the condenser.

When the Safety Injection Signal occurred, all ESF equipment required to actuate with the plant in Mode 3 responded properly. The pressurizer pressure control system limited the pressure transient in the RCS to a maximum of 2328 psig, and the pressurizer level increased to 38 percent. The minimum RCS temperature during this event was 551 degrees F. The pressurizer Power Operated Relief Valves did not lift during this transient.

The operators carried out the appropriate steps of procedure EMG E-0, "Safety Injection", and when steady state conditions were reached the appropriate steps of the SI recovery procedure ES-03, "SI Termination", were performed. The Safety Injection was terminated by approximately 1155 CDT.

An Unusual Event was declared and terminated. The appropriate federal, state, and local agencies were notified in accordance with the Emergency Plan Implementing Procedures.

The Post Trip Review revealed that steamline pressure never reached the trip setpoint for low steamline pressure, although the indications on steam generators "B" and "C" did show a momentary decrease in pressure from 1070.2 and 1065.8 psig to 746.5 and 925.8 psig respectively. Shortly after this pressure dip, the pressure returned to normal. Although the decrease in steam pressure did not reach the low pressure setpoint, the rate sensitive nature of the signal circuit caused an anticipatory trip. Thus, the initiating signal of low steamline pressure was due to the step decrease in steamline pressure.

Subsequent investigations into this event confirmed that the step decrease in the steam pressure signal was caused by interference from an operator's hand held radio transmission. An operator was standing in the area of the steamline pressure transmitters and had keyed his radio just prior to the initiation of this event. This scenario has been re-enacted with the result being an identical response. At the time of re-enactment, the plant was below the P-11 interlock point, and no actuation of ESF equipment occurred, but the required logic for a low steamline pressure signal was induced.

As a result of this event, the use of radios within the plant was severely restricted and more stringently controlled.

The third ECCS subsystem actuation occurred on May 6, 1985, and is discussed in Licensee Event Report 85-027-00, which was transmitted via KMLNRC 85-145, dated May 31, 1985. This actuation was also initiated by a low steamline pressure signal.

At the time of this event, the plant was in Mode 3, Hot Standby, prior to initial criticality, and hot, no-flow control rod drop testing on Control Bank "B" was in progress. The Reactor Coolant Pumps (RCPs) and Main Steamline Isolation Valves had been secured to support this testing, and the average temperature of the RCS was approximately 530 degrees F. The RCS pressure was approximately 2241 psig. The pressurizer level was being controlled manually at approximately 23 percent and pressure was being controlled automatically. Steam Generators "A" and "C" were being slowly fed via the Main Feedwater Bypass Valves to adjust level. With no significant heat transfer to the Steam Generators from the RCS, the addition of feedwater resulted in cooling the Steam Generators and decreasing the steamline pressure to the trip setpoint for low steamline pressure (615 psig), and the Safety Injection and Main Steamline Isolation signals occurred.

An Unusual Event was declared and subsequently terminated. The appropriate federal, state, and local agencies were notified in accordance with the Emergency Plan Implementing Procedures.

All ESF equipment responded properly. The RCS pressure transient was limited to approximately 2340 psig by the Pressurizer Power Operated Relief Valves. Pressurizer level increased to 56 percent during this event, and the lowest temperature in the RCS was approximately 500 degrees F.

The Safety Injection was terminated in accordance with plant procedures EMG E-0, "Safety Injection", and EMG ES-03, "SI Termination", at approximately 1243 CDT.

The circumstances which led to this event have been discussed with the operating personnel in shift briefings and crew meetings stressing operator awareness of plant status, and particularly early recognition of developing trends. In addition, since the plant conditions allowing no RCS flow through the Steam Generators (minimum or no decay heat present) will only reoccur after subsequent refuelings, the information pertaining to this event has been added to a Post-Refueling Action File, maintained by Training, which contains items to be stressed to the operators during the Requalification Training presented near the time of refueling.

In each of the three actuations at near normal operating temperature and pressure which have occurred, the usage factor for each Safety Injection nozzle was below the 0.70 limit specified by Technical Specification 3.5.2 Action Statement b.

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In each instance, the ECCS equipment performed its intended safety function, no release of radioactivity occurred, and at no time was there a threat to the health and safety of the public.