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Dresden Nuclear Power Station
R. R. #1
Morris, Illinois 60450
October 8, 1974



Mr. James G. Keppler, Regional Director
Directorate of Regulatory Operations-Region III
U. S. Atomic Energy Commission
799 Roosevelt Road
Glen Ellyn, Illinois 60137

SUBJECT: REPORT OF ABNORMAL OCCURRENCE PER SECTION 6.6.A OF THE TECHNICAL SPECIFICATIONS.
2/3 CORE HEIGHT YARWAY CALIBRATION DEFICIENCY.

References: 1) Regulatory Guide 1.16 Rev.1 Appendix A

2) Notification of Region III of AEC Regulatory Operations
Telephone: Mr. C. Brown, 1600 hours on September 30, 1974
Telegram: Mr. J. Keppler, 1620 hours on September 30, 1974

3) Drawing Number: GEK 26915 Tab 1

Report Number: 50-249/1974-31

Report Date: October 8, 1974

Occurrence Date: September 28, 1974

Facility: Dresden Nuclear Power Station, Morris, Illinois

IDENTIFICATION OF OCCURRENCE

The 2/3 core height water level sensors LITS 3-263-73 A&B were found during routine surveillance to have setpoints above the Technical Specification limit of ≤ 257 " H₂O ΔP decreasing.

The "as found" setpoints did not meet the requirement of Table 3.2.2 of the Technical Specifications which requires that the containment spray system be interlocked to prevent operation if reactor water level is at or below 2/3 of the core height.

CONDITIONS PRIOR TO OCCURRENCE

Unit #3 was operating in a steady state plant condition of 700 MWt and 200 MWe. Routine surveillance "Containment Spray Interlocks, Reactor Water Level" on containment spray permissive Yarway level sensors LITS 263-73A&B was in progress.

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DESCRIPTION OF OCCURRENCE

At 1600 hours on September 28, 1974, while performing routine surveillance testing of Unit #3 containment spray permissive Yarway level sensors, LITS 3-263-73 A&B were found with setpoints of 259.5 inches of $H_2O \Delta P$ decreasing and 257.5 inches of $H_2O \Delta P$ decreasing respectively. The Technical Specifications requires that the sensors operate at ≤ 257 inches $H_2O \Delta P$ decreasing. The instrument mechanic operated the sensor and indicating instrument several times to verify obtained readings and observed the indication to decrease to settings within Technical Specification limits.

DESIGNATION OF APPARENT CAUSE OF OCCURRENCE (Deficient Procedures)

The apparent cause of the occurrence is the instrument mechanic either trapping air bubbles in the sensor during test equipment connection to the Yarway, decreasing the $H_2O \Delta P$ at a slower rate than was used during adjustment of the setpoint, or not taking into consideration the instrument hysteresis characteristics.

ANALYSIS OF OCCURRENCE

On October 4 and 5, 1974, testing of LITS 3-263-73 A&B was accomplished to determine the possible cause for the out of specification setpoint readings obtained on September 28, 1974. The following was determined to affect the setpoint readings. The system was operated and determined to have instrument repeatability within 1/2 percent of full range meter indication. Meter indication is 0-400 inches. Indicator hysteresis specification is $2\frac{1}{2}\%$ maximum of full-scale meter indication.

1. During equipment connection an air bubble or bubbles may have been trapped on the low pressure line of the Yarway. Testing verified that if an air bubble or bubbles is trapped that an initial high reading will occur and could be decreased to within setpoint tolerance by repeating attempts to verify the setpoint indication.
2. When checking the setpoint, the rate at which the $H_2O \Delta P$ is reduced across the detector could affect the setpoint reading. Subsequent test confirmed that the faster the $H_2O \Delta P$ is reduced, the lower the setpoint reading is. (It is not known if the instrument mechanic reduced $H_2O \Delta P$ at approximately the same rate as the instrument mechanic who adjusted the setpoint.)
3. The hysteresis of the instrument may have affected the setpoint reading. When $H_2O \Delta P$ is increased above the reset point of the interlock and then decreased to the setpoint, the setpoint reading is decreased due to hysteresis. It is not known if the instrument mechanic who adjusted the setpoint incorporated the instrument hysteresis when adjusting the setpoint. It is known that the instrument mechanic checking the setpoint did not incorporate the instrument hysteresis characteristics. It is also known that if the instrument mechanic had incorporated the hysteresis characteristic, the setpoint readings would have been within Technical Specifications.

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The normal setpoint of these switches is 96/144ths core height. The out of specification trip points would have been 96.9/144ths and 96.2/144ths. The function of the sensors is to provide a permissive to allow the use of the containment spray system. The as found settings would have allowed containment spray at 96.2/144ths of core height.

Station abnormal procedures state that the reactor vessel level be normal prior to utilizing the LPCI system in the containment cooling mode. Even though the setpoint was low, the operator would have verified the vessel level before manually initiating the containment cooling. Therefore, this situation did not present a safety hazard to either plant personnel or the general public.

CORRECTIVE ACTION

The corrective action was to reset the interlock settings to as close to 254 inches $H_2O \Delta P$ as possible. Further action is to change the procedure to identify the hysteresis characteristics of the Yarway indicator and assure the characteristics are taken into consideration when checking the setpoint and to take steps necessary to assure air bubbles are not trapped in the detector.

FAILURE DATA

The sensors are Yarway Number 4418EC devices. The switches were last checked August 19, 1974 and found to be with Technical Specifications. This occurrence is not considered a sensor failure but a failure to connect test equipment correctly or a failure to consider equipment characteristics when checking the setpoint. However, previous to this Technical Specification violation, LITS 3-263-73A has failed six times since September, 1971 with the latest failure occurring in May, 1974. Each month since May, the sensor/indicator was found to be within Technical Specifications. LITS 3-263-73B has failed four times since September, 1971 with the last failure occurring in November, 1973. Each month since November, the sensor/indicator was found to be within Technical Specifications.

Sincerely,

B. B. Stephenson
for B. B. Stephenson
Superintendent

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