



LER# 82-079/01T-0

SUPPLEMENT TO EVENT DESCRIPTION

DURING THE LOW POWER PHYSICS TESTING PROGRAM FOLLOWING THE END OF CYCLE 6 REFUELING, THE UNIT ENTERED MODE 2 AT APPROXIMATELY 2235 HOURS ON SEPTEMBER 14, 1982. AT THAT TIME, NUCLEAR INSTRUMENTATION SYSTEM CHANNEL N43 WAS INOPERABLE BECAUSE IT'S IONIZATION CHAMBERS WERE USED FOR THE INPUT TO THE REACTIVITY COMPUTER THAT IS USED FOR LOW POWER PHYSICS TESTS. THE OVERPOWER DELTA-T AND OVERTEMPERATURE DELTA-T BISTABLES ASSOCIATED WITH NUCLEAR INSTRUMENTATION SYSTEM (NIS) POWER RANGE CHANNEL N43 SHOULD HAVE BEEN BUT WERE NOT IN THE "TRIPPED" POSITION, WHICH IS NON-CONSERVATIVE WITH RESPECT TO TECHNICAL SPECIFICATIONS 3.0.4 AND 3.3.1.1 TABLE 3.3-1 ITEMS 7 AND 8. IN ADDITION, THE ACTION REQUIREMENT WAS NOT FULFILLED WITHIN THE ONE HOUR ALLOWED BY ACTION ITEM 2a OF SPECIFICATION 3.3.1.1.

THE FOLLOWING SEQUENCE OF EVENTS DESCRIBES AND EXPLAINS HOW THE TECHNICAL SPECIFICATIONS WERE VIOLATED AND HOW THE EVENT WAS DISCOVERED.

AS OPERATIONAL TIME ON UNIT 1 HAS BEEN ACCUMULATED, AN INCREASE HAS ALSO BEEN OBSERVED IN THE BEGINNING OF CYCLE, SUBCRITICAL, NUCLEAR INSTRUMENTATION SYSTEM POWER RANGE DETECTOR SIGNAL. THIS SUBCRITICAL POWER RANGE SIGNAL CONSTITUTES A BACKGROUND TO THE SIGNAL RESULTING FROM NEUTRONS DURING ZERO POWER PHYSICS TESTS. IF THIS BACKGROUND SIGNAL IS SUFFICIENTLY LARGE, IT CAN INVALIDATE ROD WORTH MEASUREMENTS. IN ORDER TO COMPLETE TECHNICAL SPECIFICATION SURVEILLANCE 4.1.1.1.1.d, MEASURED ROD WORTH DATA ARE REQUIRED TO CALCULATE THE SHUTDOWN MARGIN. AS PART OF THE EFFORT TO STUDY THE BACKGROUND PROBLEM AND COMPENSATE FOR IT, BACKGROUND LEVELS WERE MEASURED ON ALL FOUR NUCLEAR INSTRUMENTATION SYSTEM POWER RANGE CHANNELS BY SEQUENTIALLY CONNECTING THE REACTIVITY COMPUTER TO EACH CHANNEL DURING

THE WEEKS OF AUGUST 23, 1982 AND AUGUST 30, 1982. AS A RESULT OF THESE MEASUREMENTS, ON SEPTEMBER 1, 1982, POWER RANGE CHANNEL N42 WAS REPLACED AND SUBSEQUENT BACKGROUND LEVEL MEASUREMENTS WERE TAKEN TO DETERMINE WHETHER THE NEW DETECTOR WAS MORE SUITABLE FOR LOW POWER PHYSICS TESTING. A DETERMINATION WAS MADE THAT THE NOISE LEVELS HAD INCREASED ON THE NEW N42 AND IT WAS DECIDED TO USE N43 FOR THE LOW POWER PHYSICS TESTING. DURING THE ABOVE MENTIONED MEASUREMENTS OF THE DETECTORS AND THE REPLACEMENT OF N42, THE REACTOR WAS IN MODES 3, 4 AND 5 AND THE OVERPOWER DELTA-T AND OVERTEMPERATURE DELTA-T BISTABLES ASSOCIATED WITH THE NUCLEAR INSTRUMENTATION SYSTEM CHANNEL BEING STUDIED WERE NOT TRIPPED.

AT APPROXIMATELY 0400 HOURS ON SEPTEMBER 15, 1982, APPROXIMATELY FIVE HOURS AFTER ENTERING MODE 2, A INSTRUMENT MAINTENANCE SUPERVISOR NOTICED THAT THE STATUS LIGHTS FOR THE OVERPOWER DELTA-T AND OVERTEMPERATURE DELTA-T CHANNEL ASSOCIATED WITH THE NUCLEAR INSTRUMENTATION SYSTEM CHANNEL (N43) CONNECTED TO THE REACTIVITY COMPUTER WERE NOT ILLUMINATED (NOT INDICATING "TRIPPED"). BELIEVING THIS WAS INCORRECT, THE INSTRUMENT MAINTENANCE SUPERVISOR INSTRUCTED A JUNIOR TECHNICIAN TO RESEARCH THE BISTABLES THAT NEEDED TO BE IN THE TRIPPED POSITION. THE SUPERVISOR CONTINUED TO REVIEW OTHER INSTRUMENTATION IN THE UNIT 1 CONTROL ROOM TO ENSURE THAT IT WAS FUNCTIONING PROPERLY.

AT THIS TIME, THE SUPERVISOR RECEIVED A REQUEST FOR ASSISTANCE FROM THE UNIT 2 CONTROL ROOM. HE PROCEEDED TO THE UNIT 2 CONTROL ROOM WHERE HE OBSERVED A TRANSIENT IN PROGRESS ON THE FEEDWATER HEATERS. HIS INTENTION WAS TO TAKE CORRECTIVE ACTION IF THE TRANSIENT WAS INSTRUMENT-RELATED BEFORE THE SITUATION WORSENERD AND HE WISHED TO BE PRESENT IF THE REACTOR TRIPPED IN ORDER TO ASSIST WITH ANY RESULTING PROBLEMS WITHIN HIS COGNIZANCE. THE

SUPERVISOR WAS INVOLVED IN UNIT 2 ACTIVITIES UNTIL APPROXIMATELY 0600 HOURS ON SEPTEMBER 15, 1982, AT THIS TIME, THE TECHNICIAN ASSIGNED TO THE OVERPOWER DELTA-T AND OVERTEMPERATURE DELTA-T BISTABLES CONFERRED WITH THE INSTRUMENT MAINTENANCE SUPERVISOR ABOUT HIS FINDINGS AND THE BISTABLES WERE PLACED IN THE TRIPPED POSITION AT 0630 HOURS ON SEPTEMBER 15, 1982. THE PUBLIC HEALTH AND SAFETY WERE NOT AFFECTED.

#### SUPPLEMENT TO CAUSE DESCRIPTION

TESTING WAS CONDUCTED TO DETERMINE BACKGROUND SIGNAL LEVEL ON THE NUCLEAR INSTRUMENTATION SYSTEM POWER RANGE CHANNELS IN MODES 3, 4, AND 5. IN THESE MODES, THE OVERPOWER DELTA-T AND OVERTEMPERATURE DELTA-T TRIP BISTABLES WERE NOT REQUIRED TO BE TRIPPED AND WERE NOT TRIPPED. THE INITIAL CRITICALITY PROCEDURE DID NOT INCLUDE A HOLD POINT, PRIOR TO ENTERING MODE 2, TO ENSURE THAT ALL REQUIRED BISTABLES WERE TRIPPED AFTER SELECTING THE CHANNEL TO BE USED FOR PHYSICS TESTING.

OPERATING PERSONNEL DID NOT OBSERVE THE FACT THAT THE OVERPOWER DELTA-T AND OVERTEMPERATURE DELTA-T BISTABLES WERE NOT TRIPPED. BEGINNING OF CYCLE PHYSICS TESTING IS A NORMAL ROUTINE ACTIVITY. REMOVING THE POWER RANGE CHANNEL FROM SERVICE WAS NOT ASSOCIATED WITH AN ABNORMAL PLANT LINE-UP IN THIS EVOLUTION. THE ABSENCE OF OVERPOWER AND OVERTEMPERATURE DELTA-T STATUS LIGHTS IS NOT AN INDICATION THAT IS READILY IDENTIFIED UNLESS IT IS BEING SPECIFICALLY VERIFIED. THE STATUS LIGHTS ARE IN A PART OF THE CONTROL ROOM SOME DISTANCE FROM THE NUCLEAR INSTRUMENTATION SYSTEM.

FAILURE TO TRIP THE OVERPOWER DELTA-T AND OVERTEMPERATURE DELTA-T BISTABLES WAS SERIOUS FROM BOTH A TECHNICAL SPECIFICATION AND PROCEDURAL CONTROL POINT OF VIEW. HOWEVER, SEVERAL ALTERNATE REACTOR PROTECTION FEATURES WERE

AVAILABLE TO TRIP THE REACTOR. IF A REACTIVITY EXCURSION HAD OCCURRED THE FOLLOWING TRIPS WOULD HAVE BEEN AVAILABLE:

1. NUCLEAR INSTRUMENTATION SYSTEM SOURCE RANGE CHANNEL AT 105cps, ONE OF TWO CHANNELS, BELOW P-6.
2. NUCLEAR INSTRUMENTATION SYSTEM INTERMEDIATE RANGE CHANNEL AT 25% RTP, ONE OF TWO CHANNELS.
3. NUCLEAR INSTRUMENTATION SYSTEM POWER RANGE NEUTRON FLUX, LOW SETPOINT AT 25% RTP, TWO OF FOUR CHANNELS (N43 WAS ALREADY IN TRIP).
4. NUCLEAR INSTRUMENTATION SYSTEM POWER RANGE NEUTRON FLUX, HIGH SETPOINT AT  $\leq$  25% RTP, TWO OF FOUR CHANNELS (N43 WAS ALREADY IN TRIP).
5. FOR A RAPID POWER EXCURSION POWER RANGE NEUTRON FLUX, HIGH POSITIVE RATE, TWO OF FOUR CHANNELS (N43 WAS ALREADY IN TRIP).
6. IF A DEPRESSURIZATION ACCIDENT HAD OCCURRED, THE REACTOR WOULD HAVE TRIPPED AT 1815 PSIG AS A RESULT OF A SAFETY INJECTION ACTUATION. AT THIS PRESSURE THE RCS WOULD HAVE BEEN APPROXIMATELY 76° F SUBCOOLED.
7. THE OVERPOWER DELTA-T AND OVERTEMPERATURE DELTA-T TRIPS WERE ALSO AVAILABLE BUT WERE REDUCED FROM A TWO OF FOUR LOGIC TO A TWO OF THREE LOGIC.

TO PREVENT RECURRENCE THE APPLICABLE PROCEDURE FOR INITIAL CRITICALITY HAS BEEN MODIFIED TO INCLUDE A SIGNOFF SHEET TO ENSURE THE OVERPOWER DELTA-T AND OVERTEMPERATURE DELTA-T BISTABLES FOR THE NUCLEAR INSTRUMENTATION SYSTEM CHANNEL THAT IS CONNECTED TO THE REACTIVITY COMPUTER ARE IN THE TRIPPED POSITION BEFORE CONTROL RODS ARE WITHDRAWN.

IN ADDITION, CONTROLS HAVE BEEN ESTABLISHED PROHIBITING CHANGING OPERATING MODES WITH REDUNDANT TECHNICAL SPECIFICATION EQUIPMENT PHYSICALLY INOPERABLE, UNLESS A SPECIFIC EVALUATION VERIFIES ITS PROPRIETY.

PRIOR TO THE NEXT NEED TO PERFORM THIS TESTING, A TECHNICAL SPECIFICATION CHANGE REQUEST WILL BE PROCESSED FOR UNIT NO. 1 TO INCORPORATE THE NOTE "THE PROVISIONS OF SPECIFICATION 3.0.4 ARE NOT APPLICABLE" TO ACTION STATEMENT NO.2 FOR TECHNICAL SPECIFICATION 3.3.1.1 (TABLE 3.3-1). THIS STATEMENT PRESENTLY EXISTS IN THE UNIT NO. 2 TECHNICAL SPECIFICATION. THIS CHANGE IS EDITORIAL IN NATURE. WE HAVE ALWAYS UNDERSTOOD THE TECHNICAL SPECIFICATIONS TO PERMIT ZERO POWER PHYSICS TESTING. TO DATE, FULL COMPLIANCE, HAS BEEN ACHIEVED.