

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

IN THE MATTER OF
GPU NUCLEAR CORPORATION

DOCKET NO. 50-289
LICENSE NO. DPR-50

CERTIFICATE OF SERVICE

This is to certify that a copy of Technical Specification Change Request No. 228 to Appendix A of the Operating License for Three Mile Island Nuclear Station Unit 1, has, on the date given below, been filed with executives of Londonderry Township, Dauphin County, Pennsylvania; Dauphin County, Pennsylvania; and the Pennsylvania Department of Environmental Resources, Bureau of Radiation Protection, by deposit in the United States mail, addressed as follows:

Mr. Darryl LeHew, Chairman
Board of Supervisors of
Londonderry Township
R. D. #1, Geyers Church Road
Middletown, PA 17057

Mr. Russell L. Sheaffer, Chairman
Board of County Commissioners
of Dauphin County
Dauphin County Courthouse
Harrisburg, PA 17120

Director, Bureau of Radiation Protection
PA. Department of Environmental Resources
Fifth Floor, Fulton Building
Third and Locust Streets
P. O. Box 2063
Harrisburg, PA 17120
Attn: Mr. Richard R. Janati

GPU NUCLEAR CORPORATION

BY: J. J. Broughton
Vice President and Director, TMI

DATE: March 2, 1994

I. TECHNICAL SPECIFICATION CHANGE REQUEST (TSCR) NO. 228

GPU Nuclear requests that the following changed replacement pages be inserted into existing Technical Specifications (T.S.):

Replace the existing pages 3-27, 3-27a, 3-29, 3-30, 3-31, 3-32, 3-32a, 3-32b, and 4-5 with the attached revised pages 3-27, 3-27a, 3-29, 3-30, 3-31, 3-32, 3-32a, 3-32b, and 4-5.

Add new pages 3-30a and 3-32c.

II. REASON FOR CHANGE

This requested change to the Technical Specifications (T.S.) will modify the Operational Safety Instrumentation requirements as follows:

- a. clarify equipment inoperability when one or both trains of a function are affected;
- b. define timeclocks for instrumentation inoperability that is either consistent with related equipment outage times specified in existing T.S. 3.3.2 and T.S. 3.6.6 or consistent with a reasonable outage time for equipment that has two additional independent backup actuation signals;
- c. define other timeclocks for instrumentation inoperability consistent with comparable COMPLETION TIMES specified in NUREG-1430, "STANDARD TECHNICAL SPECIFICATIONS (STS)" for Babcock and Wilcox plants;
- d. clarify when certain footnotes are applicable;
- e. administrative changes which delete information that is no longer applicable or merely provide unnecessary design feature description, and changes which provide clarification.

On February 25, 1993, GPU Nuclear submitted LER 93-001 which concerned failure of a pressure switch (BS-PS-286) during performance of a monthly T.S. surveillance. Part of the corrective action planned included reviewing and requesting changes to T.S. Table 3.5-1 so that the subject pressure switches and their related pump would have consistent allowable outage times. During the review process for this T.S. change, it was determined that Table 3.5-1, in its entirety, should be revised to specify timeclocks when minimum operability requirements are not met, in order to minimize entry into T.S. 3.0.1 (equivalent to revised STS 3.0.3), and also to clarify instrumentation requirements when one or both trains of a function are affected.

III. SAFETY EVALUATION JUSTIFYING CHANGE

1. Pages 3-27a, 3-29, 3-30, and 3-30a

Table 3.5-1 Column (A) specifies the minimum number of operable channels and Column (B) specifies the associated minimum degree of redundancy for the Reactor Protection System (RPS) channels. Column (C) is being revised to replace the term "Maintain hot shutdown" with a new footnote (a). Footnote (a) states that if the conditions of Columns (A) and (B) cannot be restored within 1 hour, the unit must be placed in HOT SHUTDOWN within an additional 6 hours. This change to Column (C) provides sufficient time to place an inoperable instrumentation channel in either the trip or bypass condition, which is required to satisfy the Columns (A) and (B) requirements. Also, the 1 hour timeclock is sufficient time to correct minor problems that might occur with the manual pushbutton.

The second sentence of the Bases for T.S. 3.5.1 on page 3-27a is being deleted as this discussion merely reflects the requirements of T.S. 3.5.1.1.

The power range instrumentation channel requirements have been changed from three minimum operable channels to two minimum operable channels. This change is consistent with the requirements specified in NUREG-1430. There are four reactor protection channels. Normal trip logic is two out of four. Minimum required trip logic is one out of two. If one or more functions in two protection channels becomes inoperable, one of two inoperable protection channels must be placed in trip and the other in bypass. This action places the RPS in a one-out-of-two logic configuration and prevents bypass of a second channel. In this configuration, the RPS can still perform its safety functions in the presence of a random failure of any single channel.

The "Turbine Trip" and "Loss of Feedwater" trips were added to the RPS automatic trip function following the TMI-2 accident in accordance with NUREG-0737. Currently Table 3.5-1 requires that the unit maintain indicated reactor power less than 7% and 45% if minimum conditions for operations are not met for the "Loss of Feedwater" and "Turbine Trip" channels, respectively. However, there is no timeclock specified to attain this condition if indicated reactor power is above these limits when the minimum conditions are not met. Allowing 1 hour to restore minimum conditions or within an additional 6 hours to reduce reactor power in an orderly manner without challenging plant systems is reasonable, based on operating experience. This revision removes any uncertainty regarding compliance with this requirement in the event minimum conditions for these two channels are not met.

The changes made on these pages are consistent with the RPS instrumentation requirements for completion times specified in NUREG-1430.

2. Pages 3-31, 3-32, 3-32a, and 3-32b

These changes provide a 1 hour timeclock to establish the minimum degree of redundancy following a change in the number of operable channels from three operable channels to the minimum of two. If one

of the designated analog channels becomes inoperable, placing it in a tripped condition leaves the system in a one-out-of-two condition for actuation. Thus, if another channel were to fail, the Engineered Safeguards Actuation System (ESAS) instrumentation could still perform its actuation functions. Placing the inoperable channel in the tripped condition is completed when all of the affected output relays and block timers are tripped. This can normally be accomplished by tripping the affected bistables or tripping the individual output relays and block timers. The 1 hour timeclock is sufficient time to perform this required action. If the conditions of Columns (A) and (B) cannot be restored within 1 hour per new footnote (a), the unit must be in HOT SHUTDOWN within an additional 6 hours and COLD SHUTDOWN within the following 24 hours. These changes are consistent with the completion times specified in NUREG-1430.

Footnote (b) allows reduction of degree of redundancy for surveillance testing during which time the ESAS analog channels have a 2 out of 2 trip logic. This allowance is based on the inability to perform the surveillance in the time allowed in footnote (a). Eight hours is a reasonable time to perform the surveillance. These changes are consistent with the associated completion time and surveillance allowance specified in NUREG-1430.

The ESAS manual initiation capability allows the operator to actuate ESAS functions from the control room in the absence of any other initiation condition. Manually actuated functions include high pressure injection and low pressure injection, Reactor Building (RB) isolation and cooling, and Reactor Building Spray (BS). This ESAS manual initiation capability is provided in the event the operator determines that an ESAS function is needed and has not been automatically actuated. Furthermore, the ESAS manual initiation capability allows operators to rapidly initiate Engineered Safety Feature (ESF) functions if the trend of unit parameters indicates that ESF actuation will be needed.

Two ESAS manual initiation channels of each ESAS function shall be operable whenever conditions exist that could require ESF protection of the reactor or RB. Two operable channels ensure that no single random failure will prevent system level manual initiation of any ESAS function. The ESAS manual initiation functions allow the operator to initiate protective action prior to automatic initiation or in the event the automatic initiation does not occur.

These changes provide a 72-hour timeclock to restore one inoperable manual initiation channel and clarify that there are separate manual actuation switches for the 4 psig and 30 psig RB isolation features. The 72-hour timeclock is based on unit operating experience for replacing/troubleshooting switches and administrative controls, which provide alternative means of ESAS function initiation via individual component controls. The 72-hour timeclock is consistent with the allowed outage time for the safety systems actuated by ESAS and NUREG-1430.

BS is initiated by starting the BS pumps at 30 psig in the RB. This is achieved by sensing the RB pressure with three pressure switches in each train. Each train's set of three pressure switches, which are wired in a two out of three matrix, controls the closing coil of the circuit breaker of one spray pump. Correspondingly, selected cooling water valves serving the Reactor Coolant Pumps close at 30 psig in the RB. This is also achieved by sensing the RB pressure with three pressure switches in each train. Also, each train of these three pressure switches are wired in a two out of three matrix and sends an actuation signal to a containment isolation valve. Both groups of six pressure switches are independent and have no other function than to start a BS pump in the respective train or close a containment isolation valve in the respective actuation train.

The Technical Specifications Bases for T.S. 3.3 which includes the BS System states that only one spray system train is required to meet the post-accident RB emergency cooling needs and the iodine removal function. At least single valve Containment Isolation for the cooling water lines affected by the 30 psig pressure switches is achieved by each actuation train of pressure switches. Current T.S. does not address redundant train related components which have independent actuating pressure switches. The current T.S. operability requirements apply the same action requirements as ESAS analog channels that do not have independent pressure sensors. Treating the operability requirements for the RB 30 psig pressure switches in this manner is inappropriate because of the design differences. In the case of ESAS analog channels which do not have independence, one channel is common to both trains and inoperability impacts both trains simultaneously. With the RB 30 psig pressure switches, inoperability of any pressure switch in one train only impacts that train.

The time being proposed for repair of an inoperable BS pressure switch in one train by this TSCR is consistent with the time allotted for repair of other safety-related equipment similarly configured such that only one train is affected. Specifically, the action proposed by this TSCR is consistent with T.S. 3.3.2, which allows components to be removed from service so that the affected system train is inoperable for not more than 72 consecutive hours. If the system is not restored to operable within 72 hours, the reactor shall be placed in HOT SHUTDOWN within 6 hours.

The timeclock being proposed for the RB isolation signal at 30 psig is consistent with the time allotted for repair of other safety-related equipment that has a redundant component. Specifically, the action proposed by this TSCR is consistent with T.S. 3.6.6 which allows 48 hours to restore an inoperable RB isolation valve. If not restored within 48 hours, the redundant valve must be closed or the reactor shall be brought to HOT SHUTDOWN within the next 6 hours and to COLD SHUTDOWN condition within an additional 30 hours.

Footnote (f) on page 3-32a is being revised to supply a reasonable time period to perform the specified action. The RB purge line isolation on high radiation is actuated when the gaseous channel of RMA-9 reaches its high alarm setpoint. The isolation function provided by RMA-9 is not part of the ESAS, but serves as an additional backup to assure no uncontrolled release of radioactivity from the containment for design basis events. The primary means of assuring the RB purge lines are isolated for design basis events are the 4 psig ESAS signal and its backup is the reactor trip signal which occurs at an RCS pressure of 1900 psig. Since the RB purge valves have redundant safety grade auto actuation from both the ESAS and reactor trip signals, it is determined acceptable to allow an 8-hour time period to allow accomplishing the required action of securing the purge and closing the purge isolation valves. This provides adequate time to confirm a problem exists with RMA-9 and perform minor troubleshooting.

3. Pages 3-27, 3-32c, and 4-5

These proposed changes are administrative in nature. Changes on page 3-27 provide clarification on Column (C) guidance and allowed use of the key operated channel bypass switch. Changes on page 3-32c delete a footnote in Section D of Table 3.5-1 which states that it is only applicable for a previous cycle - Cycle 6, and modify Column (C) and footnote (a) to be consistent with the format of other changes made in this submittal. Changes on page 4-5 provide clarification for the description of the RB pressure switches and make a spelling correction on item 20.

IV. NO SIGNIFICANT HAZARDS CONSIDERATIONS

GPU Nuclear has determined that this TSCR involves no significant hazards consideration as defined by NRC in 10 CFR 50.92.

1. Operation of the facility in accordance with the proposed amendment would not involve a significant increase in the probability of occurrence or the consequence of an accident previously evaluated.

The proposed amendment permits time to restore instrumentation channels to operable status which is consistent with existing times allowed for outage of other safety-related equipment affecting one train. With regard to the 1 hour timeclock, this time is sufficient to perform the required action necessary to restore minimum required conditions. Allowing 6 hours to reduce reactor power in an orderly manner without challenging plant systems is reasonable, based on operating experience. Thus, the proposed amendment maintains an adequate degree of equipment availability without requiring unnecessary initiation of a plant shutdown for partial equipment outages.

Therefore, it can be concluded that the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Operation of the facility in accordance with the proposed amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendment affects the RPS and the ESAS by providing timeclocks to perform corrective actions. During this timeclock period the safety function of the RPS can still be completed by the remaining minimum required channels. If an accident occurred while one ESAS train was inoperable due to faulty pressure switches or a faulty manual actuation channel, the redundant train would complete the safety function. The proposed time allowed for the pressure switches in one train or the faulty manual actuation channel to be out of service is bounded by the allowable time for other safety-related equipment such that only one train is affected. The proposed 8 hour timeclock associated with the RB purge radiation monitor, RMA-9, provides adequate time to confirm a problem exists and perform minor troubleshooting. The containment isolation function for the RB purge valves would still be maintained by a redundant 4 psig ESAS signal and a redundant reactor trip containment isolation signal.

Therefore, the proposed amendment does not create the possibility of a new or different accident.

3. Operation of the facility in accordance with the proposed amendment would not involve a significant reduction in a margin of safety.

As noted in the Bases for Specification 3.5.1, every reasonable effort will be made to maintain all safety instrumentation in operation. If RPS or ESAS instrumentation is found to be inoperable or require maintenance to assure reliability, the proposed amendment will allow the performance of maintenance and surveillance in a reasonable time period. This change does not result in a significant reduction in a margin of safety for the RPS because the automatic functions and various alternative manual trip methods are still available. Also, this change does not result in a significant reduction in a margin of safety for the ESAS because at least one train of safety features is required for continued operation within the specified timeclocks with automatic and manual trip functions.

Thus, operation of the facility in accordance with the proposed amendment does not involve a significant reduction in a margin of safety.

V. IMPLEMENTATION

It is requested that the amendment authorizing this TSCR be effective 30 days after issuance.