ATTACHMENT 1

Marked-up Technical Specification Pages

3/4 7-10

B 3/4 7-3 (with insert)

PLANT SYSTEMS

MAIN FEEDWATER LINE ISOLATION VALVES

LIMITING CONDITION FOR OPERATION

3.7.1.6 Each main feedwater line isolation valve shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

MODE 1 - With one main feedwater line isolation valve inoperable but open, POWER OPERATION may continue provided the inoperable valve is restored to OPERABLE status within ~~4~~ 72 hours; otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 24 hours.

MODES 2, 3 and 4 - With one main feedwater line isolation valve inoperable, subseqent operation in MODE 2, 3, or 4 may proceed provided:

a. The isolation valve is maintained closed.

b. The provisions of Specification 3.0.4 are not applicable.

Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 24 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.6 Each main feedwater line isolation valve shall be demonstrated OPERABLE by:

a. Part-stroke exercising the valve at least once per 92 days, and

b. Verifying full closure within 5.15 seconds on any closure actuation signal while in HOT STANDBY with $T_{avg} \geq 515°F$ during each reactor shutdown except that verification of full closure within 5.15 seconds need not be determined more often than once per 92 days.

3/4.7.1.4. ACTIVITY

The limitations on secondary system specific activity ensure that the resultant offsite radiation dose will be limited to a small fraction of 10 CFR Part 100 limits in the event of a steam line rupture. This dose also includes the effects of a coincident 1.0 gpm primary to secondary tube leak in the steam generator of the affected steam line and a concurrent loss of offsite electrical power. These values are consistent with the assumptions used in the safety analyses.

3/4.7.1.5 MAIN STEAM LINE ISOLATION VALVES

The OPERABILITY of the main steam line isolation valves ensures that no more than one steam generator will blow down in the event of a steam line rupture. This restriction is required to (1) minimize the positive reactivity effects of the Reactor Coolant System cooldown associated with the blowdown, and (2) limit the pressure rise within containment in the event the steam line rupture occurs within containment. The OPERABILITY of the main steam isolation valves within the closure times of the Surveillance Requirements is consistent with the assumptions used in the safety analyses.

3/4.7.1.6 MAIN FEEDWATER LINE ISOLATION VALVES

The main feedwater line isolation valves are required to be OPERABLE to ensure that (1) feedwater is terminated to the affected steam generator following a steam line break and (2) auxiliary feedwater is delivered to the intact steam generator following a feedwater line break. If feedwater is not terminated to a steam generator with a broken main steam line, two serious effects may result: (1) the post-trip return to power due to plant cooldown will be greater with resultant higher fuel failure and (2) the steam released to containment will exceed the design.

Due to removal of the main feed check valve from the plant design and its replacement with a second main feedwater line isolation valve, there is nothing other than the main feedwater line isolation valves to prevent back flow of AFW following a feed line break. This may result in a loss of condensate inventory and the potential for not being able to feed the steam generator.

The concern is the failure of one main feedwater line isolation valve to close with the other main feedwater line isolation valve in that line being inoperable (i.e., stuck open). It is thus desired to preclude operation for extended periods with a main feedwater line isolation valve known to be stuck in the open position.

Insert #1

Insert #2

INSERT #1

Two redundant main feedwater isolation valves (MFIV's) are provided in each main feedline to assure feedwater isolation in the event of a steam line break with a single failure. Also, redundant MFIV's assure that backflow in the feedlines is prevented following a feedline break.

INSERT #2

A time limit of 72 hours on operations with an inoperable main feedwater isolation valve provides assurance that operations will not continue for an extended period with a failed, open MFIV.

ATTACHMENT 2

SAFETY EVALUATION

I. INTRODUCTION

The existing ACTION statement for the St. Lucie Unit 2 Technical Specifications Section 3/4.7.1.6, Main Feedwater Isolation Valves (MFIV) allows operations to continue four (4) hours with an inoperable, open MFIV. This ACTION statement does not provide adequate time to analyze an MFIV problem and effect repairs. As a result, there exists the potential for unnecessary plant shutdowns.

This proposed change to the Technical Specifications will modify the Section 3/4.7.1.6 ACTION Statement for an inoperable, open MFIV to allow operations to continue for up to 72 hours instead of the present four (4) hour limit. If the valve cannot be restored to OPERABLE, the plant would be placed in HOT STANDBY in the next 6 hours and COLD SHUTDOWN within the following twenty-four (24) hours.

II. DISCUSSION AND ANALYSIS

The MFIVs are required to be OPERABLE to ensure that feedwater flow to the affected steam generator is terminated in the event of a main steamline break (MSLB). If main feedwater flow is not terminated, two effects may result: (1) the post-trip return to power may be greater with resultant higher fuel failure and, (2) the steam release to the containment may exceed containment design pressure if the break is inside containment.

Additionally, the MFIVs function to ensure that auxiliary feedwater (AFW) can be delivered to the intact steam generator in the event of a main feedline break (MFLB). Back flow of the AFW to the Main Feedwater System following a feedline break could result in a loss of condensate inventory and the potential for not being able to feed the intact steam generator.

The closure of a single MFIV in each feedline, as required by the safety analysis, provides isolation of main feedwater and availability of AFW following a steamline or feedline break. The second MFIV ensures that a single failure which precludes closure of one valve will not preclude main feedwater isolation or AFW availability.

The proposed change is acceptable for the following reasons:

(A) Under current Technical Specifications, operation with an inoperable,

open MFIV is allowed for four hours. In the event of a Design Basis Event (DBE) during this period, failure to terminate feed flow would require that: 1) the second MFIV in the same line as the first valve must also fail open, 2) a main steam line (or feed line) break must occur and the affected steam generator (or feed line) must be the one fed by the line which has two failed MFIVs, and 3) this series of events must occur during the action time (4 hours) identified in the LCO.

The likelihood of this sequence of events occurring is very low.

In order to gain perspective on the significance of the proposed change, from 4 to 72 hours, 1) an estimated MFIV fail open frequency per NUREG 2728 (1E-3 per demand) can be combined with 2) an estimate of the frequency of MSLB as given in the Zion PRA (9.4E-04) to provide a conservative estimate of the failure to terminate flow given a MSLB event occurs during operation with one MFIV inoperable, open. Review of NPRDS data for January, 1985 to May, 1987 revealed one LER written on the MFIVs. Therefore, an assumption of entering an LCO once per year is conservative. Using the described rationale provides a conservative estimate which can help illustrate the relative significance of a change from a 4 hour to a 72 hour action time.

(MFIV fails open) x (MSLB) x (LCO Action Time) = frequency of failure to terminate flow during MSLB

(1E-03/d) x (9.4E-4/Rx yr) x (4 hr) (1/8760 yr/hr) = 4.3E-10/d

(1E-03/d) x (9.4E-4/Rx yr) x (72 hr) (1/8760 yr/hr = 7.7E-09/d

The ranges of .0000000077 and .00000000043 are such low occurrence events that for practical purposes the difference between the two (7.3E-09) is not significant. A similar argument and low frequency of occurrence can be demonstrated for the feedline break scenario.

B) If an MFIV becomes inoperable and is open, the present Technical Specification Section 3/4.7.1.6 allows operations to continue for only four (4) hours prior to proceeding to HOT STANDBY. As stated in NUREG 1024, Tech Spec allowable outage times for inoperable equipment have been established on the basis of engineering judgment considering the use of standard intervals (e.g. 1 hour, 4 hours, 72 hours, etc.). It is also stated that

outage times that are too short can result in unnecessary plant trips, transients and fatigue cycling.

The proposed 72 hour allowable outage time for an inoperable, open MFIV is consistent with the standard time interval selected for other safeguards systems. For example, with an inoperable Emergency Core Cooling System (ECCS) subsystem, Section 3/4.5.2 allows operations to continue for 72 hours while the redundant subsystem is restored to OPERABLE. Similar situations exist with the Containment Spray Systems (Section 3/4.6.2) Containment Fan Coolers (Section 3/4.6.2.3), Intake Cooling System (Section 3/4.7.4) and Component Cooling Water System (Section 3/4.7.3). In each case, the above systems have redundant subsystems and the ACTION time in each Tech Spec allows operations to continue for up to 72 hours while an inoperable subsystem is restored to OPERABLE. Also, the MFIVs function as a portion of the flow boundary of the AFW and the proposed change is consistent with the AFW Tech Spec ACTION TIME (Section 3/4.7.1.2) given a single inoperable component in redundant trains. Thus, an extension of the MFIV ACTION TIME TO 72 hours provides the same time to repair an inoperable subsystem as other safeguards systems.

ATTACHMENT 3

DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATION

The standards used to arrive at a determination that a request for amendment involves no significant hazards consideration are included in the Commission's regulations, 10 CFR 50.92, which states that no significant hazards considerations are involved if the operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety. Each standard is discussed as follows:

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

The proposed 72 hour ACTION statement with an inoperable Main Feedwater Isolation Valve (MFIV) is consistent with other safeguards equipment outage times. The likelihood of a feedline or steamline break with a concurrent failure of the second valve in the same feedline is remote during the outage time. Thus, the proposed 72 hour allowable outage time will not significantly increase the probability or consequences of an accident previously evaluated.

(2) Use of the modified specification would not create the possibility of a new or different kind of accident from any accident previously evaluated.

This change will not create the possibility of a new or different kind of accident from any previously analyzed because it does not introduce a new mode of normal or emergency plant operation. In addition the proposed change does not involve a physical modification to the plant.

(3) Use of the modified specification would not involve a significant reduction in a margin of safety.

Because failure of the second MFIV in the same feedline with a simultaneous feedline or steamline break during the seventy-two (72) hour allowable outage time is unlikely, this change does not involve a significant reduction in a margin of safety.

Based on the above, we have determined that the amendment request does not (1) involve a significant increase in the probability or consequences of an accident previously evaluated, (2) create the probability of a new or different kind of accident from any accident previously evaluated, or (3) involve a significant reduction in a margin of safety; and therefore does not involve a significant hazards consideration.

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