Illinois Power Company
Clinton Power Station
P.O. Box 678
Clinton, IL 61727
Tel 217 935-5623
Fax 217 935-4632

Walter G. MacFarland IV
Senior Vice President
and Chief Nuclear Officer

ILLINOIS POWER
An Illinova Company

U-603088
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October 5, 1998

Docket No. 50-461

10CFR50.90
10CFR50.12

Document Control Desk
Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Clinton Power Station Proposed Amendment of
Facility Operating License No. NPF-62 (LS-98-011)

Dear Madam or Sir:

Pursuant to 10CFR50.90, Illinois Power (IP) hereby applies for amendment of Facility Operating License No. NPF-62, Appendix A - Technical Specifications for Clinton Power Station (CPS). Per this request IP proposes to change Technical Specification (TS) 5.5.13, "Primary Containment Leakage Rate Testing Program," to allow the next scheduled performance of the local leakage rate test (LLRT) of the primary containment penetration for the reactor pressure vessel head spray piping (1MC-042) to be deferred until the seventh refueling outage (RF-7).

The last LLRT for 1MC-042 was performed early during the current outage period at CPS. Due to the length of the ongoing extended outage, the test interval (30 months) for penetration 1MC-042 will expire prior to the next scheduled refueling outage (RF-7). For reasons more fully explained within Attachment 2 to this letter, including consideration of the consistently acceptable leakage performance of this penetration in the past, and the significant evolution required to test this penetration at this time, IP has determined that re-testing this penetration prior to plant restart from the current outage is impractical and unnecessarily burdensome relative to any safety benefit to be gained by reperforming the LLRT.

A description of the proposed changes and associated justification (including a Basis for No Significant Hazards Consideration) are provided in Attachment 2. A marked-up copy of the affected page from the current TS is provided in Attachment 3. Further, an affidavit supporting the facts set forth in this letter and its attachments is provided in Attachment 1.

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This issue was previously addressed by letter U-603061 dated August 13, 1998, wherein IP requested a temporary schedular exemption from the requirements of 10CFR50, Appendix J, to defer the LLRT of primary containment penetration 1MC-042 at Clinton Power Station (CPS). During the staff's review of the subject exemption request it became apparent that the nature of the request was more appropriately characterized as a 10CFR50.90 submittal rather than a 10CFR50.12 submittal. Subsequent telephone conferences conducted between IP and NRC staff personnel confirmed this determination on the basis that IP has adopted Option B of 10CFR50, Appendix J. Unlike Option A, test intervals for the performance of LLRTs are not specified in Option B. Instead, test intervals are derived by reference to Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," in the plant Technical Specifications which were revised to adopt Option B, via Amendment 105 to the Operating License. (RG 1.163 provides the guidance and details for implementation of 10CFR50, Appendix J - Option B, as prescribed by the NRC.) Because LLRT test intervals are established by this reference in TS 5.5.13, extension of an LLRT test interval requires a change to the TS. On this basis, it was agreed that IP should withdraw the subject exemption request and resubmit the request as a change to the operating license pursuant to 10CFR50.90.

Based on the above, IP hereby respectfully requests withdrawal of its August 13, 1998 application for a temporary schedular exemption from 10CFR50, Appendix J, to defer the LLRT of primary containment penetration 1MC-042 at CPS. Deferring the LLRT of 1MC-042 will instead be pursued via this amendment request.

Please note that the planning of remaining work activities for the current shutdown period is significantly dependent on the NRC's approval of the subject proposed license amendment. IP therefore respectfully requests NRC's prompt review and determination regarding approval of this request in order that appropriate work scheduling may be accomplished as soon as possible in preparation for the anticipated plant start up in the fourth quarter of this year.

This proposed request was evaluated against the criteria of 10CFR51.22 for environmental considerations. The proposed change does not significantly increase individual or cumulative occupational radiation exposures, does not significantly change the types or significantly increase the amount of effluents that may be released off-site and, as discussed in Attachment 2, does not involve a significant hazards consideration. Based on the foregoing, it has been concluded that the proposed Technical Specification change meets the criteria given in 10CFR51.22(c)(9) for categorical exclusion from the requirement for an Environmental Impact Statement.

Sincerely yours,

Walter G. MacFarland, IV
Senior Vice President and
Chief Nuclear Officer

JFK/mlh

Attachments

cc: NRC Clinton Licensing Project Manager
NRC Resident Office, V-690
Regional Administrator, Region III, USNRC
Illinois Department of Nuclear Safety

Walter G. MacFarland, IV, being first duly sworn, deposes and says: That he is Senior Vice President and Chief Nuclear Officer for Clinton Power Station; that this application for amendment of Facility Operating License NPF-62 has been prepared under his supervision and direction; that he knows the contents thereof; and that to the best of his knowledge and belief said letter and the facts contained therein are true and correct.

Date: This 5th day of October 1998.

Signed: Walter G. MacFarland

Walter G. MacFarland, IV

STATE OF ILLINOIS) SS.
DeWitt COUNTY)

Subscribed and sworn to before me this 5th day of October 1998.

" OFFICIAL SEAL "
Jacqueline S. Matthias
Notary Public, State of Illinois
My Commission Expires 11/24/2001

Jacqueline S. Matthias

(Notary Public)

Background

Affected Penetration

Primary containment penetration 1MC-042 is provided for the reactor pressure vessel (RPV) head spray piping associated with the reactor core isolation cooling (RCIC) and residual heat removal (RHR) systems. The head spray piping contains flanged connections to permit disassembly and removal of this piping to allow the RPV head to be removed for refueling operations.

The local leakage rate test (LLRT) for primary containment penetration 1MC-042 (see attached figure) is normally performed during a refueling outage when the drywell head and the RPV head spray piping are removed. A blind flange is installed at the drywell bulkhead to establish a boundary for performing the LLRT of penetration 1MC-042. The test volume extends from the blind flange installed at the drywell bulkhead, through the connecting ASME Class 1 piping, to the outboard primary containment isolation valves.

Regulatory Requirements and Guidance

Compliance with 10 CFR Part 50, Appendix J, provides assurance that the primary containment, including those systems and components which penetrate the primary containment, do not exceed the allowable leakage rate specified in the Technical Specifications (TS). The allowable leakage rate is determined so that the leakage assumed in the safety analyses is not exceeded.

On September 12, 1995, the NRC approved issuance of a revision to 10CFR50, Appendix J, which became effective on October 26, 1995. This revision added Option B, "Performance-Based Requirements," to Appendix J to allow licensees to voluntarily replace the prescriptive testing requirements of Appendix J (Option A) with testing requirements based on both overall and individual component leakage rate performance. Regulatory Guide 1.163, "Performance-Based Containment Leak-Test Program," was developed as a method acceptable to the NRC staff for implementing Option B. This regulatory guide states that the Nuclear Energy Institute (NEI) guidance document NEI 94-01, "Industry Guideline for Implementing Performance-based Option of 10 CFR Part 50, Appendix J," provides methods acceptable to the NRC staff for complying with Option B (with certain exceptions described therein). Option B was approved for use at CPS by Amendment 105 to the facility operating license, and was implemented during the current outage period.

Per the guidance given in NEI 94-01, for a licensee to determine the performance of each component included in the primary containment leakage rate testing program, criteria that are indicative of performance, such as an administrative leakage limit, must be established. The administrative limit is selected to be indicative of the potential onset of component degradation. Test results are thus evaluated relative to the administrative limits to assess leakage performance and to establish an appropriate test interval for each penetration.

Under the Appendix J, Option B program guidelines, as given by NEI 94-01, "extensions in Type B and Type C test intervals are allowed based upon completion of two consecutive periodic As-found tests where the results of each test are within a licensee's allowable administrative limits." Under the CPS program, the initial base test interval for a containment penetration is 30 months. For successful completion of two consecutive as-found tests, an extended interval of 60-months may be used Per the guidance of IP's internal procedure governing the Primary Containment Leakage Rate Testing Program at CPS, an as-found test is required prior to any repair, modification, or adjustment activity which could affect a component's leakage rate. Also, Appendix E, "Testing Requirement Positions," of this same procedure states specifically that torque switch adjustment or spring pack replacement (i.e., certain activities associated with motor-operated valve maintenance) requires as-found and as-left leakage rate testing of the affected valve.

For initiating the Option B program at CPS, the leakage performance (leak rate test history) of each containment penetration at CPS was evaluated to establish an initial testing frequency for each penetration within the Primary Containment Leakage Rate Testing Program. A test interval of 60 months was assigned to some valves/penetrations based on a favorable leakage history. However, an initial base test interval of 30 months was assigned to penetration 1MC-042 because an as-found test was not performed for this penetration in the fifth refueling outage, prior to performing some motor-operator testing and adjustment of valve 1E12-F023 which is one of the isolation valves associated with penetration 1MC-042. Prior to the adoption of Option B there was no requirement to perform as-found testing for maintenance activities of this type prior to performing such activities.

Problem Description

Clinton Power Station (CPS) has been in an extended shutdown period since before the last performance of the LLRT for 1MC-042. Since this penetration is on a 30-month test interval (such that the next LLRT is due again on June 8, 1999), and since plant conditions at this point in the current outage are not conducive for re-performing the LLRT prior to plant startup, a special mid-cycle shutdown would be necessary without the requested license amendment to defer performance of the next LLRT until startup from the next scheduled refueling outage (RF-7).

Earlier during the current outage, an LLRT for penetration 1MC-042 was completed on December 8, 1996. The penetration demonstrated satisfactory as-found leakage results, and the test boundary included valve 1E12-F023. However, per the CPS program and the guidelines of NEI 94-01, one additional satisfactory as-found test is required before the penetration can be placed on an extended test interval of 60 months.

Description of the Proposed Change to the CPS TS

To permit the requested extension of the LLRT for primary containment penetration 1MC-042, the last sentence in the first paragraph of TS 5.5.13, "Primary Containment Leakage Rate Testing Program," is being revised to read as follows:

"This program shall be in accordance with the guidelines contained in Regulatory Guide 1.163, 'Performance-Based Containment Leak-Test Program,' dated September 1995, as modified by the following exceptions: (1) Bechtel Topical Report BN-TOP-1 is also an acceptable option for performance of Type A tests, and (2) the leakage rate testing of primary containment penetration 1MC-042 may be deferred until the seventh refueling outage."

Note: The first exception above already exists in the TS. Addition of the new exception for 1MC-042 required the exceptions to be numbered and the text and format of this part of the Technical Specification to be slightly altered.

Justification for the Proposed Change

Historic Leakage Performance

Historically, the LLRTs for penetration 1MC-042 have yielded excellent leakage results. This penetration is tested by CPS surveillance procedure 9861.02D016, test set A. The test challenges four containment isolation valves in a group, and the leakage result is the total leakage of all four valves. The tested valves are 1E12-F061, 1E12-F023, 1E51-F013, 1E51-F391 (see attached diagram). The administrative limit for this group of valves is 20,000 sccm.

For the last three outages the leakage history of penetration 1MC-042 is as follows:

RF-4 The penetration was given a pretest prior to Generic Letter (GL) 89-10 static testing on motor-operated valve (MOV) 1E51-F013, per maintenance work request (MWR) D35177. As-found leakage was 20 sccm, and as-left leakage was 10 sccm.

RF-5 GL 89-10 static testing was performed on MOV 1E12-F023 per MWR D56864. The spring pack and torque switch were removed, the spring pack was tested and adjusted, and the thrust was measured using motor-operated valve diagnostic equipment. No as-found test was performed since the program did not require it at the time. The as-left leakage for penetration 1MC-042 was 20 sccm.

The MWR D56864 Summary states: "the as-found condition of the valve was normal, with no abnormalities noted." The torque switch and spring pack were removed, and the spring pack was tested and adjusted per CPS 8451.11, "Use of Spring Pack Tester." Per the requirements of CPS 8451.11, any visual signs of damage or required maintenance shall be documented on Checklist 8451.11C001. Based on a review of the GL 89-10 MOV notebook for 1E12-F023, no evidence suggests that any faulty condition was observed or documented. The spring pack was adjusted and reinstalled along with the torque switch. As-left VOTES testing was performed to show that the valve thrust was within acceptable limits. As noted above, the as-left LLRT measured 20 sccm for the penetration.

RF-6 1E51-F013 was modified by drilling a hole in the disc to address Generic Letter 93-07 concerns. As-found leakage for penetration 1MC-042 was 179 sccm, and as-left leakage was 100 sccm, i.e., 0.5% of the administrative limit.

Testing Approaches

Several optional approaches for completing the LLRT for penetration 1MC-042 prior to plant restart from the current outage were considered in lieu of requesting a license amendment to defer the LLRT until startup from the next scheduled refueling outage (RF-7).

1.) Testing in the normal manner

Testing in the normal manner requires disassembly of the head spray piping. Disassembly of the head spray piping to allow installation of the blind flange requires draining the reactor cavity pool and removal of the drywell head for access. This represents a considerable burden in dose and work scope. Dose records at CPS show that approximately 1.875 Rem of occupational exposure is received when draining and decontaminating the reactor cavity pool, removing of the drywell head, and disassembling the associated piping.

Little, if any, additional assurance of leakage integrity will be gained by retesting the subject penetration because this system has had little use since it was last tested, the as-left leakage was extremely low when tested earlier in this shutdown period (RF-6), and there have been no mechanisms identified that could have changed the leakage characteristics of the penetration. Also, significant post-maintenance testing would be required following reassembly of the drywell head and associated piping, including a system leakage test and VT-2 inspection of the applicable Class 1 piping at operating pressure.

2.) Applying a freeze seal

Although it is possible to apply a freeze seal to this line to form one of the LLRT test boundaries, the inherent difficulties and disadvantages associated with this option render this option undesirable. A freeze seal will cool the piping below the brittle transition temperature of the material (approximately minus 40 degrees Fahrenheit for carbon steel). As a result, a detailed piping analysis and extensive compensatory measures would be required. For example, it would be necessary to design and install temporary piping supports to ensure that the piping is completely immobilized during the freeze sealing process to prevent undesirable movement that may result in unacceptable stress levels being generated in the piping. Furthermore, industry experience has shown that a freeze seal does not make an ideal air test boundary. The ice can become sufficiently porous such that enough air could seep through the seal to indicate a failed test. Also, the air leaking through the freeze seal can weaken the seal thus rendering it even less likely to perform its intended isolation function. Therefore, creating a test volume boundary by use of a freeze seal is not desirable.

3.) Flooding the reactor vessel

An alternative to removing the head spray piping is to raise reactor water level to above the main steam lines and include the upper portion of the vessel and several additional boundary valves in the test volume. Specifically, the reactor head vent valves, 1B21-F001 and 1B21-F002, maintenance valve 1B21-F005, and RPV water level transmitter root valve 1B21-F453 would be used to bound the test volume on the vessel side. This approach is undesirable for several reasons. First, the majority of the test volume would be beyond the true test boundary, and any leakage from the additional boundary valves would penalize the penetration by not providing a true measure of the containment leakage for just the penetration. Secondly, system preparation and lineup for this test would constitute a significant permutation of the plant schedule and normal course of operations. The additional risk associated with such a complex evolution is not justified by a commensurate gain in safety resulting from a successful completion of the test.

4.) Install a blind flange with the piping in place

Because of the space restrictions beneath the drywell head, any attempt to rig the piping to allow a test flange to be installed would be extremely difficult and would include significant personnel safety concerns. Any attempt at this type of disassembly would result in an accumulation of additional dose, and upon reassembly, a system leakage test would be required, leading to more dose expenditure and schedule permutation. Any gain in assurance of leakage integrity would not offset the burden and commensurate risk associated with such an activity.

Based on consideration of the above options, IP has determined that retesting penetration 1MC-042 prior to plant restart from the current outage is impractical and unnecessarily burdensome relative to any safety benefit to be gained by reperforming the LLRT. On this basis, a license amendment to allow the LLRT for 1MC-042 to be deferred until RF-7 is the best approach.

Significant Hazards Consideration

In accordance with 10CFR50.92, a proposed change to the operating license involves no significant hazards consideration if operation of the facility in accordance with the proposed change would not: (1) involve a significant increase in the probability or consequences of any accident previously evaluated, (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.

(1) The proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed change revises Technical Specification (TS) 5.5.13 to permit deferral of the leakage rate testing of primary containment penetration 1MC-042 until the seventh refueling outage. Analyzed accidents are considered to be initiated by the failure of plant structures, systems, or components. The potential for increased leakage through primary

containment penetration 1MC-042 is not itself a condition that is or could lead to an initiator of any analyzed accident. The proposed change will not alter the operation of or otherwise increase the failure probability of any plant equipment whose failure could initiate an analyzed accident. As such, the probability of occurrence for a previously analyzed accident is not significantly increased.

The consequences of a previously analyzed accident are dependent on the initial conditions assumed for the analysis, the availability and successful functioning of the equipment assumed to operate in response to the analyzed accident, and the setpoints at which these actions are initiated. Primary containment penetration 1MC-042 forms part of the overall primary containment boundary which serves to provide a barrier to prevent the release of fission products to the environment in the event a previously analyzed accident should occur.

The only attributes of this change that could affect the consequences of a previously analyzed accident are the leakage characteristics pertaining to the primary containment isolation function of 1MC-042. The leakage acceptance criteria for penetration 1MC-042 are not being revised as a result of the proposed change. Since penetration 1MC-042 was successfully tested earlier during the current shutdown period, and since this penetration has an excellent leakage performance history, and because no significant degradation mechanisms have been present since it was last tested, there is adequate assurance that penetration 1MC-042 will continue to maintain adequate leak tightness throughout the next operating cycle. The proposed change for this one penetration is thus not expected to have any significant effect itself on the overall leak rate of the containment. Further, a conservative margin already exists with respect to the leakage assumed in the accident analyses due to the overall Type B and Type C leakage being limited by TS 5.5.13 to less than or equal to 0.6 L_a prior to unit restart. On this basis, the proposed change has no significant impact on the radiological analysis for the design basis accident(s) that assumes limited containment leakage. Based on this evaluation, there is no significant increase in the consequences of a previously analyzed accident.

Therefore, this change will not involve a significant increase in the probability or consequences of any accident previously evaluated.

(2) The proposed change would not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change revises TS 5.5.13 to allow the primary containment leakage rate test of penetration 1MC-042 to be deferred until the seventh refueling outage. No new failure modes are introduced by the proposed change as it only concerns or potentially affects leakage already considered or accounted for with respect to primary containment penetrations. The proposed change does not change the operating characteristics, function, or mechanical design of penetration 1MC-042. Likewise, there are no changes being made to any other equipment or structures. No new or different equipment is being

installed, and no installed equipment whose failure might initiate an analyzed event is being operated in a different manner. The proposed change does not impact core reactivity or the manipulation of fuel bundles. There is no alteration to the parameters within which the plant is normally operated or in the setpoints that initiate protective or mitigative actions. There are no changes in the methods governing normal plant operation, nor are the methods utilized to respond to plant transients altered.

Therefore, based on the above, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

(3) The proposed change will not involve a significant reduction in the margin of safety.

The margin of safety is established through the design of the plant structures, systems, and components, the parameters within which the plant is operated, and the establishment of the setpoints for the actuation of equipment relied upon to respond to an event. The margin of safety potentially affected by the proposed change is associated with the post-accident offsite dose consequences associated with the integrity of the primary containment boundary. The proposed change revises TS 5.5.13 to permit deferral of the leakage rate testing of primary containment penetration 1MC-042 until the seventh refueling outage. The design of penetration 1MC-042 and its leakage performance criteria are not affected by this change. Deferral of the leakage rate test will not in and of itself create a condition such that there will be a significant loss of isolation capability of the subject penetration, nor will the proposed change affect the leakage characteristics of the other components and structures that form portions of the primary containment boundary. Based on the leakage rate test history of penetration 1MC-042 and the absence of any significant degradation mechanisms that could cause this penetration to experience a reduction in effectiveness as a primary containment boundary, the proposed change does not involve any significant impact on containment leakage, and therefore does not involve any significant impact on the dose analysis for which a maximum containment leakage is assumed.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

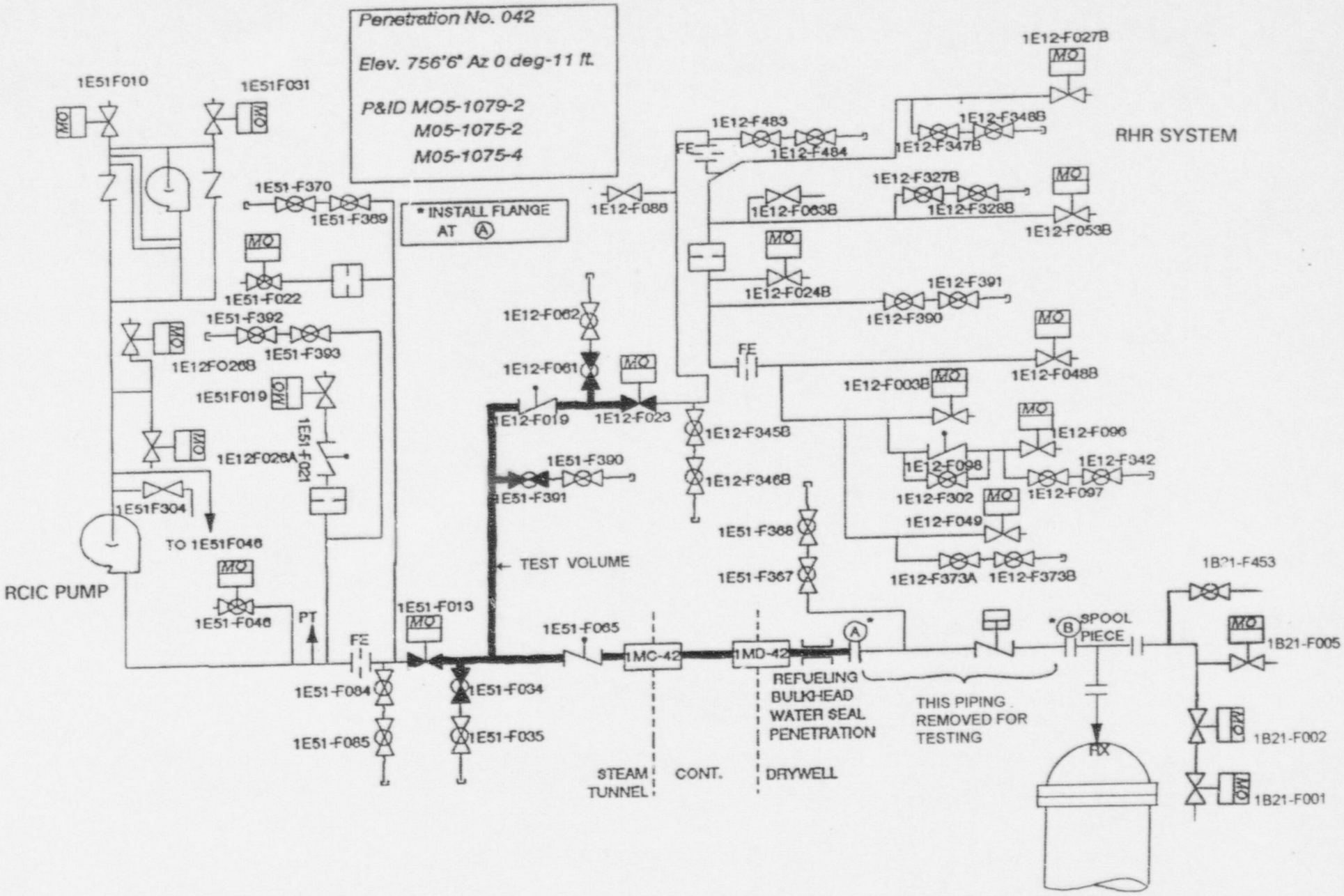
In summary, based on the above considerations, it is concluded that a significant hazard would not be introduced as a result of the proposed change, i.e., revising TS 5.5.13 to allow the deferral of primary containment leakage rate testing of penetration 1MC-042 until the seventh refueling outage.

Conclusions / Final Remarks

Penetration 1MC-042 has an excellent LLRT history and has not been exposed to operating conditions since last tested. There have been no challenges to the system or operational events that could have caused a degradation in leakage performance of the subject penetration. Re-performance of the test at this time requires a significant expenditure of manpower and dose, necessitates complex and costly post-maintenance testing, and is thus unnecessarily burdensome with no resulting increase in assurance of safety.

Because an as-found LLRT was not performed in RF-5 prior to motor-operator static testing (GL 89-10) of a particular associated containment isolation valve, an LLRT test interval of 30 months was established for penetration 1MC-042, as opposed to an extended 60-month interval. The acceptable condition of that specific valve, as well as the other isolation valves for this penetration, was subsequently demonstrated by successful LLRTs during RF-5 as well as earlier during the current outage. This penetration has not been exposed to any significant degradation mechanisms since it was last tested.

Based on the above, re-performing the LLRT on 1MC-042 at any time prior to the next scheduled refueling outage (RF-7) is neither a conservative decision nor in the best interest of safe operation of the plant or ALARA. Further, any alternate testing methods, such as allowing the penetration to be tested with the head spray piping in place, would introduce a level of risk that would likely outweigh any gain in assurance of leakage integrity or increase in the confidence of the ability of the penetration to perform its safety function.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