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Docket No. 50-461

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Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Clinton Power Station Proposed Amendment of Facility
Operating License No. NPF-62: Revision to Technical
Specifications 3/4.1.3.2, 3/4.4.2.1, and 3/4.5.1 (LS-92-011)


Dear 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). This request consists of proposed changes to Technical Specifications 3/4.1.3.2, "Control Rod Maximum Scram Insertion Times," 3/4.4.2.1, "Safety/Relief Valves," and 3/4.5.1, "Emergency Core Cooling Systems." The proposed changes would reduce, or mitigate, certain time restrictions associated with surveillance testing required during plant startup. Because IP will be conducting its fourth refueling outage (RF-4) for CPS that is currently scheduled to begin September 26, 1993, IP respectfully requests approval of the proposed changes prior to plant startup from the outage (currently estimated to commence November 24, 1993).

A description of the proposed changes and the associated justification (including the Basis For No Significant Hazards Consideration) are provided in Attachment 2. Marked-up copies of the affected pages from the current Technical Specifications and Bases are provided in Attachment 3. In addition, an affidavit supporting the facts set forth in this letter and its attachments is provided in Attachment 1.

IP has reviewed the proposed changes against the criteria of 10CFR51.22 for categorical exclusion from environmental impact considerations. The proposed changes do not involve a significant hazards consideration, or significantly increase the amounts or change the types of effluents that may be released off-site, nor do they significantly increase individual cumulative occupational radiation exposures. Based on the foregoing, IP concludes the proposed changes meet the criteria given in 10CFR51.22(c)(9) for a categorical exclusion from the requirement for an Environmental Impact Statement.

Sincerely yours,


J. S. Perry
Senior Vice President

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Attachments

cc: NRC Clinton Licensing Project Manager
Regional Admin., Region III, USNRC
NRC Resident Office, V-690
Ill. Dept. of Nuclear Safety

STATE OF ILLINOIS
COUNTY OF DEWITT


J. Stephen Perry, being first duly sworn, deposes and says: That he is Senior Vice President of Illinois Power Company; that the 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 application and the facts contained therein are true and correct.

DATE: This 16 day of April, 1993.

Signed:


J. Stephen Perry

Subscribed and sworn to before me this 16 day of April, 1993.


Notary Public

Background

Presently, the Clinton Power Station (CPS) Technical Specifications (TS) require a number of surveillances and tests to be performed during plant startup from refueling outages. For example, TS 3/4.1.3.2, "Control Rod Maximum Scram Insertion Times," 3/4.4.2.1, "Safety/Relief Valves," and 3/4.5.1, "Emergency Core Cooling System," contain tests required to be performed during plant startup. Many of the required tests verify operability for components during and prior to entry into Operational Conditions (Modes) 1 and 2 while other TS contain testing requirements that are triggered after the plant has reached the desired conditions.

With respect to satisfying the requirements of the TS identified above, the general sequence of plant restart and performance of required testing is described below:

- 1) Following entry into Operational Condition 2 and achieving criticality, reactor operation enters the heatup phase, allowing reactor coolant temperature and pressure to increase.
- 2) In the event any control rods or control rod drive mechanisms were worked on during the outage, scram time testing must be performed prior to entry into Operational Condition 1 per TS 4.1.3.2.b. In preparation for scram time testing, reactor pressure is raised to 950 psig which is the minimum pressure required per TS 4.1.3.2 to perform scram time testing.
- 3) Per TS 4.5.1.e.3 and 4.4.2.1.1.b, the Automatic Depressurization System (ADS) Safety/Relief Valves (SRVs) are required to be manually opened and the SRV acoustic monitors are required to be calibrated within 12 hours after reaching 950 psig. Although the "12-hour clock" per TS 4.5.1.e.3 starts at this point, the required testing cannot be performed until adequate steam generation has been achieved to maintain reactor pressure control during the testing. This requires reactor power to be raised to approximately 16 percent of rated thermal power (which requires entry into Operational Condition 1).
- 4) Prior to entering Operational Condition 1, with reactor pressure greater than or equal to 950 psig, scram time testing is completed on the "affected" control rods per TS 4.1.3.2.b. If a scram time test fails, additional control rods may also require testing.
- 5) Following successful completion of scram time testing, verification of plant systems status is performed and the mode change checklist (for entry into Mode 1) is completed. Reactor power is then increased, and Operational Condition 1 is entered.
- 6) Operators continue to raise reactor power. At approximately 16 percent power, plant conditions are adequate to perform SRV testing and acoustic monitor calibrations (i.e., there is sufficient steam production to ensure adequate reactor pressure control when lifting the SRVs). The SRVs must each be lifted at

least twice to complete acoustic monitor calibrations. As noted in 3) above, these tests must be completed within 12 hours of reaching 950 psig (in accordance with the current Technical Specifications).

- 7) Following successful completion of the above tests, reactor power increase is continued.

The above-mentioned time clocks, calibrations, and testing requirements collectively exert unnecessary pressure on the reactor operators during plant startup evolutions. In addition to the activities noted above, plant operators have a number of other significant operational concerns during this period of time, including transfer from the Intermediate Range Monitors (IRMs) to the Average Power Range Monitors (APRMs) prior to entry into Mode 1, and preparations for bringing the main turbine-generator and turbine-driven feedwater pumps on line. As mentioned before, prior to entry into Operational Condition 1, verification of plant conditions and the mode change checklist (for entry into Mode 1) must be completed.

With respect to SRV testing, lifting the SRVs causes steam to be directed to the suppression pool and results in reactor pressure transients which may in turn affect core reactivity if performed at low power levels. In addition, stroking the SRVs requires the reactor operators to monitor and control the suppression pool temperature. Increased suppression pool temperature may result in the need to place systems in service to cool the suppression pool. The restrictive time frame for completing SRV and control rod scram time testing concurrent with the above activities creates additional, unnecessary pressures on the reactor operators since not completing the required SRV and control rod scram time testing within the allotted time period can potentially result in entry into a plant shutdown per the applicable Technical Specifications.

IP has identified the need to revise TS 3/4.1.3.2, 3/4.4.2.1, and 3/4.5.1 to provide more flexibility in performing the required testing and reduce unnecessary stress on plant operators during significant plant evolutions involving reactivity changes.

Description of Proposed Changes

In accordance with 10CFR50.90, the following changes are being proposed:

- (1) TS 3/4.1.3.2, "Control Rod Maximum Scram Insertion Times," is being revised to allow testing of control rods at low reactor pressures. This will allow these tests to be completed prior to plant startup and outside the time limitation of the ADS SRV and SRV acoustic monitor tests. Specifically, IP proposes that part (b) of Surveillance Requirement 4.1.3.2, which addresses "affected" control rods, be incorporated into a new and separate Surveillance Requirement 4.1.3.3. Under this proposed

surveillance, either of two methods or conditions could be utilized to perform scram time testing of these control rods.

- (2) TS 3/4.4.2.1, "Safety Relief Valves," and TS 3/4.5.1, "Emergency Core Cooling Systems," are being revised to start the 12-hour time limitation for performing the SRV acoustic monitor calibrations and ADS SRV tests based on when plant steam conditions are adequate to perform the test rather than on steam pressure alone. This change is being effected simply by revising the words from "within 12 hours after reactor steam pressure is adequate to perform the test" to "within 12 hours after reactor steam conditions are adequate to perform the test."

In addition, the Bases for TS 3/4.4.2 and TS 3/4.5.1 are being revised to clearly identify that plant conditions adequate to perform the testing include having sufficient steam flow as well as adequate reactor pressure.

The proposed changes are reflected on the marked-up copies of pages from the CPS TS and the CPS TS Bases contained in Attachment 3.

Justification for Proposed Changes

Control Rod Scram Time Testing

TS 4.1.3.2.b contains a surveillance requirement for performing control rod scram time testing if maintenance or modification to the control rod or control rod drive system which could affect the scram insertion time has been performed. Although control rods are required to be OPERABLE with acceptable scram insertion times for entry into Operational Conditions 1 and 2, an exception to the provisions of Specification 4.0.4 contained in footnote "*" to the scram-time testing surveillance allows the control rod scram time testing to be performed after entering Operational Condition 2 but prior to entering Operational Condition 1. The drawbacks to performing scram time testing during this time frame is that the testing cannot be performed until reactor pressure reaches 950 psig which also is the criteria for starting the 12-hour time clock for testing ADS SRVs and performing SRV acoustic monitor calibrations. Each scram time test takes approximately 30 minutes. If there are a large number of affected control rods to be tested, the reactor operators are under considerable pressure to complete the scram time tests in time to establish the necessary plant conditions for performing the SRV testing and to subsequently complete the SRV testing within the time limits. In addition, if a scram time test should fail, eight additional control rods may be required to be tested for each control rod that fails, creating additional time pressures.

CPS TS 4.1.3.2.b may also be satisfied by performing control rod scram time tests during Operational Condition 4 when performing the reactor pressure vessel (RPV) pressure test prior to startup. Control rod scram time testing during the RPV pressure test is not preferred at CPS because of the difficulty of controlling reactor pressure with the RPV

completely filled ("solid") with water. A previous problem with this procedure was experienced during the first refueling outage while recovering from scram time testing. As a result of returning the mode switch to the shutdown position, the associated scram caused the scram inlet and exhaust valves to open, resulting in control rod drive "bypass" flow being directed into the reactor vessel. Although the scram was anticipated, this produced a pressure transient in the water-filled RPV that was not controlled as desired, resulting in lifting of several SRVs. In addition, SRV operation produced a high differential pressure condition in the main steam lines and caused the main steam line high-flow transmitters to trip, resulting in an automatic isolation (ESF actuation) of the main steam isolation, drain and bypass valves. This event is documented in CPS Licensee Event Report 89-016. As a result of this event, CPS no longer tests the control rods during RPV pressure tests in order to avoid unnecessary pressure transients on the RPV and challenges to the SRVs.

More flexibility with control rod scram time testing is desired at CPS. The current exception to Specification 4.0.4 is an option CPS would like to retain in the TS for cases which involve a small number of affected control rods to be tested. For a larger number of affected control rods to be tested, the option of performing the scram time tests outside the 12-hour time limit during plant startup is desired. The Improved Standard Technical Specifications (ITS) (NUREG-1434) contain an option for performing the control rod scram time testing while the reactor is depressurized.

The acceptance criteria for the proposed alternate control rod scram time testing is to be determined by linear interpolation between values for 0 psig and 950 psig at notch position 13. The value for the scram time test acceptance criteria at 0 psig for notch position 13 is 0.95 seconds. This value was derived from the startup test program as reflected in CPS Updated Safety Analysis Report (USAR) section 14.2.12.2.5, "Control Rod Drive System," Figure 14.2.8. The value for the scram time acceptance criteria at 950 psig for notch position 13 is 1.40 seconds. This value is the most conservative maximum scram insertion limit provided in the current TS 3.1.3.2 (i.e., the scram insertion time limits provided for "fast" control rods in Action a). Consequently, linear interpolation between these values provides adequate assurance that the control rod scram time has not been adversely affected by performance of the subject maintenance or modification.

Performing the test while the reactor vessel is at 0 psig will provide assurance of satisfactory control rod scram insertion capability prior to restarting the plant. This option of testing the affected control rods will allow the plant to enter Operational Conditions 1 and 2 with the affected control rods considered operable. Under this option, the affected control rods will also be required to be tested again prior to 40% power along with the remaining control rods per TS 4.1.3.2.a. Although the proposed option will thus require the scram time test(s) to be performed twice for the affected control rod(s), this option will alleviate some of the pressure on the reactor operators to perform such

unnecessarily restrictive time limits. This option, along with the current exception to Specification 4.0.4, will provide CPS with a safe, effective, and practical means to test the affected control rods during plant startup.

SRV and Acoustic Monitor Testing

TS 4.4.2.1.1 and TS 4.5.1 contain exceptions to the provisions of Specification 4.0.4 as stated in footnotes "*" and "***", respectively. These exceptions allow entry into Operational Conditions 1 and 2 provided the SRV acoustic monitors and the ADS SRVs are tested within 12 hours after reaching adequate reactor pressure to perform these tests. This reactor pressure is specified by the SRV manufacturer to be 950 psig. Thus, the allotted 12-hour time period for completing the required testing begins when reactor pressure reaches 950 psig.

In addition to reactor pressure, steam flow is an important parameter for maintaining reactor pressure control during stroking of the SRVs. Because opening SRVs can result in a reactor pressure transient which initially introduces negative reactivity, and subsequent SRV closure can result in the introduction of positive reactivity (through steam void collapse), two conditions must first be met before a stroke test of the SRVs is performed: (1) adequate reactor pressure must exist to protect the SRV from damage when stroking, and (2) sufficient steam flow must exist to open at least 1-1/2 main turbine steam bypass valves (which occurs at approximately 16% power). The latter is required because when an SRV is opened with less than 1-1/2 bypass valves open, a slow depressurization of the reactor vessel will occur after the bypass valves fully shut in an attempt to control pressure. This slow cooldown combined with the subsequent SRV closure can result in a pressure and corresponding reactor power spike and reactor scram.

As noted previously, per the current Technical Specifications, the 12-hour time clock for performing stroke testing of the SRVs starts once adequate reactor pressure (950 psig) is reached. However, as explained above, the tests on the SRVs cannot be performed until the required steam flow conditions are also achieved. A period of time is required after reactor pressure reaches 950 psig to establish adequate steam flow. Part of the allotted 12-hour test period is thus expended to establish appropriate test conditions before stroke testing can actually begin.

The SRVs must also be stroked to complete the channel calibrations for the associated acoustic monitors. Specifically, acoustic monitor gain adjustments are performed under steam-flow conditions for each SRV. Performance of the SRV acoustic monitor gain adjustment requires each of the SRVs to be lifted at least twice, once to verify actuation and initial response of the monitor associated with each SRV and at least once to check the effect of the gain adjustment and verify that monitors on adjacent SRVs do not actuate. This procedure consumes much of the test time allotted by the current Specification 4.0.4 exception.

To alleviate unnecessary stress and time pressures on the reactor operators during reactor startups, CPS plans to revise the existing exceptions to Specification 4.0.4 within TS 4.5.1 and TS 4.4.2.1.1. As described previously, CPS proposes to revise the current wording from "within 12 hours after reactor steam pressure is adequate to perform the test" to "within 12 hours after reactor steam conditions are adequate to perform the test." This would permit the 12-hour clock to start once adequate reactor pressure and steam flow are achieved. CPS believes the proposed change is consistent with the original intent of the Technical Specifications to permit testing to be completed within a reasonable time once adequate test conditions are achieved after entering the applicable Operating Conditions.

Under the proposed change, the point in time during plant startup when SRV/acoustic monitor testing can begin would remain unchanged. That is, the current practice at CPS of ensuring that adequate steam pressure and flow both exist prior to commencing such testing would be maintained. The testing itself would continue to be performed within the required 12-hour time period. The intent of the proposed change is simply to change or clarify the point when the 12-hour clock must begin.

Although the proposed change would delay the time when the 12-hour test period begins relative to the current CPS Technical Specifications, the delayed start time for performing the required testing is justified by its negligible impact on safety. The safety (spring) mode of operation of the SRVs is not affected by the proposed change as this function is independent of the relief mode or ADS function and the associated testing is completed during plant shutdown in accordance with ASME Section XI requirements (Specification 4.0.5). In addition, the relief (pressure transmitter actuated) mode of the SRVs also would not be impacted as the SRV pressure relief instrumentation and ADS instrumentation is fully tested prior to reactor startup. [TS 4.5.1.e merely requires an additional test of the ADS valves at operating pressure.] As a result, there is confidence that the ADS valves would operate properly if called upon. Moreover, non-ADS SRVs would be available for manual actuation to control reactor pressure should ADS valves fail to operate. At less than rated power levels, there is excess capacity available in the ADS, and hence, the ADS system and its mitigating function in response to a loss-of-coolant accident (LOCA) would be more tolerant of failures than at rated reactor power.

With respect to the impact of the proposed change on operability and testing of the acoustic monitors, the acoustic monitors merely provide indication that an SRV is open. They do not provide any actuation signals. The only potential effect of the proposed change, as noted previously, is to cause a slight delay in the verification of operability (completion of channel calibrations). There would be other indications that an SRV is open such as reactor water level, reactor pressure, and main turbine bypass valve position. As a result, IP has

concluded that the additional time being proposed is not significant with respect to the additional testing of safety functions specified by the subject TS. The resultant reduction in operator stress produced by the proposed change should have a net positive effect on safety, including consideration of the negligible impact of the potential time delay for beginning the required testing.

Basis for No Significant Hazards Consideration

In accordance with 10CFR50.92, a proposed change to the Operating License (Technical Specifications) 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, 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. The proposed changes are evaluated against each of these criteria below.

- (1) The proposed changes do not involve a significant increase in the probability or consequences of any accident previously evaluated.

The potential slight delay in confirming SRV/acoustic monitor operability during plant startup should not result in any change to the expected satisfactory completion of the required surveillance tests. As noted previously, surveillance tests which are conducted during plant shutdown provide reasonable assurance that the SRVs will function when required. Under the proposed change, plant test conditions would not be different than they are today since testing today is not begun until both steam flow and pressure are adequate. The proposed change merely provides relief for reactor operators and clarification concerning when the 12-hour test period begins relative to adequate conditions for performing the test. The resultant reduction of operator stress during plant startup evolutions and procedures should have a net positive effect on safe operation of the facility.

With respect to the proposed alternate control rod scram insertion time test, this proposed change will allow operability of the control rods to be demonstrated during plant shutdown conditions. This test option does not allow the affected control rods to be exempted from the requirement to perform scram time tests prior to exceeding 40% power. Thus, the proposed change does not result in any reduction in the scope or effectiveness of control rod scram time testing, and assurance that the control rods would insert at the appropriate rate in the event of a scram would continue to be provided. Therefore, the proposed change will not increase the probability or consequences of any accident previously evaluated.

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

The proposed changes do not involve a design change nor do they involve changes outside the scope of the existing test requirements. Consequently, no new failure modes are introduced as a result of the proposed changes, and therefore, the proposed changes cannot initiate any new or different kind of accident.

- (3) The proposed changes do not involve a significant reduction in a margin of safety.

The proposed changes have no impact on the operability/performance requirements for the SRVs, including the ADS function, as they do not change the lift setpoints or minimum number of valves required to be operable. As previously discussed, the negligible effect of the delayed starting point of the time clock should not affect completion of the required tests. As previously discussed, ADS/acoustic monitor availability will not be significantly affected by the proposal change. With respect to control rod scram insertion testing and performance, the proposed change involves no change to the current test acceptance criteria for reactor pressures greater than or equal to 950 psig and the acceptance criterion for testing at a reactor pressure of 0 psig (or by interpolation for test pressures greater than 0 psig up to 950 psig) is consistent with the current test criteria for reactor pressure ≥ 0 psig. As a result, the option of performing the control rod scram insertion time tests while the reactor is at 0 psig will provide adequate assurance of the control rod scram capability prior to plant startup. Therefore, the proposed changes do not involve a significant reduction in the margin of safety.

Based upon the foregoing, IP concludes that this request does not involve a significant hazards consideration.