

UNITED STATES NUCLEAR REGULATORY COMMISSION  
ILLINOIS POWER COMPANY, ET AL.  
DOCKET NO. 50-461  
ENVIRONMENTAL ASSESSMENT AND FINDING OF  
NO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to the Illinois Power Company\* (IP), Soyland Power Cooperative, Inc. and Western Illinois Power Cooperative, Inc., (the licensees) for Clinton Power Station, Unit 1, located in DeWitt County, Illinois.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action:

In general, the proposed license amendment would revise the Technical Specifications (TS) concerning the main steam line radiation-high full power background radiation levels and associated trip setpoints.

Specifically, the licensees requested the proposed change in order to test the feasibility of a hydrogen water chemistry (HWC) system which will be used to mitigate intergranular stress corrosion cracking of stainless steel components. The Technical Specification change will permit a temporary

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\*Illinois Power Company is authorized to act as agent for Soyland Power Cooperative, Inc. and Western Illinois Power Cooperative, Inc. and has exclusive responsibility and control over the physical construction, operation and maintenance of the facility.

Increase in the Clinton main steam line radiation-high scram and isolation setpoints to allow operation with expected higher radiation levels resulting from hydrogen injection into the reactor coolant.

This revision to the Clinton Power Station license would be made in response to the licensee's application for amendment dated May 18, 1988, as supplemented on June 2, 1988.

The Need for the Proposed Action:

Pursuant to 10 CFR 50.90, IP, et al. have proposed an amendment to Facility Operating License No. NPF-62 which consists of a change to the TS concerning the hydrogen water chemistry tests.

The proposed change consists of the addition of a footnote to the text regarding the hydrogen injection test and its effect on the main steam line radiation-high trip function. This proposed change will permit the main steam line radiation monitor setpoints to be temporarily changed based on either calculations or measurements of actual radiation levels resulting from the hydrogen injection test. The Illinois Power Company intends to perform a hydrogen injection test on the reactor coolant system at the Clinton Power Station. The purpose of the test is to determine the feasibility of hydrogen water chemistry controls as a means of reducing intergranular stress corrosion cracking of stainless steel piping.

Environmental Impacts of the Proposed Action:

The proposed change consists of the addition of a footnote regarding the hydrogen injection test and its effect on the main steam line radiation-high trip function to Technical Specification Table 2.2.1-1, Reactor Protection

System Instrumentation Setpoints, and Table 3.3.2.-2, CRVICS Instrumentation Setpoints.

The Main Steam Line Radiation Monitors (MSLRMs) provide reactor scram as well as reactor vessel and primary containment isolation signals upon detection of high activity levels in the main steam lines. Additionally, these monitors serve to limit radioactivity released in the event of fuel failures. The proposed Technical Specification changes to Tables 2.2.1-1 and 3.3.2-2 would allow adjustments to the normal background radiation level and associated trip set points for the MSLRMs at reactor power levels greater than 20% of rated thermal power. The background radiation level shall be verified and the associated trip set points shall be returned to their normal value within 24 hours of re-establishing normal radiation levels after completion of the hydrogen injection test at greater than 20% of rated thermal power or within 12 hours of establishing reactor power levels below 20% of rated thermal power.

The licensees state that the only design basis accident which takes credit for the main steam line radiation - high trip is the control rod drop accident (CRDA). Generic analysis of the consequences of the CRDA are increasingly less severe above 10 percent power due to a faster doppler response and a lower rod worth. Above 20 percent power, the consequences of the CRDA are minimal. Since hydrogen injection will be limited to above 20 percent of rated power and the increased MSLRM trip setpoint will be reduced to normal levels below this power level, the staff concludes that the currently approved CRDA analysis for the Clinton Power Station is appropriately bounded and remains valid.

The staff has reviewed the proposed Technical Specification changes to assure that the licensees have considered the radiological implications of dose rate increases associated with N-16 activity increases due to hydrogen injections into the reactor system. Radiation surveys will be conducted at regular intervals during the test to determine radiation levels in and around the facility as well as at the site boundary. Additionally, the licensees have stated that data will be obtained for shielding design should additional shielding be necessary for a permanent hydrogen water chemistry installation.

Various radiation protection measures will be implemented to maintain doses to plant personnel as low as reasonably achievable (ALARA). Other plants have operated with HWC and have not experienced an increase in offsite dose. The licensees do not expect a significant site boundary dose rate increase at Clinton during the test and will make appropriate measurements to assure compliance with 40 CFR 190 limits. The conduct of the test and radiological surveys obtained during the test will ensure ALARA in accordance with Regulatory Guide 8.8 and is, therefore, acceptable.

Compressed hydrogen will be supplied to the plant site in gaseous form in a 120,000 SCF capacity tube trailer. The tube trailer will be used as the storage facility and will be located no closer than 432 feet from any building containing safety-related or class 1E components. Although the test facility is not a permanent HWC installation, the facility will meet the applicable sections of the BWR Owners Group Guidelines, "Guidelines for Permanent BWR Hydrogen Water Chemistry Installations - 1987 Revision," EPRI NP-5283-SR-A, September 1987.

Since the licensees currently store substantial quantities of chlorine onsite for water and sewage treatment, the staff evaluated the potential synergistic effect associated with the storage of hydrogen. The combination of hydrogen gas and chlorine gas can explode in the presence of any form of energy, such as sunlight or heat (250°C). Therefore, it is prudent to maintain an adequate separation distance between the chlorine and hydrogen storage facilities. The hydrogen tube trailer will be kept at a minimum distance of over 100 feet from the chlorine storage containers. The 100 feet separation distance is judged to be sufficient to prevent interaction of these two gases in the event of a simultaneous chlorine and hydrogen release, since it meets the requirements of NFPA 50A-5984, "Standards for Gaseous Hydrogen Systems at Consumer Sites."

Therefore, the proposed changes do not increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released offsite, and there is no significant increase in the allowable individual or cumulative occupational radiation exposure. Accordingly, the Commission concludes that this proposed action would result in no significant radiological environmental impact.

With regard to potential non-radiological impacts, the proposed changes to the TS involve systems located within the restricted area as defined in 10 CFR Part 20. The changes do not affect non-radiological plant effluents and have no other environmental impact. Therefore, the Commission concludes that there are no significant non-radiological environmental impacts associated with the proposed amendment.

The notice of Consideration of Issuance of Amendment and Opportunity for Hearing in connection with this action was published in the Federal Register on June 28, 1988 (53 FR 24385). No request for hearing or petition for leave to intervene was filed following this notice.

Alternative to the Proposed Action:

The principal alternative would be to deny the requested amendment. This alternative, in effect, would be the same as a "no action" alternative. Since the Commission has concluded that no adverse environmental effects are associated with this proposed action, any alternative with equal or greater environmental impact need not be evaluated.

Alternative Use of Resources:

This action does not involve the use of resources not previously considered in connection with the Nuclear Regulatory Commission's Final Environmental Statement for the Clinton Power Station, Unit 1, dated May 1982.

Agencies and Persons Consulted:

The NRC staff reviewed the licensees' request of May 18, 1988, as supplemented on June 2, 1988, and did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT:

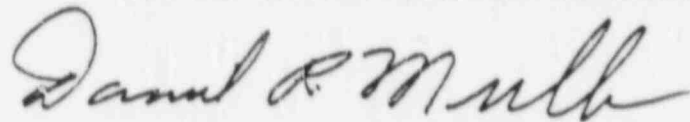
The Commission has determined not to prepare an environmental impact statement on the proposed license amendment.

Based upon this environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment.

For further details with respect to this action, see the request for amendment dated May 18, 1988, as supplemented on June 2, 1988, and the Final Environmental Statement for the Clinton Power Station dated May 1982, which are available for public inspection at the Commission's Public Document Room, 2120 L Street, N.W., Washington, D.C. 20555 and at the Vespasian Warner, 120 West Johnson Street, Clinton, Illinois 61727.

Dated at Rockville, Maryland this 20th day of September 1988.

FOR THE NUCLEAR REGULATORY COMMISSION



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