



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 70 TO FACILITY OPERATING LICENSE NO. DPR-59

POWER AUTHORITY OF THE STATE OF NEW YORK

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

DOCKET NO. 50-333

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1.0 Introduction

By letter dated August 12, 1982 the Power Authority of the State of New York (the licensee) forwarded a proposed Technical Specification change that would allow continued plant operation with one safety relief valve (SRV) inoperable. Prior to this letter the licensee had declared the subject valve inoperable with high temperature on the discharge side of the valve a major consideration in making the inoperability determination. Such temperature readings had been increasing since plant restart after the Spring 1982 refueling outage. At this time the temperature has stabilized at approximately 295 F.

2.0 Background

The safety relief valves employed at FitzPatrick are two stage Target Rock valves. The setpoints for these eleven valves are grouped with 2 valves set at 1090 psig, 2 valves set at 1105 psig and 7 valves set at 1140 psig.

The license amendment proposed by the licensee provides revised limiting conditions for operation when an SRV is inoperable for any reason. It is also intended to address concerns that SRV leakage as indicated by elevated SRV tailpipe temperatures, renders the affected valve inoperable. These concerns have been expressed as a result of a recent increase in one SRV tailpipe temperature. Setpoint drift experienced during as-received testing of SRV's at Wyle Laboratories has been attributed, at least in part, to excessive valve leakage.

SRV leakage is not monitored directly but is indicated by increased tailpipe thermocouple and acoustical monitor readings. The possibility of proposing SRV tailpipe temperatures at which the valve would be declared inoperable, because of leakage, has been investigated. General Electric (the NSSS vendor) and Target Rock (the SRV vendor) have both stated that they have not been able to identify or develop a definitive correlation between leakage and tailpipe temperature, by calculation or by using empirical data. However, the licensee has indicated that as-found testing conducted by Target Rock showed that a 40<sup>o</sup> to 60<sup>o</sup>F increase in tailpipe temperature indicates a leakage rate from negligible up to 200 pounds per hour. Further testing by Target Rock has indicated that a leakage rate of 200 pounds per hour should not affect SRV setpoint or response time. Target Rock also indicated that a 200 pound per hour leakage rate would not render a valve inoperable.

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### 3.0 Evaluation

We have reviewed the licensee's proposed amendment which will allow continued plant operation with one two-stage Target Rock relief valve inoperable. The FitzPatrick plant presently has eleven relief valves seven of which perform the Automatic Depressurization System (ADS) function. The remaining four valves fulfill the safety relief function. The subject inoperable valve is a safety relief valve set at 1140 psig.

The licensee's submittal addressed the following analyses: (1) failure of the safety relief valve to open post accident; (2) failure of the valve in the open position during normal plant operation; and (3) change in valve setpoint when called upon post accident. The analyses are addressed in the following paragraphs.

With respect to valve failure to open post accident, a plant specific analyses was performed for the FitzPatrick plant. The worst case transient was evaluated assuming: (1) the lowest setpoint SRV inoperable, and (2) the Main Steam Isolation Valves (MSIV) fail to close and the reactor trips on high neutron flux. (Note that MSIV failure to close is considered the single failure in addition to the initial event. The accident assuming that MSIV's function to close and a single failure of an SRV in addition to the inoperable SRV is less severe than the analyzed MSIV failure). The evaluation results in an increase of peak vessel pressure of 15 psig with a margin of 85 psig to the ASME Boiler and Pressure Vessel Code upset limit of 1375 psig.

Regarding SRV failure in the open position during normal plant operation, such a single SRV failure was evaluated in the original licensing review for FitzPatrick. In order to determine the affect of a second simultaneous SRV failure in the open position a 10 CFR 50, Appendix K evaluation was performed. In essence, this is a small break LOCA and the analyses determined that fuel peak centerline temperature (PCT) does not change since this accident does not become limiting. Fuel PCT is less than 1300<sup>o</sup>F for this accident, which is significantly below the Appendix K limit of 2200<sup>o</sup>F.

With respect to reduced valve setpoint, an analyses was conducted to support license amendment No. 54 to Operating License No. DPR-59 dated April 13, 1981. This amendment concluded that a reduction in valve setpoint of 50 psig increases torus loadings and would reduce torus safety margins. However, since Mark 1 Containment system modifications had been completed, the FitzPatrick plant margins satisfy the criteria for the Mark 1 interim period. (The reduced valve setpoints will result in reduced reactor vessel peak pressures.)

Regarding an increased SRV setpoint, the worst case is assumed to be a total valve failure to open; i.e., opening at a increased value is a less severe transient than not opening at all. As previously discussed above, this results in a 15 psig increase in peak reactor vessel pressure.

With respect to operation of the FitzPatrick Plant with a single inoperable SRV, we conclude, based upon the foregoing, that such operation will not have a significant adverse impact on plant safety. In the eventuality that a second SRV becomes inoperable the proposed LCO/surveillance requirements associated with SRV monitoring provide assurance that valve leakage will be identified when valve leakage is minimal, thereby minimizing the potential for valve setpoint drift. The additional testing,

reporting, and engineering evaluations required by these Technical Specifications assures timely identification and resolution of any problems. Consequently, we find the licensee's proposed Technical Specifications acceptable.

#### 4.0 Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR Section 51.5(d)(4) that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

#### 5.0 Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated, does not create the possibility of an accident of a type different from any evaluated previously, and does not involve a significant reduction in a margin of safety, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Dated: September 8, 1982