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U S Nuclear Regulatory Commission
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Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Supplemental Information for
License Amendment Request Dated February 26, 1991
Steam Generator Power Operated Relief Valve Action Statement

In our License Amendment Request dated February 26, 1991 we submitted proposed Technical Specification changes which would incorporate an action statement for the inoperability of one steam generator power operated relief valve into the Prairie Island Technical Specifications. This letter supplements the February 26, 1991 License Amendment Request with additional information requested by the NRC Staff during an April 10, 1991 conference call.

During the April 10, 1991 phone call the NRC Staff requested additional information related to the function of the Prairie Island Steam Dump and Steam Generator Power Operated Relief Valve Systems and how they are utilized during the response to a steam generator tube rupture event. This information is provided in Attachment 1. The NRC Staff also requested additional justification for the proposed allowed out of service time. That additional justification has been provided in Attachment 2.

Please contact us if you have any further questions related to this License Amendment Request.

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Attachments: 1. Supplemental Information on Function of Steam Dump and Steam Generator Power Operated Relief Valve Systems.

2. Additional Justification For Proposed Allowed Out of Service Time.

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ATTACHMENT 1

Supplemental Information on Function of Steam Dump and Steam Generator Power Operated Relief Valve Systems

Main Steam System Layout

The main steam headers direct steam flow from the steam generators to the main turbine as illustrated in the attached simplified Main Steam System flow diagram. A main steam isolation valve (MSIV) is located in each header just outside of the containment. A safety valve header is connected to each steam line upstream of the MSIV. Each safety valve header contains five code safety valves and a power operated relief valve. Downstream of the MSIVs, each main steam header contains a connection for an atmospheric steam dump header. Two atmospheric steam dump valves are supplied by each main steam line. A single condenser steam dump valve, located in the turbine building, is supplied from the loop B main steam header downstream of the equalizing line which connects the main steam headers.

Steam Dump System Function

As noted above, the Steam Dump System consists of five dump valves, one condenser dump and four atmospheric dumps. The five dump valves are controlled either automatically from temperature or pressure error signals or manually from the main control board. Each of the five valves is sized to pass 7.5% of full load steam flow. The Steam Dump System can only function when the upstream MSIVs are open.

During power operation the Steam Dump System acts as an artificial load following a rapid load decrease to remove excess power and stored energy while reactor power is decreased by the Rod Control System to match turbine load.

The Steam Dump System is also used to remove stored energy in the reactor coolant system following a reactor trip, to maintain the plant at hot shutdown conditions by removing decay heat, and to cooldown the plant from hot shutdown to cold shutdown.

The Steam Dump System is a non-safety related system.

Steam Generator Power Operated Relief Valve Function

The two steam generator power operated relief valves are 5 inch air operated valves which fail closed on loss of air. The steam generator power operated relief valves are normally automatically controlled from a pressure error signal. The normal setpoint is 1050 psig which is approximately 27 psig below the lowest safety valve lift setting. The valves can also be manually controlled from the main control board and from the hot shutdown panel. A handwheel mounted on each valve allows local manual operation. The two steam generator power operated relief valves have a total relief capability of ten percent of the maximum steam flow.

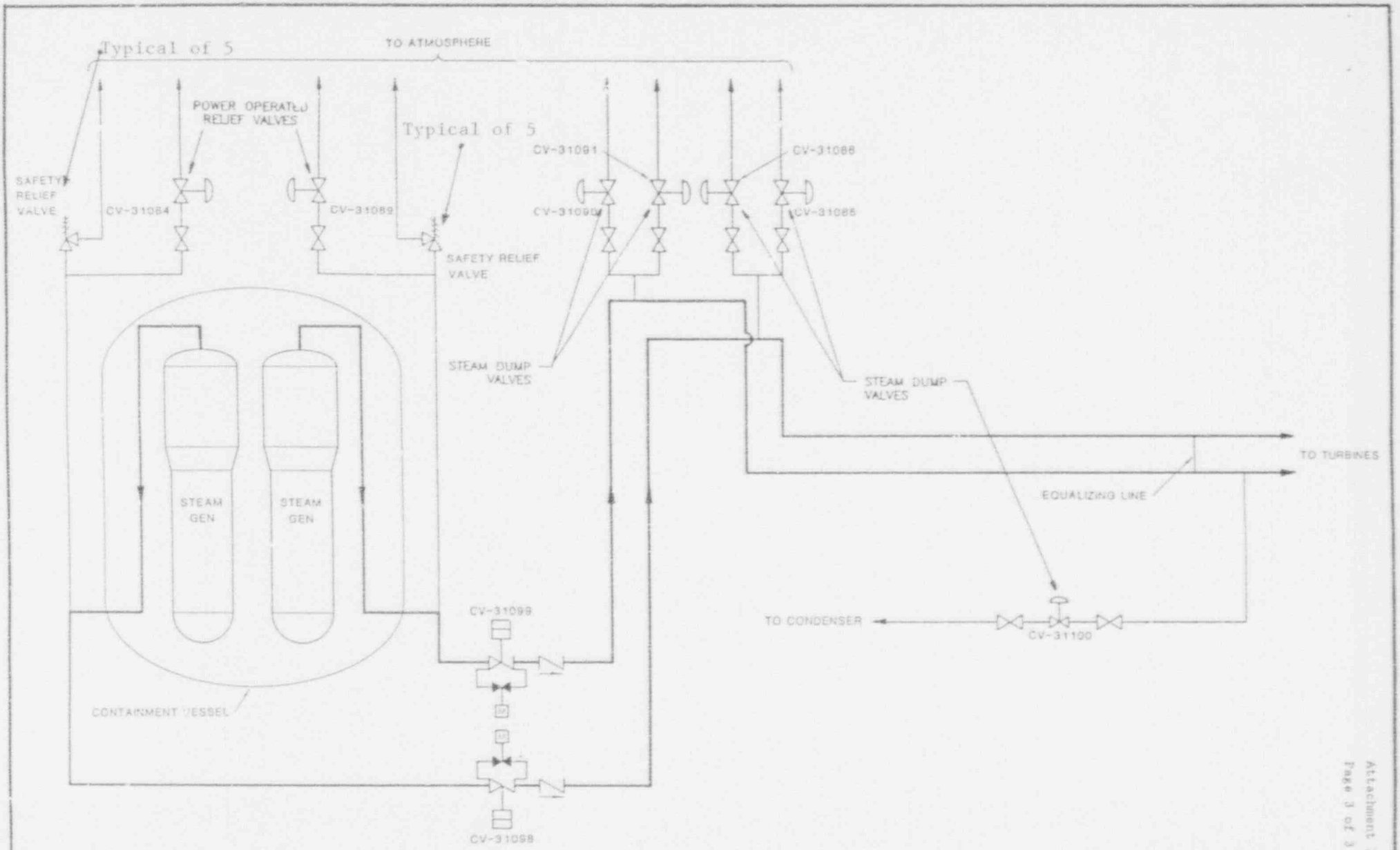
The steam generator power operated relief valves are provided to minimize the lifting cycles on the code safety valves. The steam generator power operated relief valves are also used to remove stored energy in the reactor coolant system following a reactor trip, to maintain the plant at hot shutdown conditions by removing decay heat, and to cooldown the plant from hot shutdown to cold shutdown should the Steam Dump System be unavailable due to the MSIVs being closed or the condenser unavailable.

Only the Steam Generator Power Operated Relief Valve System pressure boundary is safety related. The remainder of the system is non-safety related.

Response to Steam Generator Tube Rupture

Following a steam generator tube rupture event, the reactor coolant system must be cooled and depressurized to a pressure equal to the ruptured steam generator pressure as quickly as possible to minimize both leakage of reactor coolant and radiological releases from the ruptured steam generator. To accomplish this, the steam generator tube rupture emergency operating procedure cools down the reactor coolant system at a rate of 100°F/hr prior to beginning the reactor coolant system depressurization. The preferred method for this cooldown is via steam release from the intact steam generator to the condenser using the steam dump system. This method is preferred because dumping to the condenser conserves the feedwater supply and minimizes radiological releases.

If steam dump to the condenser is unavailable, steam release via the steam generator power operated relief valve associated with the intact steam generator is utilized as an alternative method of cooling the reactor coolant system. If the steam generator power operated relief valve associated with the intact steam generator or if no intact steam generator is available, steam is released from a ruptured steam generator to cool the reactor coolant system until the residual heat removal system can support further cooldown to cold shutdown.



MAIN STEAM SYSTEM
SIMPLIFIED FLOW DIAGRAM

Attachment 1
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ATTACHMENT 2

Additional Justification For Proposed Allowed Out of Service Time

License amendments 91 and 84 to the Prairie Island facility operating licenses, approved October 27, 1989 incorporated a large upgrade into the Prairie Island Technical Specifications. Included in that upgrade was a completely rewritten Section 3.4, "Steam and Power Conversion System".

Prior to amendments 91 and 84, Section 3.4 included the following specification for the steam generator safety and power operated relief valves:

3.4.A:

"A reactor shall not be heated above 350°F unless the following conditions are satisfied:

1. Safety and Relief Valves

   a. Rated relief capacity of ten steam system safety valves is available for that reactor, except during testing.

   b. Both steam generator power-operated relief valves for that reactor are operable."

Prior to amendments 91 and 84, Specification 3.4.B provided the following action statement for Specification 3.4.A.1:

"B. If, during startup operation or power operation, any of the conditions of Specification 3.4.A, except as noted below for 2.a, 2.b or 4 cannot be met, startup operations shall be discontinued and if operability cannot be restored within 48 hours, the affected reactor shall be placed in the cold shutdown condition using normal operating procedures."

During the preparation of the rewrite of Section 3.4, which was approved by amendments 91 and 84, the action statements provided for the steam generator safety and power operated relief valves were mistakenly not included in the revision to Section 3.4. As a result, the current Prairie Island Technical Specification does not provide action statements for the steam generator safety and power operated relief valves beyond the standard one hour to prepare for shutdown and six hours to reach hot shutdown. The steam generator power operated relief valve action statements were not intentionally deleted and there was no intentional change in the licensing basis of the Prairie Island Plant with respect to the steam generator power operated relief valves.

The changes to Section 3.4, proposed in the February 26, 1991 License Amendment Request, incorporate an action statement into Technical Specification Section 3.4 that is similar to the action statement previously included in Section 3.4 for the steam generator power operated relief valves. However, the proposed action statement is more restrictive than the action statement that was inadvertently deleted. The allowed out of service time is the same as the previous action statement, but the proposed action statement only allows one steam generator power operated relief valve to be out of service for the 48 hour period. The previous action statement implied that both steam generator power operated relief valves could be inoperable for 48 hours.

The 48 hour allowed out of service time is necessary to allow adequate time to safely perform repairs on the steam generator power operated relief valves. Based on past repair history, a major repair to one of the steam generator power operated relief valves could be expected to take approximately 34 hours. The following is a break down of the time required to perform a major repair of a steam generator power operated relief valve. The time durations are estimates based on past repair experience.

Activity	Duration (hours)
Determination That Valve is Inoperable	1
Preparation of Work Instruction	4
Isolation of the Valve	2
Depressurization and Cooldown of Hot Valve	8
Disassembly, Repair/Replacement and Assembly	18
Post Maintenance Testing	1
Total	34

The time durations provided here are estimates, they could be significantly extended if problems or unexpected delays are encountered during any of the activities. Due to the high temperatures and pressures associated with these valves it is prudent to allow adequate time for valve repairs to be completed in a manner which minimizes the personnel safety risk.