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BVY 11-069

September 29, 2011

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: Technical Specifications Proposed Change No. 295
Proposed Emergency License Amendment for Single Loop Operation
Vermont Yankee Nuclear Power Station
Docket No. 50-271
License No. DPR-28

Dear Sir or Madam:

Pursuant to 10CFR50.90, Vermont Yankee (VY) hereby proposes to amend the Technical Specifications (TS) 3.6.G "Single Loop Operation." Specifically, section 3.6.G.1.c is proposed to be revised to add an alternate method of electrically isolating the idle recirculation loop motor generator set.

Enclosure 1 provides a discussion and evaluation of the proposed license amendment, including a significant hazards consideration review in accordance with 10CFR50.92. VY has determined that the proposed change does not result in a significant hazards consideration. Enclosure 2 provides marked-up TS and Bases pages. Enclosure 3 provides new TS and Bases pages with the proposed changes incorporated. The TS Bases pages are provided for information only.

VY has reviewed the proposed change against the criteria of 10CFR51.22 and has concluded that it meets the criteria provided in 10CFR51.22(c)(9) for categorical exclusion from the requirements for an Environmental Impact Statement or an Environmental Assessment.

VY is requesting that this license amendment request be processed as an emergency TS change in accordance with 10CFR50.91(a)(5) where failure to act in a timely way could result "in prevention of either resumption of operation or of increase in power output up to the plant's licensed power level."

The VY onsite Safety Review Committee has reviewed and concurs with this proposed change.

In accordance with 10CFR50.91, a copy of this application, with attachments, is being provided to the designated state of Vermont official.

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STATE OF VERMONT
DEPT OF PUBLIC SERVICE
MONTPELIER, VT
05620-2601

There are no new regulatory commitments being made in this submittal.

If you have any questions on this transmittal, please contact Mr. Robert Wanczyk at 802-451-3166.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on September 29, 2011.

Sincerely,



[MJC/JTM]

Enclosures: (1) Description and Evaluation of Proposed Change
 (2) Marked-up Technical Specification and Bases Pages
 (3) Technical Specification and Bases Pages with Changes Incorporated

cc: Mr. William M. Dean
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BVY 11-069
Docket No. 50-271

Enclosure 1

Vermont Yankee Nuclear Power Station

Proposed Change No. 295

Description and Evaluation of Proposed Change

1. DESCRIPTION AND REASON FOR THE PROPOSED CHANGE

Vermont Yankee (VY) Technical Specification (TS) 3.6.G "Single Loop Operation" allows the reactor to continue operation with a single recirculation loop provided certain conditions are satisfied. TS 3.6.G.1.c specifies that the idle recirculation loop be isolated by electrically disarming the breaker to the recirculation pump motor generator (MG) set drive motor prior to startup or if disabled during reactor operation, within 24 hours, and until such time as the inactive recirculation loop is to be returned to service. The safety basis for this action is to prevent a cold water injection transient caused by an inadvertent pump start. There is no specific action statement associated with a failure to comply with TS 3.6.G.1, however, should this specification not be met, action would need to be taken to shut down the plant in a timely manner consistent with 10CFR50.36(c)(2).

On September 25, 2011, the "B" recirculation pump MG tripped and VY entered TS 3.6.G.1 for single loop operation. The requirements contained in the TS for operation with a single recirculation loop were satisfied.

On September 28, 2011, during the repair effort, it was determined that it may be necessary to run the drive motor to perform maintenance prior to putting the system back in service. To perform this maintenance, the breaker for the MG set drive motor would need to be closed which is not allowed by TS 3.6.G.1.c.

Therefore, VY requests a revision to TS 3.6.G.1.c to add another means of electrical isolation of the recirculation pump motor by preventing closure of the associated field breaker. This will allow the necessary maintenance to be performed and still provide appropriate protection against inadvertent recirculation pump restart.

2. DETAILED DESCRIPTION

The Reactor Recirculation System is designed so that adequate fuel barrier thermal margin is assured following recirculation pump system malfunctions and that failure of the piping integrity does not compromise the ability of the reactor vessel internals to provide a refloodable volume. The Reactor Recirculation System consists of two pumps that are normally operating. However, operation with a single recirculation pump is allowed provided minimum critical power ratio and maximum average planar linear heat generation rate limits are changed to values specified in the Core Operating Limits Report.

During single loop operation, the idle recirculation loop is currently isolated per TS 3.6.G.1.c by electrically disarming the recirculation pump MG set drive motor breaker, until ready to resume two loop operation. This is done to prevent a cold water injection transient caused by an inadvertent pump startup.

The event of concern is an inadvertent startup of an idle recirculation pump. The VY design bases initial conditions and assumptions for this event were chosen to maximize the severity of the transient. When the recirculation pump MG set drive motor breaker closes, the motor reaches synchronous speed quickly and the generator reaches full speed in approximately 5 seconds. When the generator field breaker is closed, loading the generator and applying starting torque to the pump motor, generator speed decreases as the generator tries to start the pump. A rise in core flow occurs from the surge in flow of the startup loop jet pump diffusers accompanied by a short duration neutron flux peak.

Throughout the transient diffuser flow in the startup loop jet pumps is either reversed or remains less than 10 percent. For this reason the cold loop water does not significantly affect the transient. A rise in core flow occurs from the surge in flow of the startup loop jet pump diffusers accompanied by a short duration neutron flux peak at less than 120%.

In order to restore the recirculation pump MG set to service, it may be necessary to run its drive motor to perform maintenance. The amendment request proposes a functionally equivalent means for preventing inadvertent pump startup by electrically disarming the recirculation pump MG's field breaker preventing its closure. With the field breaker open, the generator will not develop output voltage and the recirculation motor cannot drive the associated pump.

The effects of residual voltage are not a concern because, with an initially open field breaker, the generator cannot develop any output voltage. The field breaker for VY's recirculation MG set consists of two poles which apply or remove field voltage from the generator field. A third pole inserts a resistor across the generator field when the field breaker opens. The resistor is used to rapidly reduce field voltage and to cause generator residual voltage to decay rapidly and speed coastdown of the pump motor.

VY has evaluated the proposed change from a risk standpoint. This assessment is based on the qualitative argument that a functionally equivalent means for preventing a power excursion from occurring due to inadvertent start of Recirculation Pump is provided, thus the change will not cause risk to exceed the level determined acceptable during normal work controls and, therefore, there is no net increase in radiological risk to the public.

The proposed change to provide an alternate method of electrical isolation for an idle recirculation motor generator set is acceptable based on the equivalent level of protection provided against an inadvertent transient.

3. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION

No Significant Hazards Assessment

The proposed change revises Technical Specification (TS) 3.6.G.1.c to allow electrically disarming the idle recirculation loop using either the recirculation pump motor generator (MG) set drive motor breaker or the recirculation pump MG set field breaker. This is considered functionally equivalent since with the MG set field breaker open the MG set will not develop output voltage and the MG cannot drive the recirculation pump.

VY has evaluated whether or not a significant hazards consideration is involved with the proposed change by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No. The Reactor Recirculation System is not an initiator or mitigator of any Updated Final Safety Analysis Report (UFSAR) Chapter 14.6 Design Basis Accidents. UFSAR Chapter 14.5 evaluates malfunctions associated with the Reactor Recirculation System and concludes that none of these malfunctions results in any fuel damage. This proposed change provides an alternative for preventing the recirculation pump from starting. The TS will now allow either electrically disarming the MG set drive motor

breaker or electrically disarming the MG set field breaker. This is considered a functionally equivalent level of protection. System operation continues to be bounded by the station safety analysis. This request does not in any way affect operability of systems required by the TS that will be used to mitigate the consequences of an accident. Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No. The proposed change provides the alternative of electrically disarming the MG set drive motor breaker or electrically disarming the MG set field breaker. This is considered functionally equivalent and is consistent with normal tagging practices for plant equipment. As such, no new or different types of equipment will be installed, and the operation of installed equipment is unchanged. This configuration is in support of maintenance on the MG set and the methods governing plant operation and testing remain consistent with current safety analysis assumptions. Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No. The plant TS allow for operation with one recirculation loop in service. The proposed change provides the alternative and electrically disarming the MG set drive motor breaker or electrically disarming the MG set field breaker. The request does not adversely affect existing plant safety margins or the reliability of the equipment assumed to operate in the safety analysis. As such, there are no changes being made to safety analysis assumptions, safety limits or safety system settings that would adversely affect plant safety as a result of the proposed change. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, VY concludes that the request presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4. ENVIRONMENTAL CONSIDERATIONS

This amendment request meets the eligibility criteria for categorical exclusion from environmental review set forth in 10 CFR 51.22(c)(9) as follows:

- (i) The amendment involves no significant hazards determination.

As described in Section 3 of this evaluation, the proposed change involves no significant hazards consideration.

- (ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

The proposed amendment does not involve any physical alterations to the plant configuration that could lead to a change in the type or amount of effluent release offsite.

- (iii) There is no significant increase in individual or cumulative occupational radiation exposure.

The proposed amendment does not involve a significant increase in individual or cumulative occupational radiation exposure.

Based on the above, VY concludes that the proposed change meets the eligibility criteria for categorical exclusion as set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

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Enclosure 2

Vermont Yankee Nuclear Power Station

Proposed Change No. 295

Marked-Up Technical Specification and Bases Pages

3.6 LIMITING CONDITIONS FOR OPERATION

- b. The requirements for avoiding potentially unstable thermal hydraulic conditions defined in Technical Specification 3.6.J are met.
- c. The idle loop is isolated by electrically disarming the breaker to the recirculation pump motor generator set drive motor prior to startup or, if disabled during reactor operation, within 24 hours, and until such time as the inactive recirculation loop is to be returned to service.
- d. The recirculation system controls will be placed in the manual flow control mode.

4.6 SURVEILLANCE REQUIREMENTS

OR THE RECIRCULATION PUMP MOTOR GENERATOR SET FIELD BREAKER

BASES: 3.6 and 4.6 (Cont'd)

Agreement of indicated core flow with established power-core flow relationships provides the most assurance that recirculation flow is not bypassing the core through inactive or broken jet pumps. This bypass flow is reverse with respect to normal jet pump flow. The indicated total core flow is a summation of the flow indications for the twenty individual jet pumps. The total core flow measuring instrumentation sums reverse jet pump flow as though it were forward flow (except in the case of single loop operation when reverse flow is subtracted from the total jet pump flow). Thus, the indicated flow is higher than actual core flow by at least twice the normal flow through any backflowing pump. Reactivity inventory is known to a high degree of confidence so that even if a jet pump failure occurred during a shutdown period, subsequent power ascension would promptly demonstrate abnormal control rod withdrawal for any power-flow operating map point.

A nozzle-riser system failure could also generate the coincident failure of a jet pump body; however, the converse is not true. The lack of any substantial stress in the jet pump body makes failure impossible without an initial nozzle-riser system failure.

G. Single Loop Operation

Continuous operation with one recirculation loop was justified in "Vermont Yankee Nuclear Power Station Single Loop Operation", NEDO-30060, February 1983, with the adjustments specified in Technical Specification 3.6.G.1.a.

During single loop operation, the idle recirculation loop is isolated by electrically disarming the recirculation pump motor generator set drive motor, until ready to resume two loop operation. This is done to prevent a cold water injection transient caused by an inadvertent pump startup.

Under single loop operation, the flow control is placed in the manual mode to avoid control oscillations which may occur in the recirculation flow control system under these conditions.

H. Recirculation System

Twelve hours is a reasonable period of time to reach hot shutdown conditions. Operation of the reactor may not occur without forced recirculation flow.

BREAKER ON THE RECIRCULATION PUMP MOTOR GENERATOR SET FIELD BREAKER

Enclosure 3

Vermont Yankee Nuclear Power Station

Proposed Change No. 295

Technical Specification and Bases Pages with Changes Incorporated

3.6 LIMITING CONDITIONS FOR OPERATION

- b. The requirements for avoiding potentially unstable thermal hydraulic conditions defined in Technical Specification 3.6.J are met.
- c. The idle loop is isolated by electrically disarming the breaker to the recirculation pump motor generator set drive motor or the recirculation pump motor generator set field breaker prior to startup or, if disabled during reactor operation, within 24 hours, and until such time as the inactive recirculation loop is to be returned to service.
- d. The recirculation system controls will be placed in the manual flow control mode.

4.6 SURVEILLANCE REQUIREMENTS

BASES: 3.6 and 4.6 (Cont'd)

Agreement of indicated core flow with established power-core flow relationships provides the most assurance that recirculation flow is not bypassing the core through inactive or broken jet pumps. This bypass flow is reverse with respect to normal jet pump flow. The indicated total core flow is a summation of the flow indications for the twenty individual jet pumps. The total core flow measuring instrumentation sums reverse jet pump flow as though it were forward flow (except in the case of single loop operation when reverse flow is subtracted from the total jet pump flow). Thus, the indicated flow is higher than actual core flow by at least twice the normal flow through any backflowing pump. Reactivity inventory is known to a high degree of confidence so that even if a jet pump failure occurred during a shutdown period, subsequent power ascension would promptly demonstrate abnormal control rod withdrawal for any power-flow operating map point.

A nozzle-riser system failure could also generate the coincident failure of a jet pump body; however, the converse is not true. The lack of any substantial stress in the jet pump body makes failure impossible without an initial nozzle-riser system failure.

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During single loop operation, the idle recirculation loop is isolated by electrically disarming the recirculation pump motor generator set drive motor breaker or the recirculation pump motor generator set field breaker, until ready to resume two loop operation. This is done to prevent a cold water injection transient caused by an inadvertent pump startup.

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