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DEPT OF PUBLIC SERVICE
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05620-2601

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Michael J. Colomb
Site Vice President

BVY 11-070

September 30, 2011

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

SUBJECT: Technical Specifications Proposed Change No. 295
Supplement 1 - Request for Additional Information
Vermont Yankee Nuclear Power Station
Docket No. 50-271
License No. DPR-28

REFERENCE: 1. Letter, Vermont Yankee to USNRC, "Technical Specifications
Proposed Change No. 295," BVY 11-069, dated 9/29/2011

Dear Sir or Madam:

In Reference 1, Vermont Yankee proposed to amend the Technical Specifications (TS) 3.6.G "Single Loop Operation" to add an alternate method of electrically isolating the idle recirculation loop motor generator set. This letter is in response to an NRC staff request for additional information (RAI) that was discussed on a telecom held on September 30, 2011. Enclosure 1 provides responses to each of the RAI questions. Enclosure 2 provides a revised TS bases page that is provided for information only.

This supplement to the original license amendment request does not change the scope or conclusions in the original application, nor does it change the determination of no significant hazards consideration.

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 30, 2011.

Sincerely,

[MJC/JMD]

Enclosures: (1) Response to Request for Additional Information
(2) Revised Technical Specification Bases Page

cc: Mr. William M. Dean
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Enclosure 1

Vermont Yankee Nuclear Power Station
Proposed Change No. 295 - Supplement 1
Response to Request for Additional Information

Response to Request for Additional Information

RAI 1:

Provide details of the maintenance for which it may be necessary to run the drive motor.

Response:

Maintenance activities for which it may be necessary to rotate the shaft for example include brush run in, slip ring grinding, relay troubleshooting and start sequence trouble shooting.

RAI 2:

In order to avoid inadvertent auto or manual closing of field breaker or motor-generator (MG) set, discuss the precautionary need to disconnect the field breaker from its cubicle during the maintenance period.

Response:

In order for the recirculation pump to be started, the motor generator must develop an output voltage to the recirculation pump motor. Anything that will prevent the motor generator (MG) set from developing an output voltage will prevent the recirculation pump from starting. This could be 1) tagging the MG set drive motor feeder breaker open to prevent the MG set motor from being energized, or 2) performing any step which will prevent the generator from developing a field and therefore an output voltage. One of the ways of doing this is to prevent the field breaker from supplying exciter output to the generator field by removing (racking out) the breaker from the "connect" position so that the primary disconnects of the breaker are not made up to the cubicle. Once the breaker is taken out of the connect position, a limit switch contact in the back of the cubicle closes to short out the generator field windings, preventing the generator from developing voltage. Other ways of preventing the generator from developing voltage includes tagging out the power to the voltage regulator so that the voltage regulator cannot provide exciter field voltage or removing the generator brushes, tagging out the field breaker (removing the fuses in the breaker close coil) to prevent breaker closing or tagging out the start sequence timer so that the field will not flash and the regulator will not power up.

Any of these means of preventing the generator from developing an output voltage is functionally equivalent to having the MG set drive motor feeder breaker open since the intent is to prevent the pump motor from energizing.

Vermont Yankee has an approved procedure for generator slip ring grinding that uses these methods to prevent voltage from getting to the field (for personnel safety) but allows the 4KV feeder breaker to be closed so that the generator rotor will turn for the grinding evolution. This procedure is performed during outages.

The existing Technical Specifications requires the feeder breaker to the recirculation MG set drive motor be electrically disarmed when in single loop. The suggested change is to allow the use of the field breaker being disarmed as alternative adequate protection against the pump motor from energizing. Anytime the field breaker is not in the connect position, the shorting of the generator field by the cubicle mounted limit switch contact will prevent the generator from developing a field to produce a voltage to start the recirculation pump motor.

Blocking the recirculation pump motor start by preventing the generator from developing output voltage (by blocking its field) is functionally equivalent to having the recirculation MG drive motor feeder breaker open.

Inadvertent racking in of a closed field breaker to the connect position is precluded by mechanical cubicle interlocks. The existing procedure for slip ring grinding also tags out the regulator power to prevent exciter field development.

RAI 3:

Please discuss the history of maintenance on slip rings over the last 5 years. Have you done polishing by spinning the MG set before?

Response:

Slip ring grinding is performed as required based on inspections of the slip rings and brushes each refuel outage. The evolution of polishing the slip rings with the field breaker open has been performed over the past 5 years.

RAI 4:

Please discuss the difference between the existing provision to electrically disarm the drive motor breaker and the proposal to add a provision to electrically disarm the field breaker from a risk to cause an inadvertent injection transient standpoint.

Response:

The method of electrically disarming the recirculation pump motor currently described in the Technical Specification is accomplished by racking down the drive motor breaker. In the proposed option the inadvertent racking in of a closed field breaker to the connect position is precluded by mechanical cubicle interlocks. If the breaker was open, the interlock would allow the breaker to move to the connect position but a separate manual action would be required to close the breaker. The existing procedure for slip ring grinding also tags out the regulator power to prevent exciter field development. In both cases administrative actions are used to assure the positioning of components is not altered, i.e., our switching and tagging program. As such the risk of the options is not increased.

Enclosure 2

Vermont Yankee Nuclear Power Station
Proposed Change No. 295 - Supplement 1
Revised Technical Specification Bases Page

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 breaker or the recirculation pump motor generator set field breaker, until ready to resume two loop operation. These methods provide a functionally equivalent means of preventing a cold water injection transient caused by an inadvertent pump start.

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.