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VERMONT YANKEE NUCLEAR POWER CORPORATION

SEVENTY SEVEN GROVE STREET

RUTLAND, VERMONT 05701

B.4.1.1

WVY 79-89

REPLY TO:
ENGINEERING OFFICE
TURNPIKE ROAD
WESTBORO, MASSACHUSETTS 01581
TELEPHONE 617-366-9011

August 9, 1979

United States Nuclear Regulatory Commission
Region 1
631 Park Avenue
King of Prussia, Pennsylvania 19406

Attention: Office of Inspection and Enforcement
Mr. Boyce H. Grier, Director

References: (a) License No. DPR-28 (Docket No. 50-271)
(b) USNRC letter, T. A. Ippolito to R. H. Groce, dated July 20, 1979

Dear Sir:

Subject: Additional Information Submitted in Response to IE Bulletin 79-08

The following information is submitted in response to Reference (b).

Response - Item No. 2

Vermont Yankee's primary containment isolation system design is the standard BWR 3/4 design that General Electric provided for utilities of the grouping. In general, this design provided for two major classes of isolation valves, A & B. Class A isolation valves are in pipelines that communicate directly with the reactor vessel and penetrate the primary containment. These lines generally have two isolation valves in series-one inside the primary containment and one outside the primary containment. Class B isolation valves are in pipelines that do not communicate directly with the reactor vessel, but penetrate the primary containment and communicate with the primary containment free space. These pipelines generally have two isolation valves in series, both of them outside the primary containment.

The requirement for automatic Class A valves is to be fully closed in time to prevent the reactor vessel level from falling below the top of the active fuel as a result of a break of the pipeline which the valve isolates. This is achieved by automatic closure of Class A valves upon the receipt of a low or low-low water level signal.

High pressure in the drywell could indicate a break of the nuclear system process barrier inside the drywell. The automatic closure of Class B valves prevents the release of significant amounts of radioactive material from the primary containment.

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Specific justification for not isolating the recirculation loop sample line, main steam drain lines, and reactor cleanup system, on receipt of a high drywell pressure signal, as is follows:

1. Recirculation loop sample line:

   The valves isolating this line are Class A valves which are passive (closed), during normal plant operation. The valves associated with this line isolate on a Group 1 isolation which initiates on a low-low water level condition in accordance with the Class A valve criteria stated above. This group includes the main steam and the main steam drain lines. The recirculation loop sample valves provide post-reactor coolant to be obtained following core reflood when high drywell pressure may still exist.

2. Main steam drain lines:

   The valves isolating these lines are Class A valves which are manually closed following turbine startup. The valves associated with these lines isolate on a Group 1 isolation as discussed in No. 1 above. Since these valves communicate with the same process lines that the main steam isolation valves do, it is not required that these valves isolate on high drywell pressure. In addition to the low-low water level condition, Group 1 isolation valves are closed upon the receipt of any one of the following:

   a) High main steam line radition;
   b) High main steam line flow;
   c) High main steam line tunnel temperature;
   d) Low main steam line pressure (RUN mode only);
   e) Condenser low vacuum.

   Should the main steam line isolation valves shut due to low main steam line pressure (a common event during reactor scrams) coincident with a high drywell pressure condition, it would be necessary to reopen the drain lines to provide pressure equalization and thus allow the reopening of the main steam isolatoin valves to restore the primary heat sink.

3. Reactor cleanup system:

   The valves isolating this line are Class A valves which isolate upon receipt of a low water level condition above the level setpoint of those valves which isolate under Group 1 conditions. This level setting, which is coincident with the reactor vessel low water level scram setting, was selected to initiate isolation at the earliest indication of a possible breach in the nuclear system process barrier yet far enough below normal operational levels to avoid spurious isolation. A high drywell pressure condition would not be indicative of a cleanup line break unless,

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based on line size, a loss of water level was simultaneous with the condition. In that mode, the system would rapidly isolate at the reactor scram low level set point. During operational transients and design bases accidents of lesser magnitude than the maximum credible accident, the cleanup system in conjunction with the control rod drive system is capable of maintaining primary vessel water level control. Isolating this system on receipt of a high drywell pressure signal would negate this desirable feature of facility design.

In conclusion, the automatic closure of various Class A valves prevents the excessive loss of reactor coolant and the release of significant amounts of radioactive material from the nuclear system process barrier. The systems that are designed to isolate on level do so prior to the core becoming uncovered and thus prevent the process lines affected from transporting an increase in fission product inventory. High drywell pressure could indicate a breach of the nuclear system process barrier inside the drywell. (Normal heatup without proper venting of containment can cause a spurious high drywell pressure without any process line break). The automatic closure of various Class B valves prevents primary steam or coolant from transporting between the primary containment and the secondary containment. Should a small break occur inside the primary containment, a high drywell pressure signal would be generated. However, if no loss of level occurs, there would be no increase in fission product inventory in those systems isolated by Class A valves and thus, no reason to isolate and prevent use of those systems.

Response - Item No. 4

1. The range of reactor vessel water level from below the top of the active fuel area up to the top of the vessel is covered by a combination of narrow and wide-range instruments. Level is indicated and recorded in the control room via 9 different instruments. Of these nine instruments, three provide narrow range indication and control (0-60") from separate condensing chambers via the reactor feedwater system. This set indicates and records in the control room via two level indicators and one level recorder. (LI6-94A/B and LR6-96). The additional narrow-range level instruments (YARWAY-LITS-2-3-59A/B) are provided with independent condensing chambers which also indicate in the Control Room (LI-2-3-85A/B). Other safety-related systems are functions served by separate reactor water level instrumentations are:

   Reactor Core Isolation Cooling System (RCIC)

   High Pressure Coolant Injection System (HPCI)

   Low Pressure Core Spray System (LPCS)

   Residual Heat Removal/Low Pressure Injection (RHR/LPCI)

   Automatic Depressurization System (ADS)

   Primary Containment Isolation System (PCIS)

The Primay Containment Isolation System initiates on low and low-low reactor water level. All other systems initiate on low-low reactor water level. In addition, the RCIC and HPCI systems shut down on high reactor vessel water level. In all cases, except the RCIC, these systems automatically restart if low reactor level is again reached.

The remaining four level instruments all provide wide-range vessel level indication in the Control Room. Three (LI-2-3-91A/B and LR-2-3-98) share the same condensing chambers as the feedwater level instruments while the fourth (LI-2-3-86) has a completely independent condensing chamber.

2. Some of the instrumentation which the operator can use to determine change in reactor coolant inventory or other abnormal conditions are:

   Drywell Pressure and Temperature

   Drywell Radioactivity Levels

   Suppression Pool High Temperature and Level

   Safety Relief Valve (SRV) Discharge High Temperature

   High Feedwater Flow rates

   High Main Steam Flow

   Abnormal Reactor Pressure

   High Drywell Equipment & Floor Drain Sump Fill and Pumpout Rates

3. In conjunction with the special review conducted for Item One of this Bulletin all types of vessel level indicators were reviewed with the station operators. At that time, the operators were instructed to utilize all other available information to initiate safety systems. This training was completed on April 27, 1979.

<u>Response - Item No. 5</u>

1. All operating procedures and training instructions were included in that review which was completed on April 27, 1979.

2. It has always been the practice of Vermont Yankee to identify in the station operating procedures all symptoms and indicators which might provide additional information to the operators which would be useful in evaluating abnormal plant conditions. Thus during our review in response to this Bulletin we concluded no further changes were necessary in this area. However, the

importance of reviewing all plant symptoms was repeated to each licensed operator in April and will again be reviewed during each annual operator requalification training program.

Response - Item No. 6

1 & 4. During the week of May 21-25 a thorough review of all accessible safety related valves, instrumentation, and electrical circuit breaker positioning requirements (required position) and actual position was conducted in the company of NRC Inspection and Enforcement Inspectors Steka, Folley and Rekito. Without exception, proper operation of all engineered safety features was demonstrated.

2. In accordance with Administrative Procedure, A.P. 0156, Valve Lineup File, comprehensive valve lineup checks are made by station operators following each extended plant shutdown, following major equipment maintenance, and upon request of the Operations Supervisor or his assistant. Included in their checks are all safety system manual, locked, and motor operated valves and electrical circuit breakers. Following these, and monthly thereafter, each safety system is performance tested to further demonstrate total system operability. When plant conditions require changing the position of system valves, the new valve positions are recorded in the valve lineup file. In this manner the file continuously reflects the current status of all station valves. A limited number of valves, specifically, (1) those which are associated with a tagging order (A.P. 0140, VY Local Control Switching Rules), (2) those which are repositioned to perform a surveillance test (any 4100 series OP), and (3) those which are identified as Routinely Operated or As Required on the Valve lineup sheets. (i.e., Radwaste System, Cond. Demin. Sampling System, etc.) are not updated in the Valve Lineup File because the positions of these valves is either recorded elsewhere or functionally demonstrated on a continuous basis.

3. The refinements to our valve line-up procedure and a new procedure prescribing instrumentation and valve line-ups were completed on June 22, and July 24, 1979 respectively.

Response - Item No. 7

1. The only additions to this listing are the Main Steam System (including drains) & the Recirc. Sample System. These systems do isolate when high radiation indication exists. See Group 1 isolation signals as described in response to Item No. 2 of this letter.

2. Should a containment isolation occur, station operators are now required to review the following radiation monitors for evidence of abnormal radiation levels before resetting the isolation signal:

Steam Jet Air Ejector (off gas) Radiation Monitor

Advanced Off Gas (AOG) Radiation Monitor

Area Radiation Monitors

Main Steam Radiation Monitors

Radwaste Radiation Monitors

Refuel Floor Radiation Monitors

Fuel Pool Radiation Monitors

Existance of any abnormal radiation condition would disallow resetting of the isolation signal.

As an additional precaution, the following statement has been added to the appropriate operating procedures.

> "Prior to and immediately following the resetting of a containment isolation signal, review radiation monitors on Control Room panels 2, 10, 11 and 50 to ensure undesirable venting of radioactive effluents to the environs do not occur".

Response - Item No. 8

1. Your assumption that Vermont Yankee may be relying on prior operability verification within the technical specification surveillance interval is incorrect. Operability tests are performed immediately prior to removal of any redundant safety system from service irregardless of the Tech. Spec. surveillance interval. Additionally, these tests consist of total system performance demonstrations rather than only visual inspections.

Response - Item No. 9

The appropriate plant procedure (AP 0150) was revised on May 14, 1979. The OPX lines were installed at the required locations on June 11, 1979.

We trust that the supplemental information supplied in this letter is satisfactory and will allow the Commission to complete the safety evaluation for IE Bulletin 79-08 as relates to Vermont Yankee. However, should you have additional questions, please contact R. J. Wanczyk of this office.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

D. E. Moody

D. E. Moody
Manager of Operations

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