VERMONT YANKEE NUCLEAR POWER CORPORATION

SEVENTY SEVEN GROVE STREET

RUTLAND, VERMONT 05701

REPLY TO:
ENGINEERING OFFICE
1671 WORCESTER ROAD
FRAMINGHAM, MASSACHUSETTS 01701
TELEPHONE 617-872-8100

2.C.2.1
FVY 82-48

May 3, 1982

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Division of Licensing
Domenic B. Vassallo, Chief
Operating Reactors Branch #2

References: a) License No. DPR-28 (Docket 50-271)
b) VYNPC Letter (FVY 82-41) to USNRC, dated 4/14/82

Dear Sir:

Subject: Supplemental Information Regarding ISI Program Relief Requests

Vermont Yankee recently supplied the NRC with clarifying information on the proposed relief requests contained in our In-Service Inspection Program. The supplemental information and editorial correction provided on the attached pages update the material previously transmitted by Reference (b).

We trust that the supplemental information provided herein is satisfactory; however, should you have any questions, please contact us.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

James B. Sinclair

James B. Sinclair
Licensing Engineer

A001
S
1/1

EWJ/dm
cc: USNRC, Washington, D.C.
Attn: Mr. D. Collins
Radiological Assessment Branch

I. Class 1 Components

1. Requests for Relief B-1, B-2 (pg 1-118, Ref. 1) (B-A, B-B)

These relief requests concern volumetric examinations of the longitudinal and circumferential shell welds in the core beltline region (B-A) and the circumferential and meridional seam welds on the bottom head (B-B). The welds are inaccessible due to bio-shield configuration and/or interference by vessel insulation. The following additional information is requested:

(a) Is it possible to perform surface or remote visual examination on these welds to supplement volumetric examination? Please provide an estimate of percentage of each weld which may be accessible to supplementary examination.

Response: It is not practical to perform surface or direct visual examination of the longitudinal and circumferential shell welds in the core beltline region for the same reasons that volumetric examination is impractical. These welds are situated beneath thermal insulation panels which are not designed to be removable; consequently, access for removal has not been provided.

Regarding the feasibility of remote visual examination, there is insufficient clearance ($\leq$ 1") between the reactor vessel wall and the thermal insulation to insert a television camera and necessary lights. During the 1983 refueling outage, we will investigate the possibility of performing this inspection by other remote methods. Relief Request B-1 will remain as submitted pending the results of this investigation.

Accessibility of bottom head circumferential and meridional welds cannot be verified from existing plant drawings with sufficient accuracy to permit an estimate of the percentage of these welds which can be subjected to supplemental examination. We will confirm the degree of accessibility during the 1983 refueling outage and, if necessary, submit a revised Relief Request B-2.

2. Requests for Relief B-5, B-6 (pg 1-120, Ref. 1) (B-M-2, B-L-2)

Relief is requested from visual examination of the internal pressure boundary surfaces of various valve bodies and pump casings. Disassembling a valve or pump for the sole purpose of performing a visual inspection is said to impose an undue burden on the plant and may increase the probability of component failure. The following additional information is requested:

a) Please provide an estimate of the man-hours that would be expended and the radiation exposures that would be incurred through performing an examination of each of the required components.

b) Please give an estimate on how often a pump or a valve that would satisfy the Code requirements can be expected to be disassembled for maintenance.

Response: The following table provides an estimate of the man-hours and exposure involved in disassembling, inspecting, and reassembling each of the components subject to examination under Code Categories B-M-2 and B-L-2. The component groups listed are derived from Reference (c).

Code Category B-M-2, Valve Body Internal Surfaces

Component Group	Component Identification	Estimated Man-Hours (each valve)	Estimated* Man-Rem (each valve)	
1	V2-43A & B	200	180.0	**
		(216 if seal weld is replaced)	194.0	
	V2-53A & B	200	180.0	
		(216 if seal weld is replaced)	194.0	
2	V2-65A&B	120	240.0	
		(136 if seal weld is replaced)	(272.0)	
3	V2-28A & B	96	7.5	
4	V2-29A & B	90	7.0	
5	V23-15	72	5.5	
	V23-16	90	0.9	
6	V14-12A & B	72	4.5	
7	V14-13A & B	60	6.0	
8	V14-14A & B	120	12.0	
9	V2-80A thru D	104	8.5	
	V2-86A thru D	80	6.5	
10	SV2-70A & B	96	14.0	

11	RV2-71A thru D	76	11.5
12	V10-17	72	1.5
13	V10-18	120	72.0
14	V10-25A & B	72	1.5
15	V10-46A & B	120	72.0
16	V10-81A & B	136	81.0
		(152 if seal weld is replaced)	(91.0)
	V10-88	136	81.0
		(152 is seal weld is replaced)	(91.0)
17	V10-27A & B	72	1.5
18	V2-27A	72	0.7
(New Group)	V2-96A	72	0.7

Code Category B-L-2, Pump Casing Internal Surfaces

Component Group	Component Identification	Estimated Man-Hours (each valve)	Estimated* Man-Rem (each valve)	
Pumps	P-18-1A& B	500	515	**

* Exposure estimates are for 1983. Dose rates are expected to increase approximately 8% annually thereafter. All other ISI activities normally incur 75-80 Man-Rem per outage.

** Estimated man-hours required now reflect actual field data obtained from utilities that have performed this activity.

NOTE: These estimates do not include support activities such as valve alignment and tagging, draining of lines, defueling of reactor vessel (if necessary), installation of shelding, and health physics coverage.

The Code requirement is for visual inspection of one component in each group during each inspection interval. Disassembly of a valve or pump which has been functioning within acceptable parameters for the sole purpose of inspection is contrary to good maintenance practices, since the likelihood of failure may be increased. Furthermore, all of these components are subjected to an alternate form of performance and/or leakage monitoring, such as inservice pump and valve testing, Appendix J leak rate testing, or

primary coolant system leak detection. All pumps and valves in these categories are constructed of cast austenitic stainless or carbon steels, which have been identified as unlikely to experience failure by cracking. Finally, considering the uncertain benefit involved, it is difficult to justify the additional radiation exposure which would be incurred.

With the exception of valves in Groups 1C and 11, which are periodically removed from service in accordance with Reference (c), pumps and valves are normally disassembled only when they give indications of degraded performance. While components in roughly half of the groups have been made available during the first ten years of plant operation for inspection at a frequency which meets or exceeds Code requirements, others have never been disassembled to date, and there is no certainty that future maintenance activities will result in disassembly of one component per group during each inspection interval. In our estimation, ten years of plant operation have shown that established monitoring practices in this area are adequate to protect the public health and safety.

II. Pressure Testing

1. Request for Relief H-4 (pg H-16, Ref. 1) (Reactor Cleanup Water System Hydro)

This request for relief concerns a portion of the reactor cleanup water system piping, CUW-55 between valves V10-63 and V10-62. This piping section cannot be isolated from the Safety Class 3 line CUW-54. Testing this section to 1.25 times design pressure would overpressure line CUW-54. The following additional information is requested:

(a) Your drawing, P-2 of Ref. 1, is called out as the reference drawing for this request for relief. While line CUW-55 is shown on this drawing, the valves that are shown in this line are valves V12-62 and V12-63. No piping is shown upstream from valve V12-62. Also, line CUW-54 is not shown on this drawing. Please submit a marked-up copy of drawing P-2 showing line CUW-54, as well as the line between the two valves in question with the proper valve numbers. Please indicate the boundary between the two lines of different design pressure.

Response: The "V10" designations in the Relief Request are incorrect; they should read "V12."

Drawing P-2 shows only the Safety Class 2 portions of the Reactor Water Cleanup Return piping. Line CUW-54, which is Safety Class 3, is shown on Drawing P-5. At the next ISI Program revision, the text of the Relief Request will be changed to include the proper valve identification, and Drawing P-2 will be modified to show the Safety Class boundary and to indicate that the line continues on Drawing P-5.

2. Request for Relief H-5 (pg H-17, Ref. 1) (RHR Pump Discharge Line Hydrostatic Test)

Relief is requested to include the RHR pump discharge lines from pressure testing at the higher RHR system test pressure because the discharge lines are not isolable from the lower-test-pressure suction lines immediately upstream from the pumps. The following additional information is requested:

a) Is there a flange at the suction of each pump which could be blanked off to isolate the suction piping from the pumps?

b) Please provide enough information on piping and valve specifications for these suction lines to allow a determination of the pressure at which the linking component can be tested.

Response: There is no flange on the suction side of the Residual Heat Removal pumps which can be blanked off to isolate the suction piping.

The suction piping has a design pressure and temperature of 150 psig and 300 F. The piping is 20", 24" and 26" NPS, Standard Schedule (.375 wall). The valves are 300# rated.

3. Request for Relief H-8 (pg H-18, Ref. 1) (Fuel Pool Cooling and Cleanup Line, FPC-34)

This request for relief concerns the hydrostatic testing of line FPC-34 which cross-connects the condensate transfer system with the fuel pool cooling and cleanup system. This line is not isolable from the condensate transfer system, and therefore, performing a hydrostatic test on this line would require extensive tie-up of the condensate transfer system. This system is required to provide emergency makeup to the spent fuel pool as well as various other functions during all modes of operation. The following additional information is requested:

a) Drawing P-3 (pg H-10, Ref. 1) shows that while line FPC-34 is unisolable from the condensate transfer system, it is apparently isolable from the fuel pool cooling system. Should this line be included in the ISI pressure testing program for the condensate transfer system?

Response: The Safety Class boundary which was formerly located at valve V-24 has been moved to valve V-29. Therefore, line FPC-34 from CST-1 to FPC-24 and line FPC-35 are no longer Safety Class 3 and are not subject to ASME Section XI hydrostatic testing requirements. Relief Request H-8 is no longer required and will be deleted at the next revision. Drawing P-3 will be revised to show the correct test boundary.

4. Request for Relief H-9 (pg H-19, Ref. 1) (Service Water System)

This request for relief applies to the ISI pressure testing of the entire service water system. This system removes heat from various components during both power operation and plant shutdown. The system runs "approximately 100% of the time" (Ref. 1). The following additional information is requested:

a) Can the service water system be pressure-tested during times when the plant has been shut down long enough so that the service water system can safely be taken out of service?

Response: It was discovered during replacement of Service Water piping in 1981 that it is possible to alternately shut down each of the two supply subsystems for purposes of hydrostatic testing, but the return subsystems, which join to form a common return line, must remain operational as stated in the Relief Request. During shutdown, Service Water is required to cool the Residual Heat Removal heat exchangers, which provide shutdown cooling to the reactor vessel, and the Reactor Building Closed Cooling Water heat exchangers, which in turn provide cooling to the Fuel Pool Cooling heat exchangers. To compromise either of these capabilities by total shutdown of the Service Water System would not be conservative.

This Relief Request will be updated at the next revision to reflect our current position.

5. Request for Relief H-10 (pg H-19, Ref. 1) (Diesel Start System)

The diesel air-start system provides high-pressure air to diesel generators to turn the engines over for starting. This request seeks relief from the requirement to perform a hydrostatic test on the diesel air-start system. The basis for relief is that the introduction of water may be detrimental to the diesels and system operation. The following additional information is requested:

a) Table H-1 (pg H-7, Ref. 1) states that the diesel air-start system design pressure is 260 psig and that its test pressure is 250 psig. The relief request basis states that the system's normal operating pressure is 250 psi. Please explain why this system normally operates at its required test pressure.

b) Systems such as this are required to have provision for draining water which accumulates during normal operation. Please provide more justification for your inability to blow this system down properly after a hydro.

Response: The diesel air-start system is a standby system which is constantly pressurized to ~250 psig air. Introduction of water into the system is undesirable because it may result in an unjustifiable increase in the likelihood of corrosion. The configuration of the carbon steel piping is such that blowdown following an intentional wetting may not be adequate to remove all moisture. The existing drains on the air reservoirs are designed for blowdown of the small amounts of condensation which accumulate during standby periods. Water-induced corrosion in air starting lines has been identified in NUREG/CR-0660 as the root cause of most engine starting failures.

We are also requesting relief from the requirement to test this piping at 1.25 times design pressure. Instead, we will substitute a "test" pressure which is in fact the pressure maintained during system standby operation. The once-per-shift operator surveillance of the system at normal "operating" pressure is proposed as an alternative to Code requirements. Any leakage would be indicated by a drop in pressure at the air reservoir pressure indicator and, if severe enough, by a low-pressure alarm in the Control Room.

6. Request for Relief H-13 (pg H-21, Ref. 1) (Dry Well Sump Pump Discharge Lines)

Relief is requested for hydrostatically testing the drywell sump pumps' discharge lines. The safety junction of this piping is to contain the drywell atmosphere; therefore, hydrostatic testing is said to be inappropriate. The following additional information is requested:

a) Please supply a P&ID for this system. What are the normal operating pressures in the discharge line when these pumps are running?

Response: The normal discharge pressure of the drywell sump pumps is nearly 18 psig (32.5 psia) at a flow rate of 50 gpm. During operation, this piping is open-ended at the Floor Drain and Waste Collector tanks. The portion of the system covered by this Relief Request is located several feet downstream of the pump discharge, and therefore experiences a normal operating pressure of less than 18 psig.

The only reason this piping is considered Safety Class is that it forms an extension of the primary containment. As such, it is pneumatically tested under the requirements of 10 CFR 50 Appendix J to 44 psig. The hydrostatic testing requirements of ASME Section XI are not applicable.

Enclosed is a copy of drawing G191177, Sheet 1, marked up for your information.

7. Request for Relief H-18 (pg H-23, Ref. 1) (CRDM Hydraulic Operating Lines)

Relief is requested from the requirement to hydrostatically test the CRDM hydraulic operating lines. Isolation of these lines for hydrostatic testing is considered impractical due to the large number of valves to be realigned and could represent a potential safety hazard if any of these valves are inadvertently left in the test position. The following additional information is requested:

a) Please provide additional justification, such as potential for high man-rem exposure, for this request.

Response: Further review of this Relief Request has shown that an additional justification for not hydrostatically testing the CRD Hydraulic Control Units and associated piping at 2,188 psig (1.25 x Pd) would be the possibility of damage to inline components such as H_2O accumulators, air-operated scram valves, and various filter and instrumentation components which cannot practically be removed or valved out. This relief Request will be modified at the next revision to reflect our current position.

We believe that, since all piping and components in the Hydraulic Control Units experience elevated pressures (1000-1460 psig) either constantly or intermittently during plant operation, any evidence of leakage would be readily detected by routine operator surveillance.