February 29, 2000

Mr. James Knubel
Chief Nuclear Officer
Power Authority of the State of
New York
123 Main Street
White Plains, NY 10601

SUBJECT: RELIEF REQUESTS NOS. 18 AND 19 - FOR AUGMENTED INSPECTION OF THE AXIAL SHELL WELDS AND FOR INSPECTION OF THE VESSEL SHELL-TO-FLANGE WELD IN THE REACTOR VESSEL OF THE JAMES A. FITZPATRICK NUCLEAR POWER PLANT (TAC NO. MA6270)

Dear Mr. Knubel:

By letter dated August 5, 1999 (Letter JPN-99-026), you submitted Relief Request No. 18, requesting relief to defer performing the augmented inspections of the axial shell welds in the reactor pressure vessel (RPV) of the James A. FitzPatrick Nuclear Power Plant (JAFNPP) until refueling outage 16 (i.e., during the fourth quarter of the year 2004). These inspections are required pursuant to 10 CFR 50.55a(g)(6)(ii)(A)(*2*). The augmented inspection provisions of the rule require that the augmented inspections cover at least 90 percent of the volume of each weld being scheduled for examination. The provisions of the rule also require the inspections to be scheduled for the first inservice inspection interval in effect on September 8, 1992. Pursuant to 10 CFR 50.55a(g)(6)(ii)(A)(*3*) licensees are allowed to defer these examinations to the first inservice inspection period of the following inspection interval as subject to certain conditions specified in the provision.

According to your letter JPN-99-025 (also dated August 5, 1999), you indicated that the augmented examinations of the RPV shell welds were originally scheduled to take place during Refueling Outage 14 (i.e., during the fourth quarter of the year 2000). In Attachment 1 to Letter JPN-99-026, you stated that deferral of the inspections to Refueling Outage 16 would allow you to pursue the development of volumetric examination technology that would be capable of achieving a minimum examination coverage of at least 90 percent of the weld volumes scheduled for examination. You then indicated that 10 CFR 50.55a(g)(6)(ii)(A)(*5*) requires licensees to submit alternative programs to these augmented inspection requirements if it is determined that they cannot completely comply with the requirements of 10 CFR 50.55a(g)(6)(ii)(A)(*2*) and (*3*). Since you indicated that the current technology for performing the examinations would not be capable of achieving the required examination coverage, and that development of such technology would require additional time beyond that allowed by the deferral provisions of 10 CFR 50.55a(g)(6)(ii)(A)(*3*), you submitted your relief request under the provisions of 10 CFR 50.55a(a)(3)(i), which allows licensees to propose alternative programs to the requirements of 10 CFR 50.55a if the programs can be shown to provide an acceptable level of quality and safety in lieu of complying with the applicable inservice inspection requirements cited in the rule. Such alternative programs are approved by the Director of the Office of Nuclear Reactor Regulation, or his designee, on a case-by-case basis.

In letter JPN-99-026, you also requested relief to defer the scheduled volumetric examinations of the vessel shell-to-flange weld (Relief Request No. 19). In Attachment 2 to the letter, you indicated that these examinations are required pursuant to Examination Category B-A, Item No. B1.30 of Table IWB-2000-1 to Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, and are required to be scheduled during the first inspection period of the interval, and during each successive inspection interval. You added that Section IWB-2420(a) to Section XI requires the repetition of the sequence of component examinations that was established during the first inspection interval during subsequent inspection intervals for the plant. You then requested deferment of the scheduled inspections for the vessel shell-to-flange weld from the first inspection period of the third 10-year inservice inspection interval to the third inspection period of the third 10-year inservice inspection interval. You stated that deferring the inspections of the vessel shell-to-flange weld would allow you to coordinate the inspections of the weld with those being schedule for the axial shell welds in the vessel.

The staff has determined that your alternative proposals for deferment of the inspections for the axial shell welds and the vessel shell-to-flange weld are acceptable and that the inspections may be deferred until the third period of the third inservice inspection interval for JAFNPP. The Nuclear Regulatory Commission (NRC) staff therefore concludes that in regard to Relief Requests Nos. 18 and 19, your alternative programs to defer the inspections of the axial shell welds and shell-to-flange weld for the JAFNPP reactor vessel provides an acceptable level of quality and safety in lieu of performing the required inspections at the required times. Therefore, the proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(i), and pursuant to 10 CFR 50.55a(a)(3)(i), the relief requests are granted. The relief granted is authorized by law and will not endanger life or property, or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee if compliance with the actual inservice inspection requirements were imposed on the facility. However, to assure the NRC staff that the equipment necessary for the required inspections will be ready by 2004, the NRC staff requests that you submit a status report by January 2002 in summary of the advancements in the inspection equipment being considered for the year 2004 inspections. The NRC staff's evaluation and conclusions are contained in the enclosed safety evaluation.

Sincerely,

/RA by Peter Tam for/

Marsha Gamberoni, Acting Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-333

Enclosure: Safety Evaluation

cc w/encl: See next page

In letter JPN-99-026, you also requested relief to defer the scheduled volumetric examinations of the vessel shell-to-flange weld (Relief Request No. 19). In Attachment 2 to the letter, you indicated that these examinations are required pursuant to Examination Category B-A, Item No. B1.30 of Table IWB-2000-1 to Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, and are required to be scheduled during the first inspection period of the interval, and during each successive inspection interval. You added that Section IWB-2420(a) to Section XI requires the repetition of the sequence of component examinations that was established during the first inspection interval during subsequent inspection intervals for the plant. You then requested deferment of the scheduled inspections for the vessel shell-to-flange weld from the first inspection period of the third 10-year inservice inspection interval to the third inspection period of the third 10-year inservice inspection interval. You stated that deferring the inspections of the vessel shell-to-flange weld would allow you to coordinate the inspections of the weld with those being schedule for the axial shell welds in the vessel.

The staff has determined that your alternative proposals for deferment of the inspections for the axial shell welds and the vessel shell-to-flange weld are acceptable and that the inspections may be deferred until the third period of the third inservice inspection interval for JAFNPP. The Nuclear Regulatory Commission (NRC) staff therefore concludes that in regard to Relief Requests Nos. 18 and 19, your alternative programs to defer the inspections of the axial shell welds and shell-to-flange weld for the JAFNPP reactor vessel provides an acceptable level of quality and safety in lieu of performing the required inspections at the required times. Therefore, the proposed alternatives are authorized pursuant to 10 CFR 50.55a(a)(3)(i), and pursuant to 10 CFR 50.55a(a)(3)(i), the relief requests are granted. The relief granted is authorized by law and will not endanger life or property, or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee if compliance with the actual inservice inspection requirements were imposed on the facility. However, to assure the NRC staff that the equipment necessary for the required inspections will be ready by 2004, the NRC staff requests that you submit a status report by January 2002 in summary of the advancements in the inspection equipment being considered for the year 2004 inspections. The NRC staff's evaluation and conclusions are contained in the enclosed safety evaluation.

Sincerely,
/RA by Peter Tam for/
Marsha Gamberoni, Acting Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-333

Enclosure: Safety Evaluation

cc w/encl: See next page

DISTRIBUTION

File Center	PUBLIC	PD I-1 Reading	J. Medoff
E. Adensam (e-mail)	M. Gamberoni (A)	S. Little	
G. Vissing	OGC	G. Hill (2)	
ACRS	M. Tschiltz	G. Meyer, RGN-I	

DOCUMENT NAME: C:\RELa6270.wpd
To receive a copy of this document, indicate in the box: "**C**" = Copy without attachment/enclosure "**E**" = Copy with attachment/enclosure "**N**" = No copy

OFFICE	PDI-1/PM		PDI-1/PM		PDI-1/LA		OGC		PDI-1/SC (A)	
NAME	GVissing:lcc		JMedoff		SLittle		R. Hoefling		MGamberoni	
DATE	2/22/00		2/7/00		2/22/00		2/17/00		2/22/00	

James A. FitzPatrick Nuclear Power Plant

Mr. Gerald C. Goldstein
Assistant General Counsel
Power Authority of the State
of New York
1633 Broadway
New York, NY 10019

Resident Inspector's Office
U. S. Nuclear Regulatory Commission
P.O. Box 136
Lycoming, NY 13093

Mr. Harry P. Salmon, Jr.
Vice President - Engineering
Power Authority of the State
of New York
123 Main Street
White Plains, NY 10601

Ms. Charlene D. Faison
Director Nuclear Licensing
Power Authority of the State
of New York
123 Main Street
White Plains, NY 10601

Supervisor
Town of Scriba
Route 8, Box 382
Oswego, NY 13126

Mr. Eugene W. Zeltmann
President and Chief Operating
Officer
Power Authority of the State
of New York
30 South Pearl Street
Albany, NY 12207-3425

Charles Donaldson, Esquire
Assistant Attorney General
New York Department of Law
120 Broadway
New York, NY 10271

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Mr. F. William Valentino, President
New York State Energy, Research,
and Development Authority
Corporate Plaza West
286 Washington Avenue Extension
Albany, NY 12203-6399

Mr. Richard L. Patch, Director
Quality Assurance
Power Authority of the State
of New York
123 Main Street
White Plains, NY 10601

Mr. Gerard Goering
28112 Bayview Drive
Red Wing, MN 55066

Mr. James Gagliardo
Safety Review Committee
708 Castlewood Avenue
Arlington, TX 76012

Mr. Arthur Zaremba, Licensing Manager
James A. FitzPatrick Nuclear
Power Plant
P.O. Box 41
Lycoming, NY 13093

Mr. Paul Eddy
New York State Dept. of
Public Service
3 Empire State Plaza, 10th Floor
Albany, NY 12223

Michael J. Colomb
Site Executive Officer
James A. FitzPatrick Nuclear Power Plant
P.O. Box 41
Lycoming, NY 13093

Mr. Eric Beckjord
2909 29th St. NW
Washington, DC 20008-3416

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ALTERNATIVES FOR EXAMINATION OF REACTOR PRESSURE VESSEL

VERTICAL AND FLANGE WELDS

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-333

1.0 INTRODUCTION

By letter dated August 5, 1999, the Power Authority of the State of New York (PASNY, the licensee) submitted Relief Requests Nos. 18 and 19 for the James A. FitzPatrick Nuclear Power Plant (JAFNPP) for staff review. In Relief Request No. 18, PASNY requested that the Nuclear Regulatory Commission (NRC) approve an alternative to performing examinations of vertical welds on the reactor pressure vessel (RPV) according to the requirements of Section XI of the American Society of Mechanical Engineers (ASME) Code, as required by 10 CFR 50.55a(g)(6)(ii)(A)(*2*). PASNY cannot inspect essentially 100 percent of each vertical weld without disassembly or removal of internal interference, removal of permanently installed bio-shield, or modification of the inspection equipment. Alternatively, PASNY intends to defer the inspections to gain time to evaluate methods that would allow accessibility to over 90 percent of the vertical RPV shell welds in the beltline region. This alternative, however, would exceed the time provisions for completing the augmented exams specified in 10 CFR 50.55a(g)(6)(ii)(A)(*2*) and (*3*).

In addition, PASNY requests relief (Relief Request No. 19) from the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, Subsection IWB, 1989 Edition, for the volumetric examination requirement of the shell to flange weld during the first inspection period. Specifically, PASNY requests deferral of this examination to coincide with examination of the vertical welds, which would be deferred under Relief Request No. 18.

PASNY submitted additional information to support its relief request in a December 2, 1999, letter.

1.1 Applicable Requirements

It is stated in 10 CFR 50.55a(g)(6)(ii)(A)(*2*) that all licensees shall augment their reactor vessel examinations by implementing the examination requirements for RPV shell welds specified in Item B1.10 of Examination Category B-A, “Pressure Retaining Welds in Reactor Vessel,” in Table IWB-2500-1 of Subsection IWB of the 1989 Edition of Section XI, Division 1, of the ASME

Boiler and Pressure Vessel Code, subject to the conditions specified in 50.55a(g)(6)(ii)(A)(*3*) and (4). As stated in 10 CFR 50.55a(g)(6)(ii)(A)(*2*) for the purposes of this augmented examination, essentially 100 percent as used in Table IWB-2500-1 means more than 90 percent of the examination volume for each weld. Additionally, 10 CFR 50.55a(g)(6)(ii)(A)(*5*) requires licensees who cannot completely satisfy the augmented RPV shell weld examination requirement, to submit information to the NRC to support the determination and propose an alternative to the examination requirements that would provide an acceptable level of quality and safety.

2.0 INFORMATION PROVIDED BY LICENSEE REGARDING DEFERRAL OF INSPECTION FOR THE VERTICAL SHELL WELDS

2.1 Relief Requested

PASNY is requesting relief (Relief Request No. 19) from the inservice inspection requirements of 10 CFR 50.55a(g) for the volumetric examination of reactor pressure vessel vertical shell welds (ASME Code Section XI, Table IWB-2500-1, Examination Category B-A, Item B1.12, Longitudinal (Vertical) Shell Welds) and is proposing an alternative, in accordance with 10 CFR 50.55a(g)(6)(ii)(A)(*5*) and 10 CFR 50.55a(a)(3)(i).

2.2 Licensee's Proposed Alternative

PASNY's alternative plan would defer the augmented exams of vertical welds to no later than Refueling Outage 16 (RO16), during the third 10-year ISI interval which runs from September 1997 to September 2006. RO16 is currently scheduled for the fourth quarter of 2004. An unusual and a large number of RPV internal obstructions/interference prevent achieving the "essentially 100 percent" coverage requirements of 10 CFR 50.55a(g)(6)(ii)(A), "Augmented Examination of Reactor Vessel." The calculated exam coverage obtainable by three vendors using present tooling and technology is limited to a range of no more than 51 to 64 percent for all vertical welds and to only 33 to 52 percent for beltline region welds. Therefore, PASNY has encouraged vendors to research and develop, with "new generation" scanner tooling, technology that, when developed, would increase coverage of the beltline vertical welds to close to or exceed 90 percent, including incidental coverage of 2 to 3 percent of the intersecting circumferential welds. Four vendors have started the tooling conceptualization process. The newer scanner tooling will be smaller, thinner, and lighter weight, some with flexible delivery systems, using phased array ultrasonic techniques to maximize scanning coverage, and for specific applications, using tooling successfully used in the aeronautics industry. PASNY's plan includes the development, fabrication, mock-up testing, and qualification of the new tooling. PASNY estimates that the plan will take at least 12-18 months after vendor selection. Demonstrations on a mock-up and scanning from the internal surface are scheduled to start within the next 2 months and be completed by mid-2000.

2.3 Basis for Relief

PASNY presented several bases to support their proposed alternative. These bases are summarized in the following subsections.

2.3.1 Previous Shell Weld Examinations

During fabrication of the JAFNPP RPV, PASNY examined all of the shell welds using several examination methods, as required by the original construction code. It also volumetrically examined the shell welds before initial plant operations, according to ASME Section XI pre-service inspection requirements. Results showed minor inclusions/slag/porosity randomly oriented throughout the welds, all considered minor with no safety significance.

Selected shell welds have received outer diameter (OD) volumetric examinations during the first and second inspection intervals in accordance with ASME Section XI inservice inspection requirements. The OD examinations totaled 28 percent of total vertical length of shell welds with 12 percent at beltline vertical welds. The OD examinations resulted in only four recorded spot indications, which exhibited no measurable length or width and were found to be acceptable for continued operation.

2.3.2 Industry Results of Past Examinations

Survey data by the Electric Power Research Institute (EPRI) for the boiling water reactor (BWR) (BWRVIP-05 (EPRI TR-105697) BWR RPV Shell Weld Inspection Recommendations, September 1995) fleet showed that a total of 5,257 feet (63,084 inches) of vessel shell weld length have been examined, or 36 percent of the total possible weld length of 24 units, resulting in only 16 indications exceeding the acceptance criteria of Section XI of the ASME Code, IWB-3500. All 16 indications were subsurface flaws shown to be acceptable by meeting the criteria of IWB-3600. The total length of the indications was 29.9 inches, or 0.05 percent of the total weld length examined. The 16 indications (15 on circumferential welds and one on a vertical weld) have only been reported for non-CE (Combustion Engineering) RPVs; the RPV at JAFNPP was fabricated by CE. All indications were determined to be construction related. These indications were evaluated and found acceptable for continued operation. No flaws relating to plant operation were found.

2.3.3 Fatigue, Radiation Embrittlement and Stress Corrosion Cracking

Fatigue, radiation embrittlement and stress corrosion cracking (SCC) may influence crack initiation and growth in RPV low alloy steel. Fatigue and SCC are affected by water chemistry. PASNY stated that its water chemistry has been well-controlled and has been improving over the past several years. Conductivity, chloride and sulfate values have significantly improved over the last 10 years and have consistently been within EPRI limits. In 1998, average conductivity at JAFNPP was the best in the GE BWR fleet. JAFNPP has used hydrogen water chemistry and zinc additions since 1989 and planned to initiate noble metal chemical application in November 1999.

Radiation embrittlement correlates with neutron fluence. PASNY stated that JAFNPP has lower fluence values than those of the limiting plants analyzed by the NRC's evaluation of the BWRVIP-05 report.

2.3.4 Conditional Failure Probability

PASNY compared the conditional probability of failure of vertical welds with the conditional probabilities of failure other plants, including the Clinton and Pilgrim Nuclear Power Plants. The conditional probabilities of failure for the latter plants are expected to be bounding for all BWR's. PASNY determined that the conditional failure probability of JAFNPP was lower than

that of the bounding plants (i.e., the Clinton and Pilgrim Nuclear Power Plants). This is demonstrated in Table 1.

Table 1. Comparison of the Conditional Failure Probability of the James A. FitzPatrick Nuclear Power Plant to Those for the Clinton and Pilgram Nuclear Power Stations

PLANT	CONDITIONAL FAILURE PROBABILITY
JAFNPP	4.78 E – 03
Clinton	1.55 E – 02
Pilgrim	1.05 E – 02

2.3.5 Fluence and Adjusted Reference Temperature Values for Cycles 14 through 16

PASNY provided estimated values for the limiting adjusted reference temperatures (ART) for Cycles 14 through 16 for the lower intermediate course welds and lower course axial welds, the limiting welds for JAFNPP. The increase in ART over this time period is less than 10 °F, as the limiting ART increases from 93.7 °F for Cycle 14 to102.3 °F for Cycle 16.

2.3.6 Low-Temperature OverPressure Event (LTOP)

The NRC has indicated that nondesign-basis events not addressed in the BWRVIP-05 report should be considered and also requested that the BWRVIP evaluate the potential for a nondesign-basis cold overpressure transient. The NRC also considered beyond design-basis events, such as LTOP events in its pressure fracture mechanics analysis. The BWRVIP responded that the total probability of a cold overpressure transient for BWR-4s was 9E-4. It was considered highly unlikely that a BWR would experience a cold overpressure transient, and to occur, would generally require several operator errors.

PASNY addressed high-pressure injection sources, administrative controls, and operator training regarding a cold overpressure event in its Relief Request No. 17 of August 5, 1999, for permanent deferral of the RPV circumferential shell weld examinations. That request stated that the probability of a low-temperature overpressure event at the FitzPatrick plant would be less than or equal to that used in the staff's July 30, 1998, safety evaluation.

2.3.7 RPV Internal Obstructions/Interference

Unusual circumstances at JAFNPP prevent an examination of "essentially 100 percent" of the length of all vertical welds. There are an excessive number of vessel internal obstructions such as jet pump assemblies, support plates and gussets, core shroud repair tie-rods, feedwater (FW) sparger and core spray piping, guide rod, steam dryer brackets, and the surveillance specimen holder. PASNY stated that removing the obstructions other than the surveillance specimen holder, would involve substantial risk, cost and person-rem exposure. The estimate for removing/re-installing two tie-rods and one guide rod is 4.1 person-rem exposure, approximately 460 duration hours, and 6,000 person-hours total. Duration hours are strictly radiological control area accessed hours and exclude hours for engineering, tooling/mock-up development, training, and installation. Without the two tie-rods and one guide rod, net coverage for the beltline area would be increased by approximately 20 percent to a 72 percent

total, still short of the minimum 90 percent code requirement. There would be an increase of dose of approximately 4.1 REM at a total cost of over $750,000 due to material and labor and approximately 1 week of additional critical path time. Substantial risk is involved with the cutting and removal of parts with remote tooling with the potential of dropping cut material into the vessel. Even riskier would be the material condition of the removed parts or components, probably requiring contingency material stand-by. Removal of other vessel internals would risk permanent damage to the vessel inside wall, potential for loose parts, involve a significant amount of person-hours of direct labor with severe impact to the outage schedule, and substantially increase person-rem exposure, all without a compensating increase in safety.

3.0 INFORMATION PROVIDED BY LICENSEE REGARDING DEFERRAL OF INSPECTION FOR THE SHELL-TO-FLANGE WELD

3.1 Relief Requested

PASNY requests relief (RR 19) from the requirements for the volumetric examination of the vessel shell-to-flange weld during the first inspection period, as required by the ASME Code, Section XI, 1989 Edition, IWB-2500, Table IWB-2500-1 for Examination Category B-A, Item Number B1.30. Also, PASNY requests relief from IWB-2420(a) of the ASME Code to allow deferral of the entire vessel shell-to-flange weld inspection to the end of the inspection interval.

3.2 Licensee's Proposed Alternative

PASNY will defer the entire shell-to-flange weld examination to no later than the third period of the inspection interval and perform the examination together with the RPV vertical weld inspections.

3.3 Basis for Relief

Pursuant to 10 CFR 50.55a(a)(3)(ii), PASNY requests relief on the basis that the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

The third 10-year Inservice Inspection (ISI) plan for JAFNPP states that 50 percent of the shell-to-flange weld (Weld VC-F-1) will be inspected during the first inspection period and the remaining 50 percent will be inspected during the third period of the interval. This inspection schedule complies with the requirements of ASME Section XI, Table IWB-2500-1, Examination Category B-A, Item B1.30.

This relief request defers examination of the entire shell-to-flange weld until the third inspection period of the interval, in conjunction with the RPV vertical weld inspections. However, deferral of the entire exam to the third period does not follow the sequence of examinations followed during the previous intervals. Therefore, relief is also requested from Section IWB-2420(a) of ASME, Section XI. This deferral will allow the inspection of the shell-to-flange weld to coincide with the augmented inspections of the RPV vertical shell welds.

PASNY stated that inspecting the shell-to-flange weld during the same outage as the RPV vertical shell welds has the following advantages. First, it would reduce the radiation exposure to plant workers. If the shell-to-flange weld is inspected manually as currently scheduled (50 percent during the first inspection period and 50 percent during the third period of the inspection interval), estimates of total radiation exposure are approximately 2 person-Rem.

Secondly, if the inspection is deferred until the latter portion of the interval and done together with the RPV shell welds with a remote controlled, automated tool, exposure is expected to be reduced by about 2 person-Rem. Thirdly, using automated equipment improves the reliability and reproducibility of examinations, and therefore would provide reasonable assurance of the structural integrity of the shell-to-flange weld.

JAFNPP's shell-to-flange weld was manually examined during the second 10-year interval with 50 percent of the examination completed in 1990 and 50 percent completed in 1995. These exams did not reveal any rejectable indications.

4.0 NRC STAFF'S EVALUATION

The staff reviewed PASNY's submittal and found that PASNY provided an acceptable demonstration that its alternative examinations would provide assurance of structural integrity and therefore an acceptable level of quality and safety. The bases for the staff's findings are as follows:

- The staff checked the licensee's supplied data and agrees that the conditional failure probability of the JAFNPP plant is less than that of the bounding plants, Clinton and Pilgrim, for end-of-license conditions.

- The JAFNPP plant has been operating for 25 years and current fluences are not close to those expected at the end-of-license. As shown by the small increase in the ART (less than 10 °F) between Cycles 14 and 16, the increase in the conditional failure probability during this period is minimal.

- Previous results from fabrication, pre-service, and inservice inspections indicated that the welds have acceptable quality, with only minor indications identified. Industry experience has shown similar results from other RPVs from the same vendor.

- On the basis of good water chemistry and the absence of indications in these welds during previous inservice inspections, cracking due to service conditions is not expected to be a concern.

- PASNY showed that it is adequately addressing high-pressure injection sources, administrative controls, and operator training regarding a cold overpressure event as the staff concluded in its safety evaluation of PASNY's Relief Request No. 17.

Deferring the shell weld exams to no later than RO 16 will ensure a higher beltline inspection coverage by the use of "new generation" tooling. The staff agrees with PASNY that a more reliable, complete, reproducible inspection conducted later is preferable to an inadequate one conducted now with a lot less coverage and greater exposure of personnel to radiation. However, to assure the staff that the equipment necessary for the required inspections will be ready by 2004, the staff requests that the licensee submit by January 2002 a status report on the tooling under development.

5.0 CONCLUSIONS

On the basis of JAFNPP's conditional probability of failure being lower than the probabilities of the bounding plants, the minimal increase in ART from Cycle 14 to 16, the quality of the original vessel fabrication, the lack of significant operational degradation mechanisms, the results of the previous vessel examinations, and controls to prevent a cold overpressure event, the staff concludes that a deferral of the volumetric inspections for the JAFNPP vertical RPV shell welds to no later than RO16 provides an acceptable level of structural integrity and quality and safety in lieu of performing the actual examinations of the vertical RPV shell welds during RO14. Therefore, the staff has determined that the proposed alternative for inspecting the vertical RPV shell welds may be authorized pursuant to 10 CFR 50.55a(a)(3)(i), and pursuant to 10 CFR 50.55a(a)(3)(i), the relief request is granted.

In addition, PASNY has demonstrated that deferral of the volumetric examination for the RPV shell-to-flange weld to the end of the inspection interval would (1) decrease the amount of radiation exposure to plant personnel used in the examinations, and (2) allow PASNY to coordinate the examination with those scheduled for the vertical RPV shell welds. Therefore, the staff concludes PASNY has demonstrated that performing the examinations of the RPV shell-to-flange weld during the first period of the Third 10-year Inservice Inspection Period presents a hardship or unusual difficulty without a compensating increase in the level of quality and safety from actually performing the examination during the Third Period of the Third 10-year Inservice Inspection Interval. Therefore, the staff has determined that the proposed alternative for inspecting the RPV shell-to-flange weld during the Third Period of the Third Inservice Inspection Interval, and to coincide with the volumetric examinations scheduled for the vertical RPV shell welds, is authorized pursuant to 10 CFR 50.55a(a)(3)(ii), and pursuant to 10 CFR 50.55a(a)(3)(ii), the relief request is granted.

The reliefs granted are authorized by law and will not endanger life or property, or the common defense and security and are otherwise in the public interest giving due consideration to the burden upon the licensee if compliance with the actual inservice inspection requirements were imposed on the facility.

Principal Reviewer: L. Banic

Date: February 29, 2000