NMC
Committed to Nuclear Excellence

Prairie Island Nuclear Generating Plant
Operated by Nuclear Management Company, LLC

L-PI-04-039
10 CFR 50.55a

MAR 3 0 2004

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

Prairie Island Nuclear Generating Plant
Docket Nos. 50-282 and 50-306
License Nos. DPR-42 and DPR-60

Request for Relief No. 19, Revision 0, for Units 1 and 2 3rd Ten Year Inservice Inspection Interval

The purpose of this letter is to request Nuclear Regulatory Commission (NRC) authorization to use alternative examination volume requirements of Code Case N-613-1, "Ultrasonic Examination of Full Penetration Nozzles in Vessels, Examination Category B-D, Item Nos. B3.10 and B3.90, Reactor Nozzle-To-Vessel Welds, using Figures IWB-2500-7(a) and (b), Section XI, Division 1," in lieu of certain American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, IWB-2500 requirements. We are requesting relief pursuant to 10 CFR Part 50, Section 50.55a(a)(3)(i) because the proposed alternative would provide an acceptable level of quality and safety.

The details of the 10 CFR 50.55a(a)(3)(i) request are enclosed in the attached relief request for Prairie Island Unit 1 and Unit 2 (contained in one document). Nuclear Management Company requests approval by September 1, 2004 to support the refueling outage on Unit 1. The proposed alternative was approved for Hope Creek Generation Station, by NRC letter dated August 26, 2003 and approved for Virgil C. Summer Nuclear Station by NRC letter dated February 11, 2004.

Please contact Jack Leveille (651-388-1121, Ext. 4142) if you have any questions related to this letter.

1717 Wakonade Drive East • Welch, Minnesota 55089-9642
Telephone: 651.388.1121

A047

This letter contains no new commitments and no revisions to existing commitments.

Joseph M. Solymossy
Site Vice President, Prairie Island Nuclear Generating Plant

cc: Regional Administrator, USNRC, Region III
Project Manager, Prairie Island Nuclear Generating Plant, USNRC, NRR
NRC Resident Inspector – Prairie Island Nuclear Generating Plant
Chief Boiler Inspector, State of Minnesota
P. Fisher, Hartford Insurance

Attachment: (one document)
Prairie Island Unit 1 – RELIEF REQUEST NUMBER: 19 (Rev. 0)
Prairie Island Unit 2 – RELIEF REQUEST NUMBER: 19 (Rev. 0)

Prairie Island Unit 1 - RELIEF REQUEST NUMBER: 19 (Rev. 0)
Prairie Island Unit 2 - RELIEF REQUEST NUMBER: 19 (Rev. 0)

Alternative to Use Code Case N-613-1

SYSTEM/COMPONENT(S) FOR WHICH RELIEF REQUEST WILL BE USED

Code Class:	Class 1
Reference:	ASME Section XI, 1989 Edition no Addenda
Examination Category:	B-D
Item Number:	B3.90
Description:	Reactor Vessel Full Penetration Nozzle-to-Vessel Welds
Component Numbers:	See Table 1

CODE REQUIREMENTS:

ASME Section XI, 1989 Edition no Addenda is applicable to the Inservice Inspection (ISI) Programs for the Third Ten-Year Intervals for Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2.

Nuclear Management Company (NMC), LLC is currently required to perform inservice examinations of selected reactor vessel nozzle-to-vessel welds in accordance with the requirements of 10 CFR 50.55a, and the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, Rules for Inservice Inspection of Nuclear Power Plant Components. Table IWB-2500-1, Code Category B-D, Item No. B3.90 specifies the examination requirements. Figures IWB-2500-7(a) and (b) require that a minimum volume of material a distance of one half the reactor vessel shell thickness adjacent to the weld ($t_s/2$) be examined.

PROPOSED ALTERNATIVE:

Pursuant to 10 CFR 50.55a(A)(3)(i), PINGP requests to implement an alternative to the volumetric (ultrasonic (UT)) requirements of ASME Section XI Table IWB-2500- 1. ASME Section XI Code requires that a minimum volume of material a distance of one half the reactor vessel shell thickness adjacent to the weld ($t_s/2$) be examined as demonstrated in Figures IWB-2500-7 (a) and (b). In lieu of the $t_s/2$ volume requirements of ASME Section XI, Figures IWB-2500-7 (a) and (b), PINGP proposes to reduce the examination volume next to the widest part of the weld from half of the vessel wall thickness to one-half (1/2) inch from the weld; as described in Code Case N-613-1, Figures 1 and 2. As discussed below, this will provide an acceptable level of quality and safety.

BASIS FOR RELIEF REQUEST:

The required examination volume for the reactor vessel pressure retaining nozzle-to-vessel welds extends far beyond the weld into the base material, and is unnecessarily large. This proposed alternative would re-define and limit the examination volume boundary to one-half (½) inch of base material on each side of the widest portion of the weld, removing from examination the

base material that was extensively examined during prior inspections, and is not considered in the high residual stress region associated with the weld. This reduction in base material examination volume will not affect the flaw detection capabilities in the weld and heat affected zone. The proposed reduction in examination volume is of the base material only.

Crack initiation during plant service in the examination volume excluded from the proposed reduced examination volume is highly unlikely because of the low stresses encountered in the base material outside of the heat affected zone of the weld. The stresses induced by the weld process are concentrated at or directly adjacent to the weld. Cracks, should they initiate, typically occur in the high-stressed areas of the weld. These high stress areas are bounded in the examination volume defined by Code Case N-613-1. During previous examinations, both preservice and inservice, no indications exceeding the allowable flaw size of IWB-3500 were detected in the reactor vessel nozzle to shell examination volumes including the base material areas proposed for exclusion from examination in this request. The prior thorough examination of the base material and the proposed examination of the high-stressed areas of the weld provide an acceptable level of quality and safety.

The required examination of the welds shall consist of techniques and procedures qualified in accordance with ASME Code, Section XI, Appendix VIII, Supplements 4, 6 and 7.

From the nozzle bore, the weld and surrounding one-half (½) inch volume will be interrogated using techniques and procedures qualified in accordance with Appendix VIII, Supplement 7, as administered by the Performance Demonstration Initiative (PDI). In addition, the nozzle to shell examination volume is also accessible from the vessel inner diameter (ID) surface and will be examined in four orthogonal directions for the first 15 percent of weld thickness with respect to the vessel ID surface using Appendix VIII, Supplement 4 qualified techniques. The remaining 85 percent of weld volume accessible from the vessel ID surface will be examined in two opposing circumferential scanning directions using Appendix VIII, Supplement 6 qualified techniques to interrogate for transverse defects.

IMPLEMENTATION SCHEDULE:

The proposed alternative is requested for remainder of the 3rd 10 Year Interval of the Inservice Inspection Program for Prairie Island Unit 1 and Unit 2.

REFERENCE:

1. By letter dated August 26, 2003, the NRC Staff authorized similar relief for Hope Creek Generating Station, Docket No. 50-354 (Relief Request HC-RR-B08 [TAC No. MB7839]).
2. By letter dated February 11, 2004, the NRC Staff authorized similar relief for Virgil C. Summer Nuclear Station, Docket No. 50-395 (Relief Request RR-II-16 [TAC No. MC0108])

Table 1
Nozzle-to-Vessel Welds Within Scope of Request

Unit No.	ISI Summary Number	Component Identification	Component Description
1	301098	N-6	Inlet Nozzle to Vessel Weld Loop A
1	301100	N-7	Outlet Nozzle to Vessel Weld Loop A
1	301102	N-8	SI Nozzle to Vessel Weld Loop A
1	302977	N-9	Inlet Nozzle to Vessel Weld Loop B
1	302979	N-10	Outlet Nozzle To Vessel Weld B Loop
1	302981	N-11	SI Nozzle To Vessel Weld Loop B
2	501129	N-6	Inlet Nozzle to Vessel Weld Loop A
2	505018	N-7	Outlet Nozzle to Vessel Weld Loop A
2	500726	N-11	SI Nozzle to Vessel Weld Loop A
2	501150	N-9	Inlet Nozzle to Vessel Weld Loop B
2	505020	N-10	Outlet Nozzle to Vessel Weld Loop B
2	500727	N-8	SI Nozzle to Vessel Weld Loop B