NMC
Committed to Nuclear Excellence

Palisades Nuclear Plant
Operated by Nuclear Management Company, LLC

October 31, 2005 10 CFR 54

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

Palisades Nuclear Plant
Docket 50-255
License No. DPR-20

Supplementary Information for the Application for Renewal of the Palisades Plant Operating License

In a letter dated March 22, 2005, Nuclear Management Company submitted an Application for Renewed Operating License for the Palisades Nuclear Plant. In letters dated August 25, 2005 and August 27, 2005, several commitments were made to submit additional information to respond to questions raised during the Aging Management Programs and Aging Management Review audits. Enclosures 1 through 13 to this letter provide the required information.

Please contact Mr. Robert Vincent, License Renewal Project Manager, at 269-764-2559, if you require additional information.

Summary of Commitments

This letter contains no new commitments. This letter closes seven commitments made in previous NMC correspondence dated August 25, 2005 and August 27, 2005.

I declare under penalty of perjury that the foregoing is true and correct. Executed on October 31, 2005.

Paul A. Harden
Site Vice President, Palisades Nuclear Plant
Nuclear Management Company, LLC

A112

27780 Blue Star Memorial Highway • Covert, Michigan 49043-9530
Telephone: 269.764.2000

Enclosures (13)

CC Administrator, Region III, USNRC
Project Manager, Palisades, USNRC
Resident Inspector, Palisades, USNRC
License Renewal Project Manager, Palisades, USNRC

27780 Blue Star Memorial Highway • Covert, Michigan 49043-9530
Telephone: 269.764.2000

ENCLOSURE 1

NMC Response to August 25, 2005, Commitment Regarding Primary Chemistry Aspects of Water Chemistry Aging Management Program

(2 Pages)

ENCLOSURE 1
NMC Response to August 25, 2005, Commitment Regarding Primary Chemistry Aspects of Water Chemistry Aging Management Program

August 25, 2005, Commitment Regarding Primary Chemistry Aspects of Water Chemistry Aging Management Program

NMC Letter Dated August 25, 2005 stated,

NMC will submit, for NRC review and approval, a comparison of EPRI TR-105714 revision 5 with revision 3 to identify the material changes that impact aging management and justify their acceptability by October 31, 2005. If necessary, the submittal will include a Water Chemistry Program description, revised to identify and justify use of TR-105714, Revision 5, as an exception to the NUREG 1801 program description. [NMC Tracking No. 80]

NMC Response to August 25, 2005, Commitment Regarding Primary Chemistry Aspects of Water Chemistry Aging Management Program

Enclosure 2 to this letter provides a comparison of Revision 5 of the EPRI PWR Primary Water Chemistry Guidelines, issued as TR-102884, upon which Palisades' current Primary Water Chemistry Program is based, with Revision 3 of those guidelines in TR-105714, which is referenced in NUREG 1801. This discussion concludes that revision 5 of the EPRI primary water chemistry guidelines provides an acceptable level of control to effectively age manage the associated systems.

Based on this comparison, and to indicate the use of Revision 5 as an exception to NUREG 1801, final changes to the LRA description of the primary chemistry portions of the Water Chemistry Program are provided below. The identified revisions include all changes relevant to the primary chemistry portions of the LRA description of the Water Chemistry Program.

This completes NMC action for this commitment.

Final Changes to LRA Section B2.1.21 Water Chemistry Program

LRA Section B2.1.21 is hereby revised as follows:

On page B-154, under **NUREG 1801 Consistency**, replace the entire section with the following statement: "The Water Chemistry program is an existing program that is consistent with, but includes exceptions to, NUREG 1801-Section XI.M2, "Water Chemistry".

On page B-154 under the heading of **Exceptions to NUREG 1801**, replace the entire section with the following statement: "An exception is taken to the selected NUREG 1801 program elements listed below. The specific exceptions being taken are also discussed in the corresponding element discussions. They are repeated here for ease of review.

1. The Palisades Plant Water Chemistry program implements the PWR Primary Water Chemistry Guidelines, revision 5, which is issued as EPRI 102884, "Pressurized Water Reactor Primary Water Chemistry Guidelines, Revision 5" dated September 2003 (revised October 2003). Justification has been developed to show that this revision to the guidance has no detrimental affects on aging management of the water chemistry program.

On page B-159, under heading **Conclusion**, first paragraph, replace the last sentence with, "The program is consistent with, but includes exceptions to, NUREG-1801, Section XI.M2, "Water Chemistry."

ENCLOSURE 2

Comparison of EPRI TR-102884, "Pressurized Water Reactor Primary Water Chemistry Guidelines, Revision 5," with EPRI TR-105714 Revision 3 for Aging Management Effectiveness

(5 Pages)

ENCLOSURE 2

Comparison of EPRI TR-102884, "Pressurized Water Reactor Primary Water Chemistry Guidelines, Revision 5," with EPRI TR-105714 Revision 3 for Aging Management Effectiveness

NEI 97-06, "Steam Generator Program Guidelines," was endorsed by the NRC to manage steam generator tube integrity in a uniform manner for all nuclear utilities. Section 3.2.2 of NEI 97-06 specifically directs, "Each licensee shall have procedures for monitoring and controlling primary-side water chemistry to inhibit primary-side corrosion-induced degradation in accordance with the EPRI *PWR Primary Water Chemistry Guidelines*."

In the report summary of the current EPRI PWR Primary Water Chemistry Guidelines – Revision 5, the following is stated:

> "This fifth revision of the PWR Primary Water Chemistry Guidelines, endorsed by the utility executives of the EPRI Steam Generator Management Project, represents another step in the continuing use of proactive chemistry programs to limit or control degradation of steam generator tubes and other structural parts. This revision documents the increased consideration of state-of-the-art water chemistry programs to help ensure the continued integrity of reactor coolant system (RCS) materials of construction and fuel cladding, ensure satisfactory core performance, and support the industry trend toward reduced radiation fields. These revised PWR Primary Water Chemistry Guidelines reflect the recent field and laboratory data on primary coolant system corrosion and performance issues, which PWR operators can use to update their primary water chemistry programs."

It further states in the second paragraph of section 1.1 the relationship of these guidelines to NEI 97-06:

> "... this initiative adopted EPRI's Water Chemistry guidelines, including this document (TR1002884), as the basis for an optimized chemistry program. Specifically, the [NEI] initiative required that US utilities meet the intent of the EPRI PWR Primary Water Chemistry Guidelines. The focus of NEI initiative is steam generator integrity...Volume 1 addresses the specific requirements of the primary water chemistry program relative to the NEI initiative."

Since the intent of NEI 97-06 is to manage the integrity of the steam generator tubes, and since NEI 97-06 has deferred to the EPRI Guidelines as the industry directed standard, Palisades has developed its primary water chemistry program in accordance with the EPRI Guidelines. It follows that by complying with the EPRI Guidelines, an industry accepted and directed standard, that Palisades is also managing the aging effects on the primary system pressure boundary –the steam generators through the application of the same guidelines – regardless of the revision in effect.

ENCLOSURE 2

Comparison of EPRI TR-102884, "Pressurized Water Reactor Primary Water Chemistry Guidelines, Revision 5," with EPRI TR-105714 Revision 3 for Aging Management Effectiveness

Below are a series of tables showing the requirements of both revisions, followed by a discussion of the differences and applicability for Palisades.

Power Operation Control Parameters (Reactor Critical)

Parameter	Revision 3		Revision 5	
	Frequency	Action Level 1,2,3	Frequency	Action Level 1,2,3
Chloride, ppb	3/WK	>50, >150, >1,500	3/wk	*, >150, >1,500
Fluoride, ppb	3/WK	>50, >150, >1,500	3/wk	*, >150, >1,500
Sulfate, ppb	1/WK	>50, >150, >1,500	1/wk	*, >150, >1,500
Lithium, ppm	3/wk	Plant Specified	3/wk	Plant Specified
Hydrogen, cc/Kg H20	3/wk	<25>50, ≤15, ≤5	3/wk	<25>50, <15, <5
Dissolved Oxygen, ppb	3/wk	>5, >100>1,000	As required by Plant Technical Specification	>5, --, >100

*Plant-specific administrative limits

Action Level 1 limits for Power Operation Control Parameters for chloride, fluorides, and sulfate were deleted in revision 5 with a footnote added requiring that utilities develop site-specific administrative limits for these species. Dissolved oxygen frequency and Action Level 3 limits were deleted in revision 5 with a footnote added to sample per plant Technical Specifications. Palisades maintains revision 3 Action Level one limits of 50-ppb. Palisades' data shows that dissolved oxygen levels are consistently nondetectable when at full power, with PCS Hydrogen maintained at the desired level. Oxygen concentrations are maintained less than detectable by the addition of hydrogen to the PCS and by maintaining PCS hydrogen greater than 25cc/kg while at full power. Excess hydrogen is maintained to scavenge any oxygen in the PCS. Thus the 3 times per week monitoring of PCS hydrogen is a conservative measurement that dissolved oxygen is within specification.

ENCLOSURE 2
Comparison of EPRI TR-102884, "Pressurized Water Reactor Primary Water Chemistry Guidelines, Revision 5," with EPRI TR-105714 Revision 3 for Aging Management Effectiveness

Power Operation Diagnostic Parameters

Parameter	Revision 3		Revision 5	
	Frequency	Typical Value	Frequency	Reason for Analysis
Conductivity, µmho/cm	1/day	Consistent with additives	1/day	Assess consistency with additives
pH @ 25°C	1/day	Consistent with additives	1/day	Assess consistency with additives
Boron	1/day	As required for reactivity control	1/day	As required for reactivity control
Suspended Solids, PPB	1/wk	<10	1/wk	To establish and trend changes from baseline
Silica, ppb	1/wk	<1,000	1/wk	Plant-specific target <3,000
Zinc, ppb	This parameter was not in Revision 3		Per Plant specific zinc addition programs	As required by plant-specific program

Typical Value of Power Operation Diagnostic Parameters in Revision 3 became "Reason for Analysis" in Revision 5. All sample frequencies remained the same except zinc was added in revision 5, to be sampled per Plant Programs.

Revision 5 Suspended Solids Typical Value of <10-ppb became "to establish and trend changes from baseline." Palisades maintains normal administrative limits of 10-ppb and 35-ppb , which agrees with both versions.

Revision 5 also increased the Silica target to <3,000-ppb due to industry experience with high silica because of degraded Boraflex in the Spent Fuel Pool (SFP). Silica is produced from the decomposition of Boraflex, which is used as a neutron absorber in some Spent Fuel Pools. Low limits for silica concentrations are set by nuclear fuel manufacturers because of the potential to precipitate with metals (e.g., Al, Ca, Mg) and deposit on the fuel cladding, which could lead to zircaloy corrosion, and poor heat transfer and fuel performance. Thermodynamic calculations suggest that the risk of elevated silica on the formation of zinc silicates in the fuel crud is low for concentrations of silica up to 1.5 ppm, provided that the zinc concentration in the coolant is maintained at values in the range of 5 ppb. In a safety evaluation for primary system zinc addition at Palisades, Siemens Corp., a Palisades nuclear fuel supplier, concluded that industry experience confirms that existing chemistries do not result in zinc-related deposition on fuel rods. Based on theoretical considerations, and the Farley operations data, the threshold value for silica should be even higher than 1.5-ppm. Theoretical calculations indicate that the concentrations of zinc (10 ppb) and silica (6 ppm) will be much lower at the saturation conditions in core outlet regions. In areas where sub cooled boiling conditions occur; these values can concentrate resulting in the precipitation of zinc silicate. Palisades has had no incidences of axial offset anomalies, and the conditions for localized boiling do not exist. This higher limit is still an acceptable limit for aging management.

ENCLOSURE 2
Comparison of EPRI TR-102884, "Pressurized Water Reactor Primary Water Chemistry Guidelines, Revision 5," with EPRI TR-105714 Revision 3 for Aging Management Effectiveness

Cold Shutdown Control Parameters (Reactor <250°F)

	Revision 3			Revision 5	
Parameter	**Frequency**	**Action Level 1**	**Value Prior to Exceeding 250°F**	**Frequency**	**Value prior to Exceeding 250°F**
Chloride, ppb	1/wk	>150	≤150	1/wk	<150
Fluoride, ppb	1/wk	>150	≤150	1/wk	<150
Sulfate, ppb	1/wkw	>150	≤150	1/wk	<150
Oxygen, ppb	Applicable only during heatup.	N/A	≤100	Applicable only during heatup.*	<100

*Although not a NEI-97-06 directive, pressurizer oxygen should also be <100 ppb prior to exceeding 250°F pressurizer temperature. Individual plant requirements based on Technical Specifications or NSSS requirements apply.

Cold Shutdown Parameter Action Level 1 limits of Revision 3 were combined with "Value Prior to Exceeding 250°F," otherwise there has been no change between revision 3 and 5 control parameters. Palisades' limits are less than EPRI requirement.

Startup Control Parameters (Reactor Sub critical and >250°F)

	Revision 3			Revision 5	
Parameter	**Frequency**	**Action Level 1, 2, 3**	**Value Prior to Criticality**	**Frequency**	**Value Prior to Criticality**
Chloride, ppb	Established by chemistry management based on plant startup schedule and Technical Specification requirements	--,>150, >1,500	≤150	Established by chemistry management based on plant startup schedule and Technical Specification requirements	<150
Sulfate, ppb		--,>150, >1,500	≤150		<150
Fluoride, ppb		--,>150, >1,500	≤150		<150
Hydrogen, cc/Kg H20		-,-,-	≥ 15 Prior to Power Ascension		>15 Hydrogen overpressure to be established prior to power ascension
Dissolved Oxygen, ppb		--,>100, >1,000	≤100		<100

The Startup control Parameters Action Level table was deleted from revision 3. Both Revision 3 and 5 have "Value Prior to Criticality" table, which was Revision 3 Action Level 2 limits. Palisades' limits prior to criticality are less than EPRI requirements.

ENCLOSURE 2
Comparison of EPRI TR-102884, "Pressurized Water Reactor Primary Water Chemistry Guidelines, Revision 5," with EPRI TR-105714 Revision 3 for Aging Management Effectiveness

Startup Chemistry Diagnostic Parameters (Following Fill-and-Vent to Reactor Critical)

	Revision 3		Revision 5	
Parameter	**Frequency**	**Note**	**Frequency**	**Note**
Boron	1/day	As required for reactivity control	1/day	As required for reactivity Control
pH	This parameter was not in Revision 3		1/day	
Conductivity	1/day		1/day	
Lithium	1/day	Consistent with Station Program	1/day	Consistent with Station Program
Corrosion Products	1/day	Diagnostic	1/day	
Suspended Solids, ppb	1/day	Should be < 350	1/day	Should be < 350
Ammonia, ppb	1/72 hr	Diagnostic	1/72 hrs	
RCS Temperature	1/day	Diagnostic	1/day	
Letdown Flow	1/8 hr	Diagnostic	1/8 hrs	
Purification Demin DF	1/day	Diagnostic	1/day	
Silica	1/day	Diagnostic	1/day	
Pressurizer Dissolved Oxygen, ppb	1/day	Should be <5	Moved to the Cold Shutdown Control Parameters	
Hydrazine	This parameter was not in Revision 3		As required	

Pressurizer Liquid Sample in revision 3 is found in Cold Shutdown Control Parameters in Revision 5, which is more restrictive than as a diagnostic parameter. Hydrazine and $pH_{25°C}$ in revision 5 were not in the table of revision 3; otherwise the table remains the same in both versions.

In short, while there were some minor changes from Revision 3 to Revision 5 of the guidelines, they are not considered to have any significant effect on the ability of the site to properly manage the long-term aging of our primary systems components.

Enclosure 3

NMC Response to August 25, 2005, Commitment Regarding Secondary Chemistry Aspects of Water Chemistry Aging Management Program

(2 Pages)

Enclosure 3
NMC Response to August 25, 2005, Commitment Regarding Secondary Chemistry Aspects of Water Chemistry Aging Management Program

August 25, 2005, Commitment Regarding Secondary Chemistry Aspects of Water Chemistry Aging Management Program

NMC Letter Dated August 25, 2005 stated,

NMC will submit, for NRC review and approval, a comparison of TR-102134 revision 6 with revision 3 to identify the material changes that impact aging management and justify their acceptability by October 31, 2005. If necessary, the submittal will include a Water Chemistry Program description, revised to identify and justify use of TR-102134, Revision 6, as an exception to the NUREG 1801 program description. [NMC Tracking No. 80]

NMC Response to August 25, 2005, Commitment Regarding Secondary Chemistry Aspects of Water Chemistry Aging Management Program

Enclosure 4 of this letter provides a comparison of Revision 6 of the EPRI PWR secondary water chemistry guidelines, issued as TR-108224, upon which Palisades' current secondary Water Chemistry Program is based, with Revision 3 of those guidelines in TR-102134, which is referenced in NUREG 1801. This discussion concludes that revision 6 of the secondary water chemistry guidelines provides an acceptable level of control to effectively age manage the associated systems.

Based on this comparison, and to indicate the use of Revision 6 as an exception to NUREG 1801, final changes to the LRA description of the secondary chemistry portions of the Water Chemistry Program are provided. The changes described in this section assume that the changes related to primary chemistry, as discussed in Supplementary Information Regarding Short Term Commitment 1 above, are also incorporated. The identified revisions include all changes relevant to the secondary chemistry portions of the LRA description of the Water Chemistry Program.

This completes NMC action for this commitment.

Final Changes to LRA Section B2.1.21 Water Chemistry Program

LRA Section B2.1.21 is hereby revised as follows:

On Page B-153, under heading **Program Description**, replace "TR-102134, Rev. 5" in the first paragraphs, with "TR-108224." In the third paragraph, replace the last sentence to read, Palisades has adopted TR-102134, Rev. 5 (issued as TR-102884) and TR-102134 Rev. 6 (issued as TR-108224) which are later revisions of the same documents. To the end of the fifth paragraph, add the following, "Revision 6 provides further details regarding how to best integrate these guidelines into this plant-specific optimization process."

On page B-154, under the heading **Exceptions to NUREG 1801**, add the following exception number two:

2. The Palisades Water Chemistry Program implements the guidelines of revision 6 of the EPRI PWR secondary water chemistry Guidelines, issued as EPRI TR-108224, "Pressurized Water Reactor Secondary Water Chemistry Guidelines – Revision 6," dated October 2003. Justification provided shows that this later revision to the guidance ensures that the Water Chemistry Program will continue to provide effective management of aging.

On Page B-154, under the heading **Scope of Program**, second sentence, replace TR-102134 with TR-108224.

On Page B-159, under the heading **Conclusion**, first paragraph, replace the last sentence with, "This program is consistent with, but includes exceptions to, NUREG 1801 Section XI.M2, "Water Chemistry."

Enclosure 4

Comparison of EPRI TR-108224 "Pressurized Water Reactor Secondary Water Chemistry Guidelines – Revision 6" with EPRI TR-102134 Revision 3 for Aging Management Effectiveness

(6 Pages)

Enclosure 4
Comparison of EPRI TR-108224 "Pressurized Water Reactor Secondary Water Chemistry Guidelines – Revision 6" with EPRI TR-102134 Revision 3 for Aging Management Effectiveness

NEI 97-06, "Steam Generator Program Guidelines," was endorsed by the NRC to manage steam generator tube integrity in a uniform manner for all nuclear utilities. Section 3.2.1 of NEI 97-06 specifically directs, "Each licensee shall have procedures for monitoring and controlling secondary-side water chemistry to inhibit secondary-side corrosion-induced degradation in accordance with the EPRI *PWR Secondary Water Chemistry Guidelines*." NEI 97-06 makes no reference to the revision of the EPRI guideline to be used – or the specific technical report number. In fact, at the time of issuance of NEI 97-06, Revision 4 of the guidelines, TR-102134, had already been issued since November of 1996.

In the Forward of the current EPRI PWR Secondary Water Chemistry Guidelines – Revision 6, the following is stated:

> "Industry water chemistry guidelines are updated periodically as new information becomes available. Previous revisions of these guidelines have identified a detailed water chemistry program that was deemed to be consistent with the then current understanding of research and field information. Each revision, however, has recognized the impact of these *Guidelines* on plant operation and has noted that utilities should optimize their program based on a plant-specific evaluation prior to implementation."

It further states in the second paragraph of section 1.1 the relationship of these guidelines to NEI 97-06:

> "... the U.S. nuclear power industry established a framework for increasing the reliability of steam generators by adopting NEI 97-06, Steam Generator Program Guidelines. This initiative references EPRI's Water Chemistry Guidelines, including this document, as the basis for an industry consensus approach to chemistry programs. Specifically, the initiative requires that U.S. utilities meet the intent of the *EPRI PWR Secondary Water Chemistry Guidelines*. The focus of the NEI initiative is steam generator integrity. These *Guidelines* are a support document under NEI 97-06. These *Guidelines* include control parameters and monitoring requirements which must be incorporated into a plant's water chemistry program in order to meet the intent of these *Guidelines*. "

Since the intent of NEI 97-06 is to manage the integrity of the steam generator tubes, and since NEI 97-06 has deferred to the EPRI Guidelines as the industry directed standard, Palisades has developed its secondary water chemistry program in accordance with the EPRI Guidelines. It follows that by complying with the EPRI Guidelines, an industry accepted and directed standard, that Palisades is also managing the aging effects on the steam generators through the application of the same guidelines – regardless of the revision in effect.

Enclosure 4
Comparison of EPRI TR-108224 "Pressurized Water Reactor Secondary Water Chemistry Guidelines – Revision 6" with EPRI TR-102134 Revision 3 for Aging Management Effectiveness

Reconciliation of the differences between Revision 3 and Revision 6 of the guidelines will in some cases defer to the fact that guidance has been relaxed as the industry has gathered more information about the actual corrosion mechanisms – and what was required in Revision 3 of the guidelines does not necessarily make sense to continue doing in light of the fact that the stricter limits make no difference on the long-term health of the equipment.

Below is a summary of the differences between Revision 3 and Revision 6 as they apply to Palisades – with a summary of the difference and its effects on the steam generator (or feedwater) health.

Parameter	Revision 3	Revision 6	Discussion
Primary Coolant System < 200°F S/G Sample:			
pH	< 9.8 take action	< 9.5 take action	This is a move to a lower pH, which is not necessarily less conservative since cracking rates of alloy 600 are actually lower under certain conditions as the pH approaches 7.0. By controlling pH above 9.5, Palisades can adequately manage the aging effects of the secondary components including steam generators.
Hydrazine	No change	No change	
Sodium	No change	No change	
Chloride	No change	No change	
Sulfate	No change	No change	
Boron	Control Parameter	Diagnostic Parameter	Palisades does not monitor for boron in this condition if the pH specification of > 9.5 is able to be met. The guideline now suggests that the boron should be removed so that pH can be controlled at the optimum level. Boron is added for power operation steam generator chemistry control to mitigate corrosion mechanisms. As long as it does not interfere with the ability of the site to control pH in modes 2-6, it is not necessary to completely remove it or to monitor regularly for its presence.
DO2 (for S/G Fill Source Only)	Control Parameter	Diagnostic parameter	Palisades is not able to control the DO2 concentration of our S/G fill source because it is vented to atmosphere. Palisades adds hydrazine while filling the steam generators from this source. This is considered to be a significant difference and is deemed to have no effect on the overall health of the steam generators due to the high levels of hydrazine maintained in the steam generators in this mode.

Enclosure 4
Comparison of EPRI TR-108224 "Pressurized Water Reactor Secondary Water Chemistry Guidelines – Revision 6" with EPRI TR-102134 Revision 3 for Aging Management Effectiveness

Parameter	Revision 3	Revision 6	Discussion
Feedwater Sample > 200 °F to < 5% Rx Power:			
pH	No change	No change	
DO2	No change	No change	
Hydrazine	Take action if < 3 x [DO2] and > 100 ppb	Take action if < 20 ppb OR < 8 x [DO2]	Palisades meets the revision 6 guidance and typically controls hydrazine between 80 and 100 ppb in the feedwater. Revision 3 had (what appears to be based on looking at other sections of revision 3) a minimum hydrazine value of 100 ppb which has since been relaxed in later revisions. It appears that with subsequent revisions of the guidelines, the excess hydrazine concentration "requirements" have been relaxed because they were deemed to make no measurable difference. Palisades controls hydrazine according to the Revision 6 guidelines – which does require that hydrazine exceed dissolved oxygen concentration by 8 to 1 – to manage the long-term health of the steam generator tubes. There will be no negative affect on the ability to manage the long-term health of our steam generators because of this change.
S/G Blowdown Samples (PCS Temp > 200 °F to < 30% Rx Power):			
pH	Control Parameter	Diagnostic Parameter	No change other than from control parameter to diagnostic parameter.
Cation Conductivity	Control Parameter	Diagnostic Parameter	No change other than from control parameter to diagnostic parameter.
Sodium (ppb)	100/20	100/10	Revision 6 requires that sodium be less than 10 ppb prior to escalation above 30% reactor power. This is more conservative.
Chloride	No change	No change	
Sulfate	No change	No change	
Boron	Control Parameter	Diagnostic Parameter	Revision 3 allowed this to be controlled by the site program – diagnostics require the same thing essentially in revision 6. This is an "editorial" difference between documents and has no affect on the long-term age management of the steam generators.
Phosphate	Control Parameter	N/A	Phosphates are no longer used.
THERE ARE NO DIAGNOSTIC PARAMETERS IN REVISION 3 FOR THE ABOVE.			

Enclosure 4
Comparison of EPRI TR-108224 "Pressurized Water Reactor Secondary Water Chemistry Guidelines – Revision 6" with EPRI TR-102134 Revision 3 for Aging Management Effectiveness

Parameter	Revision 3	Revision 6	Discussion
S/G Feedwater Sample (Power Operation > 5% Rx Power): revision 3 control parameters compared...			
pH	Continuous Monitoring	Daily recording, but inline (continuous monitoring is implied by footnotes).	Values for pH are per the station program. This is essentially an "editorial" difference between documents and has no affect on the long-term age management of secondary components, including steam generators. pH has also become a "diagnostic" parameter in revision 6.
pH Agent	No change	No change	
DO2	< 5 ppb required for power escalation > 30%	< 10 ppb required for power escalation > 30%	The difference in values required for power escalation is not considered to negatively impact the long-term health of the steam generators due to the excess hydrazine limits of 8 X [DO2]. For steady state operation above 30% power, the first action level has remained at 5 ppb for both revision 3 and revision 6. This is not a change.
Hydrazine	Take action if <100 ppb	Take action if < 8 x CPD [DO2] OR < 20 ppb – whichever is larger	Relaxation of hydrazine concentration with later revisions, but additional action levels 2 and 3 required in revision 6 if hydrazine addition is lost. This change is considered to have no negative affect on the ability of the site to adequately mitigate feedwater dissolved oxygen concentrations that could potentially result in the introduction of oxygen rich water into the steam generators. The current EPRI guidelines continue to require hydrazine concentrations well in excess of the dissolved oxygen concentrations which is still very conservative. This change will not adversely affect our ability to manage the long-term health of secondary components including our steam generators.
Total Iron	No change	No change	
Total Copper	No change	No change	

Enclosure 4
Comparison of EPRI TR-108224 "Pressurized Water Reactor Secondary Water Chemistry Guidelines – Revision 6" with EPRI TR-102134 Revision 3 for Aging Management Effectiveness

Parameter	Revision 3	Revision 6	Discussion
S/G Feedwater Sample (Power Operation > 5% Rx Power): revision 3 diagnostic parameters compared...			
Cation Conductivity	Continuously monitor	No specific direction	Revision 6 does not specify how to monitor cation conductivity as a diagnostic parameter – nor does it provide a value as revision 3 does. Water quality is now so good and steam generator contaminants are kept so low that changes in cation conductivity are not typically the first indications of a problem. Palisades continues to monitor feedwater cation conductivity continuously. This however, is not considered to impact the long-term age management of the steam generators since any feedwater contaminant would be identified by build-up in the steam generators and subsequent action – most likely prior to the ability to detect the contaminant in the feedwater.
Sodium	Continuously monitor	Not a diagnostic parameter	Such low levels of sodium exist in our system, that monitoring of sodium in the feedwater provides little advance warning over other parameters. Does not negatively impact long-term age management of secondary components including steam generators.
Boron	Per section 5 of Revision 3	Not a diagnostic parameter	Boron is only monitored in the steam generators per revision 6 – if it is added. Does not negatively impact long-term age management of steam generators.
S/G Blowdown Sample (Power Operation > 30% Rx Power): revision 3 control parameters compared...			
pH	Control Parameter	Diagnostic Parameter	Later revisions relaxed this to a diagnostic since it was per the site program in revision 3 anyway. This does not negatively impact the long-term age management of secondary components, including steam generators.
Cation Conductivity	> 0.8 / >2 / >7	None / >1 / >4	Revision 6 requires more significant action to be taken at more challenging values. Not a relaxation. (AL 1 / AL 2 / AL 3)
Sodium (ppb)	20/100/500	5/50/250	Revision 6 is more restrictive. Not a relaxation. (AL 1 / AL 2 / AL 3)

Enclosure 4
Comparison of EPRI TR-108224 "Pressurized Water Reactor Secondary Water Chemistry Guidelines – Revision 6" with EPRI TR-102134 Revision 3 for Aging Management Effectiveness

Parameter	Revision 3	Revision 6	Discussion
Chloride (ppb)	20/100/na	10/50/250	Revision 6 is more restrictive. Not a relaxation. (AL 1 / AL 2 / AL 3)
Sulfate (ppb)	20/100/na	10/50/250	Revision 6 is more restrictive. Not a relaxation. (AL 1 / AL 2 / AL 3)
Boron	Control Parameter	Diagnostic Parameter	Addressed in site program. Does not negatively impact the long-term age management of the steam generators.
Phosphate	Control Parameter	N/A	Phosphates are no longer used.
S/G Blowdown Sample (Power Operation > 30% Rx Power): revision 3 diagnostic parameters compared...			
Specific Conductivity	No change	No change	
pH Agent	No change	No change	
Hideout Return Evaluation	Required each planned shutdown.	Required each planned shutdown.	The Hideout return evaluation guidance has improved from revision to revision – this is not a relaxation.
Cation to Anion Ratio	No change	No change	Is now called molar ratio.
Silica	No change	No change	
Condensate Sample Control Parameters > 5% Rx Power:			
DO2	No change	No change	

In short, while there were some minor changes from Revision 3 to Revision 6 of the guidelines, NMC concludes that they do not have any significant effect on the ability of the site to properly manage the long-term aging of our secondary system components.

Enclosure 5

NMC Response to August 25, 2005, Commitment Regarding Closed Cycle Cooling Water Aging Management Program

(2 Pages)

Enclosure 5
NMC Response to August 25, 2005, Commitment Regarding Closed Cycle Cooling Water Aging Management Program

August 25, 2005, Commitment Regarding Closed Cycle Cooling Water Aging Management Program

NMC Letter Dated August 25, 2005 stated,

NMC will submit, for NRC review and approval, a comparison of TR-107396 revision 1 with revision 0 to identify the material changes that impact aging management and justify their acceptability by October 31, 2005. If necessary, the submittal will include a Closed Cycle Cooling Water Program description, revised to identify and justify use of TR-107396, Revision 1, as an exception to the NUREG 1801 program description. [NMC Tracking No. 80]

NMC Response to August 25, 2005, Commitment Regarding Closed Cycle Cooling Water Aging Management Program

Enclosure 6 provides a comparison of TR-107396 Revision 1 (published by EPRI as TR-1007820 Revision 1), on which the Palisades Closed Cycle Cooling Water Program is based, with Revision 0 which is referenced in NUREG 1801. This discussion concludes that, while there were some minor changes from Revision 0 to Revision 1 of the closed cycle cooling water guidelines, they are not considered to have any affect on the ability of the site to properly manage the long-term aging of components that are cooled by closed cycle cooling water systems.

Based on this comparison, and to indicate the use of Revision 1 as an exception to NUREG 1801, final changes to the LRA description of the Closed Cycle Cooling Water Program are provided. These changes apply to the original LRA description of the program, and supersede in their entirety the changes reported in response to Question 14 of NMC letter dated August 25, 2005.

This completes NMC action on this commitment.

Final Changes to LRA Section B2.1.6 Closed Cycle Cooling Water Program

LRA Section B2.1.6 is hereby revised as follows:

On Page B-41, under the heading **Program Description**, third paragraph, add Revision 1 after TR-107396.

On page B-42 under the heading of **Exceptions to NUREG 1801**, replace the entire section with the following statement: "An exception is taken to the selected NUREG 1801 program elements listed below. The specific exceptions being taken are also discussed in the corresponding element discussions. They are repeated here for ease of review.

1. Preventive Actions: The Palisades Plant Closed Cycle Cooling Water Program implements the guidelines of revision 1 of the Closed Cycle Cooling

Water Guidelines, issued as EPRI TR-1007820 "Closed Cycle Cooling Water Chemistry, dated April 2004. This guideline supersedes EPRI TR-107396, "Closed Cycle Cooling Water Chemistry Guideline", Revision 0, issued November 1997, referenced in NUREG 1801. Justification provided shows that this later revision to the guidelines has no detrimental affects on aging management of the closed cycle cooling water system.

On Page B-43 under the heading of **Preventive Actions**, last sentence of the first paragraph, add Revision 1 after TR-107396.

On page B-44 under the heading of **Parameters Monitored, Tested , and/or Inspected**, replace the last paragraph, including exception bullet, with the following statements. "This program monitors the effects of corrosion by surveillance testing and inspection. For pumps, the parameters monitored include flow, discharge and suction pressures. For heat exchangers, the parameters include flow, inlet and outlet temperatures, and differential pressures as appropriate. This element is consistent with NUREG 1801, Section XI.M21, "Closed-Cycle Cooling Water System"."

On pages B-44 and B-45 under **Detection of Aging Effects**, replace the last paragraph, including exception bullet, with the following statements. "Performance and functional testing ensures acceptable functioning of system or components. For systems or components in continuous operation, performance adequacy is determined by monitoring data trends. Components not in operation are periodically tested to ensure operability. This element is consistent with NUREG 1801, Section XI.M21, "Closed-Cycle Cooling Water System"."

On page B-45 and B-46 under **Monitoring and Trending**, replace the last paragraph, including both exception bullets, with the following statements: "Performance and functional testing are performed at least every 18 months to demonstrate system operability, and tests to evaluate heat removal capability of the system and degradation of system components are performed every five years. This element is consistent with NUREG 1801, Section XI.M21, "Closed-Cycle Cooling Water System"."

On page B-46 and B-47 under **Acceptance Criteria**, replace the last paragraph, including both exception bullets, with the following statement: "This element is consistent with NUREG 1801, Section XI.M21, "Closed-Cycle Cooling Water System"."

Enclosure 6

Comparison of EPRI TR-107820, "Closed Cycle Cooling Water Chemistry, Revision 1 to TR-107396, Closed Cycle Cooling Water Chemistry Guideline" with EPRI TR-107396 Revision 0 for Aging Management Effectiveness

(4 Pages)

Enclosure 6
Comparison of EPRI TR-107820, "Closed Cycle Cooling Water Chemistry, Revision 1 to TR-107396, Closed Cycle Cooling Water Chemistry Guideline". with EPRI TR-107396 Revision 0 for Aging Management Effectiveness

Revision 0 of the EPRI Closed Cooling Water Chemistry Guidelines was published as technical report number TR-107396. The purpose of this document was to assist plants in developing water treatment strategies to protect carbon-steel and copper containing systems from corrosion. TR-107396 was not a very directive document and actually provided very broad direction for plants to develop their own closed cooling water chemistry control programs by utilizing the guidance in the report to tailor specific station programs.

TR-107396 did not have the now-typical operating table of "Control Parameters" and "Diagnostic Parameter" with the respective sampling frequency and expected values. But, it did identify throughout the text parameters that should be monitored as "Control Parameters" and/or "Diagnostic Parameters." In general, the first revision of the document allowed plants a great deal of flexibility in developing their closed cooling water chemistry programs.

Revision 1 of the Closed Cooling Water Chemistry Guideline, TR-1007820, is significantly more directive in nature. Revision 1 incorporates the term "Action Level" and establishes values for which specific actions are "required" to be taken to correct the condition. Furthermore, it specifically establishes recommended monitoring frequencies and clearly identifies the expected parameter values. For comparison of Revision 1 to Revision 0, the Revision 1 table of monitored parameters related to Palisades' water treatment regime will be used. For each parameter identified in the Revision 1 table, the manner in which it was addressed by Revision 0 will be discussed. Since Palisades uses nitrite corrosion inhibition for all of its closed cooling water systems, the differences between the other methods of corrosion inhibition are not discussed.

CONTROL PARAMETERS (per Revision 1)

Nitrite:

In Revision 1, Nitrite has a normal range of 500 to 1500 ppm. There are now action levels associated with correcting the nitrite concentration if it is outside of the normal range. The monitoring frequency is identified as weekly or monthly depending on the system classification (safety significance).

The only difference of note is that Revision 0 had a normal range specified as 500 to 1000 ppm. Revision 0 did not specify "action levels" and it was not as directive with respect to the sample interval. The changes from Revision 0 to Revision 1 relative to nitrite control will not affect the long-term age management of our closed cooling water systems.

pH:

In Revision 1, pH has a normal range of 8.5 to 11.0. There are now action levels associated with correcting the system pH if it is outside of the normal range. The monitoring frequency is identified as weekly or monthly depending on the system classification (safety significance).

The only difference of note is that Revision 0 had a normal range specified as 8.5 to 10.5. Revision 0 did not specify "action levels" and it was not as directive with respect to the sample interval. The changes from Revision 0 to Revision 1 relative to system pH control will not affect the long-term age management of our closed cooling water systems.

Azole:

In Revision 1, azole has a normal range of 5 to 100 ppm. There are now action levels associated with correcting the azole concentration if it is outside of the normal range. The monitoring frequency is identified as monthly regardless of the system classification (safety significance).

The only differences of note are that Revision 0 had a normal range specified as 5 to 30 ppm. If the broadened pH band (per Revision 1) from 10.5 to 11.0 is to be taken advantage of, then Revision 1 states that azole concentration is to be in excess of 25 ppm to improve the copper corrosion resistance to the elevated pH. Additionally, Revision 0 did not specify "action levels" and it was not as directive with respect to the sample interval. The changes from Revision 0 to Revision 1 relative to azole control will not affect the long-term age management of our closed cooling water systems.

Chloride and Fluoride:

Revision 0 required analysis of chloride, fluoride and sulfate. Revision 1 only requires analysis of chloride and fluoride, and then, only if the closed cooling water system contains stainless steel that is operated at temperatures > 150°F. These differences between the guidelines do not have any effect on the long-term age management of our closed cooling water systems.

DIAGNOSTIC PARAMETERS (per Revision 1):

Conductivity:

In Revision 1, Conductivity is to be consistent with the nitrite level. There are no associated parameter values or action levels. The monitoring frequency is to be with nitrite's monitoring frequency.

The only difference with respect to monitoring conductivity per Revision 0 and Revision 1 is that Revision 0 indicated that conductivity was both a control parameter and a diagnostic parameter. The changes from Revision 0 to Revision 1 relative to monitoring conductivity will have no affect on the long-term age management of our closed cooling water systems.

Nitrate:

In Revision 1, there are no associated parameter values or action levels. The monitoring frequency is identified as quarterly. There are no differences from Revision 0 that would affect the long term age management of closed cycle cooling systems.

Ammonia:

In Revision 1, there are no associated parameter values or action levels. The monitoring frequency is identified as quarterly. There are no differences from Revision 0 that would affect the long term age management of closed cycle cooling systems.

Chloride and Sulfate:

In Revision 1, there are no associated parameter values or action levels for these contaminants. The monitoring frequency is identified as monthly. There are no differences from Revision 0 that would affect the long term age management of closed cycle cooling systems.

Total Iron and Total Copper:

In Revision 1, there are no associated parameter values or action levels for these corrosion products. The monitoring frequency is identified as monthly. There are no differences from Revision 0 that would affect the long term age management of closed cycle cooling systems.

Microbiological Activity:

In Revision 1, there are no associated parameter values or action levels for microbiological activity. The monitoring frequency is identified as monthly. There are no differences from Revision 0 that would affect the long term age management of closed cycle cooling systems.

Radioactivity:

In Revision 1, there are no associated parameter values or action levels for radioactivity. The monitoring frequency is identified as quarterly. There are no differences from Revision 0 that would affect the long term age management of closed cycle cooling systems.

Other Parameters:

In Revision 0, there are a number of parameters that are not specifically identified within revision 1. Specifically, Total Organic Carbon (TOC), Dissolved Oxygen, Total Alkalinity, Calcium/Magnesium, and Refrigerants, are all identified as "diagnostic" parameters in Revision 0. None of the above parameters (or monitoring of them) is considered to have any affect on the long-term health of the closed cycle cooling water systems.

In short, while there were some minor changes from Revision 0 to Revision 1 of the closed cycle cooling water guidelines, they are not considered to have any affect on the ability of the site to properly manage the long-term aging of our components that are cooled by closed cycle cooling water.

Enclosure 7

NMC Response to August 25, 2005, Commitment Regarding ASME Section XI IWB, IWC, IWD IWF Inservice Inspection Aging Management Program

(6 Pages)

August 25, 2005, Commitment Regarding ASME Section XI IWB, IWC, IWD IWF Inservice Inspection Aging Management Program

NMC Letter Dated August 25, 2005 stated,

NMC will revise the ASME Section XI IWB, IWC, IWD, IWF Aging Management Program descriptions in LRA Appendices A and B to reflect the 2001 edition including the 2002 and 2003 addenda of ASME Section XI. The revised program descriptions will identify exceptions to this code taken by the program, if any, that impact aging management effectiveness. Appropriate justification will also be provided to show that the exceptions, if any, still provide an acceptable level of aging management. The revised program descriptions will be submitted for NRC review and approval by October 31, 2005. [NMC Tracking No. 82]

NMC Response to August 25, 2005, Commitment Regarding ASME Section XI IWB, IWC, IWD IWF Inservice Inspection Aging Management Program

The NUREG 1801 Revision 1, Section XI.M1, XI.M3 and XI.S3 programs, reference the 2001 edition of ASME B&PV Code, Section XI as providing an acceptable basis for an aging management program. NMC has concluded that the ASME Section XI IWB, IWC, IWD, IWF Inservice Inspection Program for aging management should be revised to reflect the 2001 edition through 2003 addenda as the Section XI code of record. Accordingly, the following changes are hereby made to the description of the ASME Section XI IWB, IWC, IWD, IWF Inservice Inspection Program provided in LRA Section B2.1.2 on pages B-17 through B-25.

On page B-17 under the heading **Program Description**, replace the second paragraph in its entirety with the following,

> "The Palisades ASME Section XI IWB, IWC, IWD, IWF Inservice Inspection aging management program is based on the ASME B&PV Code, Section XI, 2001 edition including 2002 and 2003 addenda. The IWB-2500 Category B-Q requirements to perform volumetric examinations of steam generator tubes is addressed by the Steam Generator Tube Integrity Program.

On page B-19, under the heading **NUREG-1801 Consistency**, replace the existing paragraph in its entirety with,

> "The ASME Section XI IWB, IWC, IWF Inservice Inspection Program is consistent with, but contains exceptions to, NUREG-1801, Section XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC and IWD." This program is consistent with NUREG-1801, Section XI.M3, "Reactor Vessel Closure Studs," and Section XI.S3, "ASME Section XI, Subsection IWF."

On page B-19, under the heading **Exceptions to NUREG-1801**, replace the existing section in its entirety with the following,

"Several alternatives to the ASME Section XI, 2001 edition through the 2003 addenda, are expected to be implemented as part of the aging management program in effect at the time Palisades enters the period of extended operation. These alternatives are identified as exceptions to NUREG-1801, and are justified as acceptable from an aging management point of view, in accordance with 10 CFR 54.

The specific exceptions identified to the NUREG-1801 program description are listed below with a justification for their acceptability. It has been determined that these exceptions only apply to the Detection of Aging Effects element.

1) Risk-Informed Inservice Inspection Program

This alternative implements Risk-Informed Examination of Class 1, Class 2, Class 3 and Non Class Piping Butt Welds using Westinghouse Owners Group WCAP-14572, Revision 1-NP-A, "Westinghouse Owners Group Application of Risk-Informed Methods to Piping Inservice Inspection Topical Report" and WCAP-14572, Revision 1-NP-A, Supplement 1, "Westinghouse Structural Reliability and Risk Assessment (SRRA) Model for Piping Risk-Informed Inservice Inspection"

The Risk-Informed Inservice Inspection (RI-ISI) program provides an acceptable alternative to the piping ISI requirements with regards to (1) the number of locations, (2) the locations of inspections, and (3) the method of inspection. The RI-ISI program maintains the fundamental requirements of ASME Section XI, such as the examination technique, examination frequency, and acceptance criteria. Although the RI-ISI program reduces the number of required examination locations in some cases, it maintains an acceptable level of quality and safety by focusing inspections on the most safety significant welds with nondestructive examination (NDE) techniques that are more focused towards finding the type of expected degradation as well as the types of flaws and degradation found during traditional inspections.

A systematic approach was used to identify component susceptibility to common degradation mechanisms and to categorize these degradation mechanisms into the appropriate degradation categories with respect to their potential to result in a postulated leak or rupture in the pressure boundary. An evaluation to determine the susceptibility of components to a particular degradation mechanism that may be a precursor to a leak or rupture in the pressure boundary, and an independent assessment of the consequences of a failure at that location were performed. Industry and plant-specific piping failure information (i.e., operating experience) was

used to identify piping degradation mechanisms and failure modes, and consequence evaluations were performed using PRAs to establish safety ranking of piping segments for selecting new inspection locations. The degradation mechanisms identified in the RI-ISI program include thermal fatigue, mechanical fatigue, flow accelerated corrosion (FAC), microbiologically influenced corrosion (MIC), intergranular stress-corrosion cracking (IGSCC), and primary water stress-corrosion cracking (PWSCC). The consequences of pressure boundary failures were evaluated and ranked on their impact on core damage and early release. Therefore, redistributing the welds to be inspected with consideration of the safety significance of the segments provides assurance that segments whose failures have a significant impact on plant risk receive an acceptable and improved level of inspection.

The objective of ISI, required by ASME Section XI, is to identify conditions (e.g., flaw indications) that are precursors to leaks and ruptures in the pressure boundary that may impact plant safety. The RI-ISI program meets this objective. The risk-informed selection process not only identifies the risk-important areas of the piping systems but also defines appropriate examination methods, examination volumes, procedures, and evaluation standards necessary to address the degradation mechanism(s) of concern and the ones most likely to occur at each location to be inspected. Therefore, the examination methods of the RI-ISI program are acceptable since they are selected based on specific degradation mechanisms, pipe sizes, and materials of concern. The risk significance of piping segments is taken into account in defining the inspection scope of the RI-ISI program. The RI-ISI program methodology provides reasonable assurance that any reduction in inspections will not lead to degraded piping performance when compared to the existing performance levels. Inspections are focused on locations with active degradation mechanisms as well as selected locations that monitor the performance of system piping. Inspection strategies ensure that failure mechanisms of concern have been addressed and there is adequate assurance of detecting damage before structural integrity is affected.

The RI-ISI program is a living program that includes performance monitoring and feedback provisions to confirm the assumptions and analyses used in the development of the program. Feedback of relevant information is used to ensure the appropriate identification of safety-significant piping locations. As a minimum, risk-ranking of piping segments is reviewed and adjusted on an ASME-period basis. Significant changes may require more frequent adjustment of the risk-ranking of piping segments as directed by NRC bulletin or generic letter requirements, or industry and plant-specific feedback (i.e., operating experience).

In conclusion, the RI-ISI program is a full scope program that includes ASME Class 1, 2, 3, and non-class piping systems. The proposed

alternative program provides an acceptable level of quality and safety. Additionally, the alternative program will not be limited to ASME Class 1 or Class 2 piping, but will encompass the high safety significant piping segments regardless of ASME Class Other non-related portions of the ASME Section XI Code are unaffected. WCAP-14572 defines the relationship between the risk-informed examination program and the remaining unaffected portions of ASME Section XI. This alternative provides an acceptable aging management program.

2) Relief from Regenerative Heat Exchanger Examinations

This alternative allows examination of the accessible volume of the weld circumference comprising the regenerative heat exchangers, as opposed to the requirement to examine 100% of the weld length due to design limitations. This alternative allows the examination of the bottom head circumferential and nozzle welds to be reduced to the accessible volumes rather than the 100% volumetric requirements.

The volumetric examinations of the subject welds of the regenerative heat exchanger assembly would detect any pattern of degradation, if present. In addition, required VT-2 visual examinations are performed during system leakage tests. Therefore, this alternative provides an acceptable level of quality and safety.

3) Relief from Pressurizer Examinations

This alternative allows examination of the accessible volumes of the weld circumference comprising the Pressurizer for Palisades Unit 1, as opposed to the requirement to examine 100 % of the weld length due to design limitations. This alternative allows the examination of the circumferential, meridional and nozzle welds to be reduced to the accessible volumes rather than the 100% volumetric requirements.

The volumetric examinations of the subject welds of the pressurizer would detect any pattern of degradation, if present. In addition, required VT-2 visual examinations are performed during system leakage tests. Therefore, this alternative provides an acceptable level of quality and safety.

4) Relief from Shutdown Cooling Heat Exchanger Examinations

This alternative allows examination of the accessible volumes of the weld circumference comprising the Shutdown Cooling Heat Exchanger for Palisades Unit 1, as opposed to the requirement to examine 100 % of the weld length due to design limitations. This alternative allows the examination of the circumferential, and nozzle welds to be reduced to the accessible volumes rather than the 100% volumetric requirements.

The volumetric and surface (when required) examinations of the subject welds of the Shutdown Cooling Heat Exchanger would detect any pattern of degradation, if present. In addition, required VT-2 visual examinations are performed during system leakage tests. Therefore, this alternative provides an acceptable level of quality and safety.

5) Relief from Steam Generator Examinations

This alternative allows examination of the accessible volumes of the weld circumference comprising the Steam Generator for Palisades Unit 1, as opposed to the requirement to examine 100 % of the weld length due to design limitations. This alternative allows the examination of the circumferential, and nozzle welds to be reduced to the accessible volumes rather than the 100% volumetric requirements.

The volumetric examinations of the subject welds of the Steam Generators would detect any pattern of degradation, if present. In addition, required VT-2 visual examinations are performed during system leakage tests. Therefore, this alternative provides an acceptable level of quality and safety.

6) Relief for Single Sided Examinations

This alternative allows single sided examination of circumferential piping welds for Palisades Unit 1, using the best available technology as opposed to the requirement to examine both the upstream and downstream.

The volumetric examinations of the subject piping welds would detect any pattern of degradation, if present. In addition, required VT-2 visual examinations are performed during system leakage tests. Therefore, this alternative provides an acceptable level of quality and safety.

7) Relief for Inside Diameter Surface Examination

In accordance with the Palisades Risk Informed Inservice Inspection Program, Volumetric examinations are required on 100% of the weld length for welds in Category R-A, Item R1.11 "Elements Subject to Thermal Fatigue." The proximity of the flange to the weld centerline and the outside diameter contours of the nozzle will result in an extremely limited examination for all axial scanning (ability to detect circumferential flaws) with ultrasonic examination.

This alternative allows the welds to be examined from the inside diameter with the Liquid Penetrant Technique (the inside diameter of these components was machined during fabrication) in lieu of the volumetric examination. Based on a flaw initiating at the inside diameter, this liquid

penetrant examination will provide an acceptable level of quality and safety.

On page B-21, third paragraph, revise the first sentence to read as follows,

"The ISI Program meets the requirements of ASME Section XI, in accordance with applicable provisions and requirements of 10 CFR 50.55a.

On page B-22, replace the last paragraph under heading **Detection of Aging Effects** in its entirety with the following,

"The ASME Section XI IWB, IWC, IWD, IWF Inservice Inspection Program implements several alternatives to the requirements of the ASME B&PV Code, Section XI, 2001 edition including 2002 and 2003 addenda. These alternatives are considered exceptions to the NUREG 1801 descriptions of the programs.

The specific exceptions and justification of their acceptability in an aging management program are described in the preceding section entitled Exceptions.

This element is consistent with, but contains exceptions to, NUREG 1801, Section XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC. and IWD." This element is consistent with NUREG-1801, Sections XI.M3, "Reactor Head Closure Studs," and Section XI.S3, "ASME Section XI, Subsection IWF.""

On page B-25, under the heading **Conclusion**, replace the first paragraph in its entirety with the following,

"The ASME Section XI IWB, IWC, IWF Inservice Inspection Program is an existing program that uses as its bases, various industry and NRC standards. This program is consistent with, but contains exceptions to, NUREG-1801, Section XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC and IWD." This program is consistent with NUREG-1801, Section XI.M3, "Reactor Vessel Closure Studs," and Section XI.S3, "ASME Section XI, Subsection IWF."

NMC has also concluded that no changes are necessary to the ASME Section XI, Subsections IWB, IWC, IWD, IWF Inservice Inspection Program description in LRA Section A2.2.

This completes NMC action in response to this commitment.

Enclosure 8

NMC Response to August 25, 2005, Commitment Regarding Containment Inservice Inspection Aging Management Program

(8 Pages)

Enclosure 8
NMC Response to August 25, 2005, Commitment Regarding Containment Inservice Inspection Aging Management Program

August 25, 2005, Commitment Regarding Containment Inservice Inspection Aging Management Program

NMC Letter Dated August 25, 2005 stated,

NMC will revise the Containment Inservice Inspection Program description in the LRA to identify use of the 1998 edition as an exception to GALL. Exceptions taken to the 1998 edition, if any, will be identified and justified as part of the program description. A comparison of the 1998 edition with the 1995 edition/1996 addendum referenced in NUREG 1801, revision 0, or the 2001 edition, including the 2002 and 2003 addenda, referenced in NUREG 1801, draft revision I (publicly released on August 12, 2005), will also be developed to support the adequacy of the 1998 edition of IWE and IWL for aging management. The revised program description and comparison will be submitted for NRC review and approval by October 31, 2005. [NMC Tracking No. 113]

NMC Response to August 25, 2005, Commitment Regarding Containment Inservice Inspection Aging Management Program

Enclosure 9 of this letter provides a comparison of the 1998 edition of the ASME B&PV Code, Section XI, Subsections IWE and IWL, with the 1992 edition. Both the 1992 edition, and the 1995 edition including the 1996 addenda are referenced in the 2001 publication of NUREG 1801. Since the time NMC committed to provide this comparison, it was determined that the comparison between the 1998 edition and the 1992 edition had already been submitted to and reviewed by NRC on the Palisades docket in conjunction with a previous licensing action. Since the purpose of the comparison is to verify that the Palisades aging management program provides a level of aging management comparable with those found acceptable in NUREG-1801, it makes no difference whether the 1992 or 1998 edition is used for the reference edition. Therefore, the comparison of the 1998 edition with the 1992 edition is submitted to satisfy this commitment in lieu of a comparison with the 1995 edition including 1996 addenda. This discussion concludes that the 1998 edition provides an acceptable level of control to effectively age manage the associated systems.

Based on this comparison, and to indicate the use of the 1998 edition as an exception to NUREG 1801, final changes to the LRA description of the Containment Inservice Inspection Program are provided below.

This completes NMC action for this commitment.

Final Changes to LRA Section B2.1.7, Containment Inservice Inspection Program

On page B-49 of the application under "**NUREG-1801 Consistency**", replace the existing paragraph with the following paragraph.

"The Containment Inservice Inspection program is consistent with, but contains exceptions to, NUREG-1801, Section XI.S1, "ASME Section XI, Subsection IWE," and Section XI.S2, "ASME Section XI, Subsection IWL." The Containment Inservice Inspection program is consistent with NUREG-1801, Section X.S1, "Concrete Containment Tendon Prestress."

On page B-49 of the application under "**Exceptions to NUREG-1801**", replace the existing paragraph with the following.

The specific exceptions identified to the selected NUREG-1801 program elements are listed below. It has been determined that these exceptions only apply to the Detection of Aging Effects element.

1. Nureg-1801, Section XI.S1, references the 1992 Edition with the 1992 Addenda and the 1995 Edition with the 1996 Addenda, of ASME Code - Section XI, Subsection IWE, as approved in 10 CFR 50.55a, as providing acceptable aging management programs. It states that these codes and the additional requirements specified in 10 CFR 50.55a(b)(2) constitute an existing mandated program applicable to managing aging of steel containments, steel liners of concrete containments, and other containment components for license renewal. The Palisades Containment Inspection program implements ASME Section XI, Subsection IWE, 1998 edition, no addenda, with the following alternatives:

   Under Visual Examination Methods and Personnel Qualification, IWE-2300, the following additional actions apply.

   The 1992 edition and addenda invoke the use of IWA-2200 for visual, surface, and volumetric examination methods, and IWA-2300 for qualification of personnel. For qualification of personnel, the 1992 addenda of IWA-2300 require personnel to be qualified and certified using a written practice prepared in accordance with ANSI/ASNT CP-189. The 1998 edition of IWE-2300 requires licensees to define requirements for visual examination of containment surfaces, and for qualifying the personnel performing visual examinations. Additionally, IWE-2320 requires that a responsible individual (RI) be responsible for activities related to the containment surface visual examinations and personnel qualification. Palisades supplements the requirements of the 1998 edition of IWE-2300 with the following provisions:

   a. The qualification program for personnel performing the general and detailed visual examinations meet the applicable requirements of IWA-2210 of the 1992 Edition and Addendum of Section XI.

   b. Palisades' procedures include the general and detailed visual examinations in the functional task descriptions for the VT-3 and

VT-1 methods, respectively. Personnel performing the general and detailed visual examinations are certified to VT-3 and VT-1, respectively.

c. Performance requirements for general and detailed visual examinations are included in the visual examination procedure. A performance demonstration is developed and documented to establish the distances and illuminations for which the general and detailed visual examinations are sufficient to detect evidence of degradation that may affect the containment structure integrity or leak tightness. The Palisades visual examination procedure has been prepared by non-destructive examination (NDE) Level III personnel and the RI, and demonstrated to the ANII [Authorized Nuclear Inservice Inspector].

d. The general visual examination acceptance criteria are included in the Palisades Section XI visual examination procedure. The general visual examination of containment liner surfaces examines for indications of degradation that may affect the containment structural integrity or leak tightness. Indications of flaking, blistering or peeling coating; excessive corrosion; and general deformation, bulges, surface irregularities, or other signs of distress, are recorded. The general visual examination of pressure retaining bolted connections examines for missing or loose bolting materials, corrosion, bolting deformation, or other indications that may affect the integrity of bolted connection. Indications are recorded. The general visual examination of moisture barriers examines for wear, damage, erosion, tears, surface cracks and other defects that would permit intrusion of moisture into inaccessible areas. Indications are recorded. Recorded indications are evaluated in accordance with IWE-3000, 1998 Edition.

e. The detailed visual examinations are included in the Palisades Section XI visual examination procedure. The detailed visual examination assesses the initial condition of surfaces requiring augmented examinations, in accordance with the IWE-1241, and determines the magnitude and extent of indications of degradation and distress of these containment surfaces. The detailed visual examination also determines the magnitude and extent of indications of degradation and distress of suspect containment surfaces. The detailed visual examination criteria of IWE-2310(e) of the 1998 edition are used, supplemented by additional criteria for bolted connections and moisture barriers as defined in the general visual examination criteria above.

f. Results of a general visual examination are acceptable for continued service without further evaluation only when there is no evidence of

damage or degradation of the inspected component or surface area.

g. For IWE examinations, the Palisades Containment Inspection Program continues to meet the requirements specified in the 1992 Edition of Section XI (ASNT-SNT-TC-1A, 1984 Edition or ANSI/ASNT CP-189, 1991 Edition) for the qualification of personnel performing examinations. In addition, the inspection and evaluation procedures that are used to perform inspections are reviewed and approved by a certified NDE Level III examiner and the ANII.

Under Examination of Paint and Coatings, IWE-2500(b), the following additional actions apply.

The requirement to examine paint or coating prior to removal was deleted in the 1998 edition of the Code. However, in the absence of any examination for detecting flaws or degradation in the containment base metal, the potential exists for recoating to be applied to a degraded containment surface. NMC assures that coatings will not be applied inappropriately to a degraded surface. At Palisades, liner plate protective coating is maintained in accordance with administrative work requests and the work order program. As part of this program, the RI is required to perform a maintenance pre-review of any work order authorizing liner plate work. During this review, the RI enters inspection requirements to ensure the liner plate will continue to meet design-basis requirements. These inspection requirements include detailed inspections, general visual examinations, and detailed visual examinations. Items not meeting the acceptance criteria of examination procedures are evaluated in accordance with the Palisades Corrective Action Program and accepted by analysis or repaired or replaced in accordance with Palisades' programs.

Under Visual Examination Acceptance Standards for Categories E-A and E-C, the following additional actions apply.

IWE-3510.1 and IWE-3511.1 of the 1998 edition of the Code state that the licensee is required to define the acceptance criteria for visual examination of containment surfaces when performing Category E-A and Category E-C examinations. The basic requirements for these examinations are provided in IWE-2310 and are augmented by Palisades as described in the previous description of additional actions under IWE-2500(b).

Under Ultrasonic Examinations, IWE-3511.3, the following alternative actions apply.

In Paragraph IWE-3511.3 of the 1998 edition of the Code, examination of metallic liners of Class CC components has been excluded from the acceptance criterion which requires disposition of areas where material loss exceeds 10 percent of the nominal wall thickness. Palisades addresses this difference by applying acceptance standards determined by an engineering analysis completed in accordance with administrative procedures. This engineering analysis documents the minimum required thickness for specific areas on the containment liner plate. The 1998 edition applies the criteria in IWE-3511.3 to Class MC pressure-retaining components, and not to metallic liners of Class CC components. Palisades applies the ultrasonic examinations criteria in IWE-3511.3 to Class CC components as well as to Class MC components. This is equivalent to the requirements of the 1992 addenda.

Under Examination of Pressure Retaining Bolting, Table IWE-2500-1, the following alternatives apply.

The 1992 edition through the 1996 addenda requires a VT-1 visual examination on 100 percent of the pressure-retaining bolting. It also requires torque testing of each bolted connection. In the 1998 edition of IWE, the requirements for bolted connections have been moved to Examination Category E-A, Item E1.10, "Containment Vessel Pressure Retaining Boundary" and Item E1.11, "Accessible Surface Areas." The 1998 edition requires that 100 percent of the accessible surface areas of the containment vessel pressure-retaining boundary be visually examined (general visual) during each inspection period. This corresponds to an examination of all bolted connections three times per inspection interval. Included in the examination are bolts, studs, nuts, bushings, washers, and threads in base material and flange ligaments between fastener holes. The Code does not require that the bolted connection be disassembled for performance of the examination.

In addition to the Code requirements, Palisades program requires a detailed visual examination for areas where flaws or degradation are indicated. Damaged bolted connections are disassembled and a detailed visual examination of the bolted connection components performed. A general visual examination (or detailed visual examination if applicable) is performed when a bolted connection is disassembled at the time of a scheduled general visual examination. Accessible surface areas of the connection (bushings, threads, ligaments in the base material of flanges) are included in the examination.

A general visual examination (or detailed visual examination if applicable) is performed when a bolted connection is disassembled at

times other than a scheduled visual examination. Procedures are used to ensure that the integrity of the reassembled bolted connections are maintained. The procedures include acceptance criteria for the continued use of all parts of the connections including bolts, studs, nuts, bushings, washers, and threads in base material and flange ligaments between fastener holes.

2. Nureg-1801 Section XI.S2, references both the 1992 Edition with the 1992 Addenda and the 1995 Edition with the 1996 Addenda, of ASME Code Section XI, Subsection IWL, as approved in 10 CFR 50.55a, as providing an acceptable aging management program. It states that these codes and the additional requirements specified in 10 CFR 50.55a(b)(2) constitute an existing mandated program applicable to managing aging of containment reinforced concrete and unbonded post-tensioning systems for license renewal. The Palisades Containment Inspection uses the 1998 edition of Subsection IWL as an alternative to the requirements of the 1992 edition and addenda for inspection of Class CC components, with the following alternatives.

   Under Qualification of Visual Examination Personnel for Concrete Inspection, IWL-2300, the following additional activities apply.

   The 1998 edition of IWL-2310(d) requires the licensee to define the qualification requirements to qualify personnel to perform visual examinations of concrete and tendon anchorage hardware, wires, or strands. Prior to the 1997 addenda, IWL-2310(c) required that visual examination personnel be qualified in accordance with IWA-2300 or IWA-2350, as applicable. Palisades applies the following additional requirements for personnel qualification.

   a. The qualification program for personnel performing the general and detailed visual examinations meets the applicable requirements of IWA-2300 of the 1992 Addendum.

   b. Palisades' procedure includes the general and detailed visual examinations in the functional task descriptions for the VT-3 and VT-1 methods, respectively. Personal performing the general and detailed visual examinations are certified to VT-3 and VT-1, respectively.

   c. Performance requirements for general and detailed visual examinations are included in the Palisades visual examination procedure. The detailed visual examination meets the resolution requirements for VT-1 contained in Table IWA-2210-1 in the 1992 Edition and Addenda. A performance demonstration has been developed and documented to establish the distances and illumination for which the general and detailed visual examinations

are sufficient to detect evidence of degradation that may affect the containment structural integrity. The Palisades visual examination procedure has been prepared by nondestructive examination (NDE) Level III personnel and the Responsible Engineer and demonstrated to the ANII.

d. The visual examinations are performed in accordance with 1998 edition, Subsection IWL-2310, IWL-2510, and IWL-2524.1. Indication will be recorded, and subsequently evaluated, by the Responsible Engineer in accordance with IWL-2320, IWL-3200 and IWL-3300.

Under Examination of Concrete, IWL-2510, the following additional requirements apply.

The 1992 edition and addenda require the use of visual examination procedures VT-3C and VT-1C for the examination of concrete. In the 1998 edition and addenda, IWL-2310, these procedures have been changed to "general visual" and "detailed visual" examinations. The 1998 Code requires the licensee to define the requirements for visual examination of tendon anchorage hardware, wire, and strands. Palisades applies the following additional requirements for examination of concrete.

The general visual examinations provide a screening mechanism to locate conditions that may be indicative of damage or distress. Containment surfaces are accepted on the basis of a general visual examination only when there are no indications of damage or distress that are a code concern.

IWL-detailed visual examinations are conducted when the criteria for acceptance by general visual examinations are not met, or when the surface or component is initially classified as suspect or otherwise requires augmented examination. Suspect areas are defined in Table IWL-2500-1, Categories L1.12 and L2.30. For IWL-detailed visual examinations, the surface may be accepted for continued service without further evaluation provided one of the following is demonstrated:

a. The Responsible Engineer determines that the flaw or area of degradation is nonstructural in nature or has no unacceptable effect on the structural integrity of the containment, as determined by an evaluation of the magnitude and extent of the relevant indication from ACI 201.1R. Although not required by IWL-2310(a), ACI 349.3R may be used, as appropriate.

b. The Responsible Engineer determines that the flaw or area of degradation is limited to the outermost concrete layer with no rebar exposure, or, if rebar is exposed, the rebar does not exhibit evidence of corrosion.

c. The Responsible Engineer is able to accept the indication based on a review of a previous evaluation from historical record.

Under Examination of Suspect Areas, Table IWL-2500-1, the following additional requirements apply.

Table IWL-2500-1 of the 1998 edition of the Code requires a general visual examination for Item L1.12 (suspect areas). The 1992 addenda of the Code require a VT-1 examination. Palisades will perform detailed visual examinations of suspect areas addressed in Category L-A, Item L1.12.

In summary, NMC has concluded that the 1998 code edition, alternatives, and additional requirements described herein, provide aging management activities equivalent to the 1992 and 1995 code editions referenced in NUREG 1801, and are, therefore, acceptable as the basis for the Containment Inservice Inspection Program."

On page B-54, under heading **Detection of Aging Effects**, replace the final paragraph of the section with the following:

This element is consistent with, but contains exceptions to, NUREG 1801, Section XI.S1, "ASME Section XI, Subsection IWE," and Section XI.S2, "ASME Section XI, Subsection IWL." This element is consistent with NUREG 1801 Section X.S1, "Concrete Containment Tendon Prestress." The exceptions applicable to this element are itemized in the Exceptions section of this program description.

Enclosure 9

Comparison of 1998 Edition of ASME B&PV Code, Section XI, Subsections IWE and IWL, with 1992 Edition Including 1992 Addenda for Aging Management

(42 Pages)

Enclosure 9
Comparison of 1998 Edition of ASME B&PV Code, Section XI, Subsections IWE and IWL,
with 1992 Edition Including 1992 Addenda for Aging Management

By Letter dated February 21, 2002, as supplemented May 6, 2002, NMC submitted information supporting the use of the 1998 edition of the ASME Code, Section XI, Subsections IWE and IWL in lieu of the 1992 edition with the 1992 addenda. The May 6, 2002 letter included a detailed comparison of the provisions of these codes. In a letter dated September 27, 2002, the NRC approved the use of the 1998 edition Subsections IWE and IWL, with some additional alternative actions, under 10 CFR 50.55a. The program exceptions and alternatives identified in the revised LRA description of the program in Enclosure 8 are consistent with these.

The NRC SER in the September 27, 2002 letter provided an itemized table for each subsection that described:

(1) The paragraph corresponding to the 1992 edition and Addenda of the subsection (IWE or IWL)
(2) Changes Between the 1992 edition and addenda and the 1998 edition
(3) Palisades' statement of significance and/or basis for the use of the alternative inspection
(4) The NRC staff's assessment of the acceptability of the requirements of the 1998 edition of the code in terms of quality and safety.

While the NRC comments included in this table may not have been developed from the perspective of aging management, the table itself provides a detailed listing of the differences between code editions that can be reviewed for relevance to aging management under license renewal. NMC has reviewed this itemization of the differences between the codes and finds that the 1998 code, in conjunction with the identified alternatives, provides an acceptable level of aging management comparable to the requirements of the 1992 edition and 1992 Addenda of ASME Section XI, subsection IWE and IWL. For convenience of NRC review, the comparison tables, including the NRC comments, have been extracted from the September 27, 2002 SER and are included below.

Enclosure 9
Comparison of 1998 Edition of ASME B&PV Code, Section XI, Subsections IWE and IWL,
with 1992 Edition Including 1992 Addenda for Aging Management

PALISADES PLANT – IWE COMPARISON

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
1100	No change	N/A	
1200	No change	N/A	
1210	No change	N/A	
1220	Changed "containment" to "containment system"	Nonsignificant	Editorial change has no safety or quality significance. Acceptable.
1230	No change	N/A	
1231	Removed item 3) - "single welded butt joints from the weld side" - as a specific item required to remain accessible for the life of the plant.	These single welded butt joints were removed as a separately listed examination item and are now included within the item for the pressure retaining boundary as discussed in the changes to Table IWE-2500-1 below.	Examination of welds is optional in 10 CFR 50.55a. Acceptable.
	Changed wording from "80% of the surface area" to "80% of the pressure retaining boundary" and stated exclusions from that 80%.	The exclusions from 80% incorporate an existing Table IWE 2500-1 note and clarify that areas made inaccessible during construction are also excluded.	Wording of IWE-1231 changed to be consistent with the existing Table IWE-2500-1. Acceptable.
	Reworded paragraph b).	Change to b) is for clarity and is nonsignificant.	Editorial change has no safety or quality significance. Acceptable.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda, and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
1232	ASME XI generic change from repair and/or replacement to repair/replacement activities. Deleted paragraph (a)(3) addressing inaccessible welded joints.	Nonsignificant Welded joints were removed as a separately listed examination items and are now included within the item for the pressure retaining boundary as discussed in the changes to Table IWE-2500-1 below.	Editorial change has no safety or quality significance. Acceptable. Examination of welds is optional in 10 CFR 50.55a. Acceptable.
1240	No Change	N/A	
1241	Added stiffeners and, by reference to IWE-2420, flaws accepted by evaluation as areas requiring augmented examination.	Clarifies the intent of the Code that areas identified in IWE-2420(b) require an augmented exam in the next period.	Adding stiffeners in IWE-1241(a) requiring examination and adding reference to IWE-2420(b). The additional areas subject to augmented examination further assure containment integrity. Acceptable.
1242	Changed IWE-2500(b) to IWE-2500(c)	Nonsignificant	Editorial change has no safety or quality significance. Acceptable.
2000	No change	N/A	
2100	Added new Subarticle IWE-2100 - "General" - to provide reference to IWA-2000 with exceptions from IWA-2210, 2300, 2500 and 2600.	The containment examinations are completely defined within the jurisdiction of IWE, thus reference to IWA-2210, and IWA-2300 are not applicable.	By adding additional general requirements of IWA-2100, further assures containment integrity. Also, IWE-2310, 1998 covers the visual examinations as identified in

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
2100 (cont)		The exceptions to IWA-2500, and IWA-2600 are to weld base exams that do not apply to IWE. The NMC Containment Inspection Program will specify the requirements for personnel certification in accordance with CP-189 and SNT-TC-1A. Therefore, the examinations in the 1998 Edition provide acceptable level of quality and safety as defined in IWE of the 1992 Edition.	IWA-2210. Acceptable. Per the 1998 Code, personnel will not have to be certified to CP-189 (IWA-2300) - Licensee committed to certify inspection personnel in accordance with CP-189 and SNT-TC-1A. Acceptable.
2200	Deleted paragraph c) which provided allowances for the use of shop or field examinations in lieu of on site preservice examinations. Deleted paragraph g) which required the condition of new coating to be documented in the preservice examination record.	The deletion of an allowance for an alternative examination ensures that proper preservice examinations are performed and documented. The deletion of the requirement to document the condition of "new" non-pressure retaining coatings in the preservice examination record provides for more efficient program implementation without affecting component integrity. The NMC work order process requires notification of Responsible Engineer (RE) who will ensure thorough ISI and PSI examinations of containment surface including condition of base metal.	The deletion of paragraph (c) ensures that proper preservice examination is performed per Table IWE-2500-1. Acceptable. The licensee's work order process requires notification of Responsible Engineer (RE) who will ensure thorough ISI and preservice inspection (PSI) examinations of containment surface including condition of base metal without the need for an additional Code examination. Acceptable.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
2200 (cont)	ASME XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant.	This is editorial change. Acceptable.
2300	Added new Subarticle 2300 - "Visual Examination, Personnel Qualification and Responsible Individual."	"Visual Examination, Personnel Qualification and Responsible Individual" - The philosophy of IWE to be an engineering inspection under the direction of the Responsible Individual is contained in this new sub-article. The most significant change is the definition of the roles and responsibilities of the Responsible Individual. This individual will be accountable for the entire inspection program which will meet or exceed the level of quality and safety defined in the 1992 Edition.	IWE 2300 -"Visual Examination, Personnel Qualification and Responsible Individual" is newly added subarticle. The specific paragraphs IWE-2310, IWE-2320, and IWE-2330 added are discussed below. The NMC has submitted additional commitments, as detailed in Containment Relief Request CRR-08. Reference to the applicable additional commitments are identified in the discussion below.
2310	Added new paragraph 2310 - Visual Examinations - which a) states that the owner shall define requirements for visual examination of containment surfaces;	a) The VT-3 and VT-1 inspections of IWA have been replaced by Responsible Individual defined general and detailed visual exams, respectively. The definition of critical examination items and acceptable conditions has not changed, such that any conditions adversely	Consistency with existing ISI visual examination requirements provide for an efficient internal program; that coupled with the program established for NMC will provide uniformity and consistency industry wide. NMC's visual examination requirements are

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
2310 (cont)		affecting quality or safety are not impacted by this change.	defined in Containment Relief Request CRR-08, Proposed Alternatives, item 1). The 1998 Code with the specific commitments are acceptable.
	b) and c) defines general and detailed examinations.	b) and c): The general visual and detailed examinations are equivalent to the VT-3 and VT-1 exams in terms of assessing the general condition and potential for deterioration within the containment system. The use of owner defined inspection types allows for the involvement of qualified engineering personnel with background in programs such as Maintenance Rule, containment coating, and Appendix J. This provides for a containment inspection program that is performed by individuals with knowledge in containment degradation mechanisms.	The 1998 Edition does not specify acceptance criteria since the examination requirements are defined by the owner. The staff does not find this to be acceptable. The licensee provided specific acceptance criteria for the general visual and detailed examinations defined in Containment Relief Request CRR-08, Proposed Alternatives, item 1), in its February 21, 2002, submittal. This is acceptable.
	d) and e) provides the requirements for the conditions of areas affected by repair/replacement activities, painted or coated areas, and non-	d) and e): Previously these examination requirements did not exist within Article IWE-2000 but	NMC has provided acceptance criteria for general and detailed visual examinations are defined in the Containment Relief Request

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
2310 (cont)	coated areas.	were contained in the acceptance criteria of Article IWE-3000. Adding these specific attributes here ensure proper containment examinations. There are no acceptance criteria specified since the proposal maintains owner defined examination requirements.	CRR-08, Proposed Alternatives, items 1) and 3), in submittal dated February 21, 2002. The 1998 Code with the specified commitments and acceptance criteria are acceptable.
2320	Added new paragraph 2320 - "Responsible Individual" - which a) states the qualification requirements of the Responsible Individual and b) defines the responsibilities of the Responsible Individual for the development of plans and procedures; instruction, training and approval of visual examination personnel; performance or direction of visual examinations; evaluation of results and documenting results.	The qualification along with the roles and responsibilities of the Responsible Individual are clearly delineated within this sub-article. This section clearly states the expectations for the Responsible Individual, and brings accountability for the entire program to an individual knowledgeable in containment and their degradation mechanisms. This individual will develop the inspection plans, train personnel, direct to perform inspections, and finally evaluate the results. The cohesiveness of the inspection program has been improved by addition of this sub-article, resulting in an increase in level of quality and thus no adverse impact on safety.	a) The details for the Responsible Individual qualification requirements were previously contained in the acceptance standards of IWE-3510.1. This is editorial change. Acceptable. b) The added detailed responsibilities for the Responsible Individual ensure proper performance of those related activities. Having an individual possessing the qualifications described in paragraph 2320 a) performing the responsibilities defined in paragraph 2320 b) ensures the reliable detection of conditions.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
			The philosophy of the 1998 Edition give the responsible individual complete control over the program. This provides consistency in all the plan and procedure; performance and direction of examination; evaluation of results and documentation. Acceptable.
2330	Added new paragraph 2330 - "Personnel Qualification" - which a) states that the owner is responsible for defining the qualification requirements for personnel performing visual examinations and b) provides minimum qualification requirements that were previously contained in the acceptance criteria of IWE-3510.1.	a) Adding requirements for the owner to define personnel qualification requirements is consistent with the philosophy that the Responsible Individual must qualify the inspection personnel. The code recognizes that the qualification may differ depending on the containment type and even the inspection period in question. This change is consistent with the other changes discussed above and serves to improve the level of quality and thus has no adverse impact on safety.	The staff finds owner-defined personnel qualification requirements to be unacceptable. Personnel should be qualified in accordance with Subsection IWA requirements. The licensee states that qualification program for personnel will be in accordance with Subsection IWA, and will be qualified in accordance with ASNT-SNT-TC-1A, 1984 Edition or ANSI/ASNT CP-189, 1991 Edition This is acceptable.
2400	No change	N/A	
2410	No change	N/A	

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
2411	Deleted a subparagraph discussing decreasing and extending inspection periods.	The deleted subparagraph eliminates duplication with IWA-2400.	The deleted subparagraph requirements are similar to as of IWA-2400. The Code 1998 Edition invokes the requirements of IWA-2400 under newly added paragraph IWE-2100. This is Acceptable.
2412	Deleted a subparagraph discussing decreasing and extending inspection periods. Added a subparagraph detailing requirements for the scheduling of added welds or components.	The deleted subparagraph eliminates duplication with IWA-2400. The added requirements for the scheduling of added welds or components was added prior to the 1998 Edition rewrite of Subsection IWE and is of marginal value with the 1998 revisions to Table IWE-2500-1 (refer to the evaluation later in this table).	The deleted subparagraph requirements are similar to as of IWA-2400. The Code 1998 Edition invokes the requirements of IWA-2400 under newly added paragraph IWE-2100. This is Acceptable.
2420	Revised (b) to remove repaired areas as areas requiring reexaminations during the next successive inspection period.	Repaired areas that are likely to experience accelerated degradation and aging are already subject to augmented examinations per IWE-1241. Some repairs may be located in non- augmented areas and may be necessary to correct physical damage caused by construction or craft activities. Changing duration of reexamination of areas that remain essentially unchanged from "three	Changing duration of reexamination of areas that remain essentially unchanged from "three consecutive inspection periods" to "the next successive inspection period" is consistent with the requirements for Class 2 components. Acceptable.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
		consecutive inspection periods" to "the next successive inspection period" is consistent with the requirements for Class 2 components. The evaluation that determines that flaws or areas of degradation remain unchanged is sufficient to conclude that there are no active corrosion mechanisms present.	
	Changed (c) to require that areas which remain essentially unchanged for the next inspection period no longer require augmented examinations. The 1992 Addenda required three consecutive examinations to reach this conclusion.		This is now consistent with Class 2 successive inspections. The engineering evaluation of IWE-3122.3, along with the reexamination in the next inspection, is sufficient to assure that augmented examinations need not be continued. Acceptable.
2430	Deleted the paragraph - Additional Examinations - which discussed adding examination items of the same category if flaws or areas of degradation are identified during an examination.	The changes to Table IWE 2500-1 eliminate several examination categories. The categories that remain all require 100% examination. Therefore no items are available for additional examinations.	The 1998 Code does not rely on sampling as 100% of the containment surface is already examined. Therefore, elimination of this requirements is appropriate. Acceptable.
2500	Reworded the existing subparagraphs consistent with the previous paragraph changes and with Table IWE-2500-1 changes.	The reworded subparagraphs add clarity and provide consistency within IWE.	The rewording of the subparagraphs provides consistency between IWE-2500 and Table IWE2500-1. Acceptable.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
2500 (cont)	Deleted the requirement to examine paint or coatings prior to removal.	The Code jurisdiction is the pressure retaining boundary, not the non-pressure retaining coatings. Eliminating this requirement does not adversely impact the level of quality or the safety of the containment inspection program. The 1998 Edition increases the frequency of examination when compared to the 1992 Addenda. During examinations, the general and detailed visual examinations of coated areas will identify flaws and degradation in the containment base metal and result in appropriate corrective actions per the Code requirements. Should a coating be removed between required inservice inspections, the Responsible Individual shall identify and resolve any base metal conditions that could challenge the structural integrity of the containment. As a result, there is no anticipated benefit from a separate Code requirement to inspect coatings prior to removal. This deletion provides for a more efficient program implementation without affecting component	Elimination of the paint or coatings examination prior to removal has been found acceptable provided adequate provisions exist in the licensee's program to examine the base metal prior to reapplication of the coating. The licensee addressed base metal examination in its February 21, 2002 submittals.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
2500(cont.)	Replaced the requirement for one-foot square grids in thickness measurements with a reference to Table IWE 2500-2.	integrity. The new Table IWE 2500-2 provides more detailed requirements for thickness measurements and is discussed below.	The ultrasonic gridline approach is a sampling methodology similar to that of other portions of the Code and other erosion/corrosion monitoring programs. Acceptable.
	Added a reference to IWE-5000 for pressure tests.	The added reference to IWE-5000 provides direction for the performance of pressure tests.	This change provides direction for performance test. Acceptable.
2600	Deleted a sentence discussing compatibility of paint and coating systems and a requirement to examine the new paint.	The jurisdiction of the Code does not include the quality and compatibility of the containment coating systems. This change has no impact on the scope of IWE inspections.	Elimination of this sentence is considered acceptable when covered by existing nuclear coatings program. Acceptable
3100	Removed the word nondestructive from the heading.	Nonsignificant	This is editorial change. Acceptable.
3110	No change	N/A	
3111	Replaced the reference to Table IWE-3410-1 with a reference to subarticle IWE-3500. Removed reference to paragraph IWE-3115.	Table IWE-3410-1 and paragraph IWE-3115 has been deleted and is discussed below. IWE-3500 adequately captures all of the information previously contained in the deleted table and paragraph.	This is editorial change. Acceptable.
			This is editorial change.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
3112	Replaced the reference to Table IWE-3410-1 with a reference to subarticle IWE-3500. ASME XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	Acceptable.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
3114	Replaced the reference to Table IWE-3410-1 with a reference to subarticle IWE-3500. ASME XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
3115	Deleted subparagraph which addressed repair programs and evaluations being subject to review by authorities.	Nonsignificant - there were no submittal or retention requirements changed by the deletion of the subparagraph.	The regulations do not require the licensee to submit the containment inspection program. Acceptable.
3120	Removed the word nondestructive from the heading.	Nonsignificant. Consistent with IWB and IWC.	This is editorial change. Acceptable.
3121	Removed the word nondestructive and deleted references to IWE-3124 and IWE-3125 for the acceptance of flaws for continued service.	The removal of word nondestructive is nonsignificant. The referenced subparagraphs did not actually apply to the acceptance of flaws for continued service.	This is editorial change. Acceptable.
3122	Replaced the references to Table IWE-2500-1 and to IWE-3000 with a reference to subarticle IWE-3500. ASME XI generic change from repair and/or replacement to repair/replacement activities. Reworded several sentences. Deleted sentence which addressed	Nonsignificant - the changes are for clarity and to reconcile paragraph numbering. There was no submittal or retention requirements changed by the deletion of the sentence addressing evaluation reviews. Consistent with IWB and IWC.	This is editorial change. Acceptable.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	evaluations being subject to review by authorities.		
3124	Replaced the reference to Table IWE-3410-1 with a reference to subarticle IWE-3500. ASME XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
3125	Deleted subparagraph which addressed repair programs and reexamination results being subject to review by authorities.	Nonsignificant - there were no submittal or retention requirements changed by the deletion of the subparagraph.	This is editorial change. Acceptable.
3130	No change	N/A	
3200	Added a statement to the end of the paragraph that states supplemental surface or volumetric examinations are required when specified by the engineering evaluation.	The added statement clarifies requirements and eliminates potential duplication or contradiction of requirements in stating that the engineering evaluation requirements of IWE-3122 determine what and when supplemental examinations are required.	This is editorial change. Acceptable.
3410	Replaced the reference to Table IWE-3410-1 with a reference to subarticle IWE-3500.	Nonsignificant	This is editorial change. Acceptable.
3430	No change	N/A	

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
3500	No change	N/A	
3510	Reconciled acceptance standards with the IWE-2300 changes discussed above and the Table IWE-2500-1 changes discussed below by:	Previously examination requirements were contained in the acceptance standards of IWE-3500. This has been corrected by the addition of IWE-2300 as discussed above.	Owner-defined visual examination requirements do not provide uniformity and consistency industry wide. This is unacceptable unless the licensee provides specific acceptance standards. The licensee provided this information in its February 21, 2002, submittal. Acceptable.
	Adding the requirement that the owner shall define acceptance criteria for visual examination of containment surfaces;	This change directly corresponds to the addition of IWE-2310(a) as discussed above.	The licensee's visual examination acceptance criteria are defined in Containment Relief Request CRR-08, Proposed Alternatives, item 3). Acceptable.
	Removing the wording for Responsible Individual and for personnel qualifications; Combining 3510.2 and 3510.3 and removing specific VT-1 and VT-3 examination attribute wording; and	This change directly corresponds to the addition of IWE-2320; and the addition of IWE-2310(e)(1) and (2) as discussed above.	The is editorial change of rearranging the paragraph. Acceptable.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	Incorporating IWE-3511;3513,3514 and 3515 with changes into IWE-3510.	These changes correspond to the changes in the examination categories of Table IWE-2500-1 and to the removal of examination standards paragraphs per the addition of IWE-2310(e)(3) and (4).	This is editorial change of rearranging the paragraph. Acceptable.
	By the incorporation of IWE-3515 the acceptance standards for bolting were changed from referencing material specs and torque or tension limits to conditions affecting leak tight or structural integrity.	The resulting acceptance standards for bolting provide for more practical containment ISI program implementation without adversely affecting containment leak tight or structural integrity. The Appendix J, Type A test is considered sufficient for determining the leak-tight integrity of the penetration	The examination of bolting, seals and gaskets to determine their ability to maintain containment leak tight integrity as a separate inspection is considered unnecessary. The Appendix J, Type A test is considered sufficient for determining the leak-tight integrity of the penetration. Acceptable.
3511	Deleted subparagraph which addressed examination category E-B.	Examination category E-B has been incorporated into examination category E-A per the changes to Table IWE-2500-1	Examination category E-B has been merged with E-A, which is with in consistent with the changes to Table IWE-2500-1. The details of changes in Table IWE-2500-1 are discussed in the below. Acceptable
3512	Renumbered subparagraph to IWE-3511. Reconciled acceptance	The subparagraph was renumbered based on the deletion of previous	This is editorial change as discussed in comments column under IWE-3511. Acceptable.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	standards with the IWE-2300 changes discussed above and the Table IWE-2500-1 changes discussed below	IWE-3511 as discussed above. Previously examination requirements were contained in the acceptance standards of IWE-3500. This has been corrected by the addition of IWE-2300 as discussed above. This change is based on regulatory requirements excluding containment welds, and elimination of any direct reference to containment weld examination in the Code.	
	Added the requirement that the owner shall define acceptance criteria for visual examination of containment surfaces;	This change directly corresponds to the addition of IWE-2310(a) discussed above.	The licensee's visual examination acceptance criteria are defined in relief request CRR-08, Proposed Alternative, item 3), Acceptable.
	Combined 3512.2 and 3512.3 with changes into 3511.2 and removed specific VT-1 examination attribute wording; and	These changes directly correspond to the addition of IWE-2310(e)(1) and (2) discussed above and eliminate potential duplication or contradiction of requirements.	This is a editorial change of rearranging the paragraphs. Acceptable.
	Reworded ultrasonic examination subparagraph and limited the UT to Class MC components.	This change eliminates the need to perform the UT examinations on metallic liners of Class CC	Licensee states it will apply provisions of IWE-3511.3 to both Class MC and metallic liners of Class CC components. This is acceptable.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
		components.	
3513 3514 3515	Deleted subparagraphs IWE-3513, 3514 and 3515 which addressed examination categories E-D, E-F, and E-G, respectively.	Examination categories E-D, E-F and E-G have been incorporated into examination category E-A per the changes to Table IWE-2500-1 discussed below.	Acceptable. The regulations do not require the examination of containment welds.
4100	No change	N/A	
5200	No change	N/A	
5210	No change	N/A	
5220	ASME XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	Editorial change has no safety or quality significance. Acceptable.
5221	ASME XI generic change from repair and/or replacement to repair/replacement activities. Removed the quotation of 10 CFR 50 Appendix J paragraph IV.A.	Nonsignificant - the requirement to meet the requirements of the Appendix J paragraph referenced is not affected by removing the quoted Appendix J paragraph.	Editorial change has no safety or quality significance. Acceptable.
5222	ASME XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	Editorial change has no safety or quality significance. Acceptable.
5240	Replaced a reference to IWA-5240 with requirements to perform detailed visual examination of repair/replacement areas during pressure tests.	The types of examinations performed in the containment program are all contained in IWE-2300. The requirements of IWA-5240 to detect evidence of leakage	Referencing IWE-2300, visual examination in lieu of IWA-5240, visual examination provides more focuses on containment integrity than the general requirements

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
		will be satisfied through the use of the detailed visual examination of IWE-2300.	(IWA-5240). Acceptable.
5250	Changed Corrective Measures to Corrective Action in the heading. ASME XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	Editorial change has no safety or quality significance. Acceptable
7100	No change	N/A	
Table 2411-1	No change	N/A	
Table 2412-1	Replaced the separate entries for 1st and successive intervals with one entry for All intervals. Added Note (1) which states that if the first period completion percentage for any examination category exceeds 34%, at least 16% of required examinations shall be performed in the second period.	Nonsignificant - The previous requirements for the 1st and successive intervals are identical. Therefore combining the entries does not affect any requirements. Ensures allocations of examinations are done throughout the 10-year interval. The IWE change is consistent with changes made in IWB, IWC, IWD, and IWF.	Editorial change has no safety or quality significance. Acceptable. This change provides more flexibility in scheduling examination, but ensures full examination. Acceptable.
Table 2500-1 Cat. E-A	E1.11 Revised frequency of examination from *prior to each	Removing the requirement to coordinate examinations with type A	By removing the requirement to coordinate examinations with type

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	type A test" to "100% during each period".	tests, and requiring a general visual every inspection period is more restrictive. This change corresponds with the rule as stated in 10 CFR 50.55a. Appendix J, Option A, requires periodic (one each period) Type A tests. Appendix-J, Option B, is based on historical performance and requires periodic visual inspection for Type A tests.	A tests allows for more efficient containment ISI program implementation without adversely affecting containment integrity. Also, the requirement to perform general visual examinations every inspection period increases the total number of examinations on the containment surface in the interval. Acceptable.
Table 2500-1 Cat. E-A (cont)	E1.12 Re-designated item from "accessible surface areas" to "wetted surfaces of submerged areas". Replaced examination method VT-3 with general visual.	Replacing the accessible surface area designation (which is now included in E1.11) with wetted surface areas (which were previously included in E1.12 footnote 4) does not eliminate or reduce any required examination areas. The conditions of distress which would be detected by a VT-3 examination are the same conditions that would be detected by a general visual examination (refer to the evaluation of IWE-2300 above). The	Acceptable with licensee's commitments for general visual examination requirements and acceptance criteria as stated in its February 21, 2002, submittal.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
		requirement to perform a detailed examination on any suspect area has not changed. The new requirement in item E1.11 to perform general visual examinations every inspection period increases the total number of examinations on the containment surface in the interval. The overall impact of this change is to increase the level of quality and does not adversely affect the safety of the containment inspection program.	
Table 2500-1 Cat. E-A (cont)	E1.20 Added BWR to item description. Replaced examination method VT-3 with general visual.	This item is not applicable to the Palisades' containment.	N/A
	E1.30 Added item for moisture barriers with a general visual required each period.	Moisture barriers were previously included in examination category E-D with a VT-3 required each interval. Examining moisture barriers more frequently will assure reliable detection of conditions adverse to containment integrity.	Acceptable with licensee's commitments for general visual examination requirements and acceptance criteria as stated in its February 21, 2002, submittal.
	All item no.'s - Replaced reference to IWE-3510 for examination requirements with IWE-2310.	Nonsignificant - Previously some examination requirements were contained in IWE-3500. They now	This is editorial change. Acceptable.

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	Notes - Revised to specifically include welds and bolting as part of the pressure retaining boundary requiring examination.	exist in IWE-2300 as discussed above. Welds and bolting were previously included in examination categories E-B, E-F and E-G. Including these items in the examination category for the containment pressure retaining boundary provides for more efficient program implementation without adversely affecting component integrity.	This is editorial change. Acceptable.
Table 2500-1 Cat. E-B	Deleted examination category which addressed pressure retaining welds.	Pressure retaining welds are now included in examination category E-A as addressed above. 10 CFR 50.55a makes containment weld inspections optional.	10 CFR 50.55a makes containment weld inspections optional. Acceptable.
Table 2500-1 Cat. E-C	E4.11 Replaced examination method VT-1 with detailed visual. E4.12 Added grid line intersections to description of parts examined.	The conditions of distress or deterioration which would be detected by a VT-1 are the same conditions that will be detected by the described detailed visual examination, as discussed in IWE-2300 above. The added wording clarifies inspection requirements and	Acceptable with licensee's commitments for detailed visual examination requirements and acceptance criteria as stated in its February 21, 2002, submittal. The recommended ultrasonic

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	Changed examination method from volumetric to ultrasonic thickness.	ensures repeatability in the location of subsequent thickness measurement points.	gridline sample requirements provide a more practical approach to augmented container examinations. Acceptable.
	All item no.'s - Added examination requirement paragraph number references. Updated references in Acceptance Standard and Extent and Frequency columns.	Previously no references existed for examination requirements. These requirements have been added to IWE-2300 and 2500 as discussed above. Adding new references and updating paragraph numbers ensure proper requirements are applied to examinations.	This is editorial change. Acceptable.
	Notes - Changed note 2 from requiring augmented examination until an area remains unchanged for three consecutive inspection periods to the next inspection period. Deleted note 3 which discussed inspection deferrals.	Three inspection periods cover a ten year interval. Performing augmented examinations for at least two periods while continuing general visual examinations each period provides for more efficient program implementation without adversely affecting component integrity. Deletion of note 3 is nonsignificant. Change from three consistent with the requirements for class 2 components.	Change from three consecutive periods to one period is consistent with the requirements for Class 2 components. Acceptable.
Table 2550-1 Cat. E-D	Deleted examination category which addressed seals, gaskets and moisture barriers.	Moisture barriers have been included in examination category E-A as addressed above. Seals and	Appendix J, Type A test is considered sufficient for determining the leak-tight integrity

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
		gaskets previously required examination once per an interval with effectively an acceptance criteria of leak tightness. Leak tight integrity is verified during each 10 CFR 50 Appendix J leak test. Removing these inspection items provides for more efficient program implementation without adversely affecting component integrity.	of seals and gaskets. Acceptable.
Table 2550-1 Cat. E-F	Deleted examination category which addressed dissimilar metal welds.	Dissimilar metal welds are now included in examination category E-A as addressed above.	10 CFR 50.55a makes containment weld inspections optional. Acceptable.
Table 2550-1 Cat. E-G	Deleted examination category which addressed pressure retaining bolting.	Pressure retaining bolting is now included in examination category E-A as addressed above. 1992 Edition required VT-1 of bolting when a connection is disassembled. The 1998 Edition requires general visual, in place, with no requirement when joint is disassembled.	1992 Edition required VT-1 of bolting when a connection is disassembled. Licensee has committed to this. The licensee provided this additional information regarding inspection of bolted connections when connection is disassembled in its February 21, 2002, submittal.
Table 2550-1 Cat. E-P	Deleted examination category which addressed 10CFR50 Appendix J testing for all pressure retaining components.	Appendix J testing is mandated by plant technical specifications. Removing this duplicate requirement from IWE does not adversely affect	Deleting Examination Cat. E-P, provides relief to licensee without affecting component integrity. Since Appendix J test is already

IWE Paragraph (1992 Ed.)	Changes between IWE 1992 Edition/Addenda. and the 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
		component integrity.	required by Technical Specification. Acceptable.
-----	Added new Table IWE-2500-2 - Ultrasonic Thickness Measurements For Augmented Examinations - which details gridline spacing and thickness measurement requirements.	The new requirements provide for consistency and repeatability in obtaining thickness measurements and thus assure the reliable detection of conditions adverse to containment integrity.	The new requirements provide consistency and repeatability in obtaining thickness measurements and thus assure the reliable detection of conditions adverse to containment integrity. Acceptable.
Table IWE-3410-1	Deleted table.	Nonsignificant - the contents of the previous table are adequately addressed in IWE-3500.	This is a editorial change. Acceptable.

PALISADES PLANT -- IWL COMPARISON

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda, and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
1100	ASME Section XI generic wording change from repair, replacement and/or modification terms to repair/replacement activities	Nonsignificant	This is editorial change. Acceptable.
1200	No change	N/A	
1210	No change	N/A	
1220	No change	N/A	
2100	Changed "Inspection" to "General" in heading. Provided reference to IWA-2000 with exceptions from IWA-2210 and 2300 for visual examinations and for qualification of visual examination personnel.	Nonsignificant The additional general requirements invoked by reference to IWA-2000 where none were referenced previously further assure containment integrity. The exceptions from IWA-2210 and IWA-2300 are significant in that the related previous requirements have been changed and incorporated into IWL-2310.	This is editorial change. Acceptable. IWL examinations will not require the visual examinations identified in IWA-2100. Personnel will not have to be certified to CP-189 (IWA-2300), whereas the NMC Containment Inspection Program will specify the requirements for personnel certification in accordance with SNT-TC-1A and CP-189 as specified in its February 21, 2002, submittal. This is acceptable.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda. and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
2200	Deleted reference to IWL-2500.	The reference to IWL-2500 in the 1992 Addenda was incorrect. The preservice examination requirements were always to be performed in accordance with IWL-2210, IWL-2220, and IWL-2230. This is a non-significant change associated with a subsequent inquiry.	This is editorial change. Acceptable.
2210	No change	N/A	
2220	No change	N/A	
2230	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
2300	No change; content changes are in IWL-2310.	The philosophy of Subsection IWL to be an engineering inspection program under the direction of the Responsible Engineer is contained in this revised subarticle. This individual will be accountable for the entire inspection program which will meet or exceed the level of quality and safety defined in the	The specific paragraphs IWL-2310, and IWL-2320 are changed as discussed below. The NMC has submitted additional commitments, as detailed in Containment Relief Request CRR-09. Reference to the applicable additional commitments are identified in the discussion below.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda, and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
		1992 Edition.	
2310	The changes to IWL-2310 are summarized by the following four items: (a) replaced VT-1C and VT-3C visual examination terminology with new general visual and detailed visual examination terms.	(a) The VT-3C and VT-1C inspections of IWL have been replaced by Owner (Responsible Engineer) defined general and detailed visual examinations, respectively. The general and detailed visual examinations are equivalent to the VT-3C and VT-1C examinations in terms of assessing the general condition and potential for deterioration within the containment system. The definition of critical examination items and acceptable conditions has not changed. Therefore, any conditions adversely affecting quality or safety are not impacted by this change.	The owner-defined visual examination requirements of the 1998 Edition do not provide uniformity and consistency throughout the industry. The general and detailed visual examinations are equivalent to the VT-3C and VT-1C examinations in terms of assessing the general condition and potential for deterioration within the containment system. The licensee provided details of its visual examination methods in its February 21, 2002, submittal. The licensee's proposed alternative is acceptable.
	(b) Eliminated reference to IWA-2210 for illumination levels,	(b) Direct visual examination is not practical on all areas of	The licensee's visual examination requirements addressing illumination,

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda, and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	examination distances and resolution requirements.	containment surfaces. The previous VT-3 requirements precluded the ability to demonstrate that remote visual examination was equivalent to direct visual examination. Providing examination attributes in IWL as opposed to referencing the generic requirements of IWA focuses the visual examination on areas important to the verification of containment integrity.	examination distances, and resolution requirements are defined in Containment Relief Request CRR-09, Proposed Alternatives, item 2), in its February 21, 2002, submittal. This is acceptable.
	(c) Replaced reference to IWA-2300 for concrete examination personnel qualification requirements with provisions for the owner to define the examination personnel qualification requirements.	(c) Requiring an owner defined program provides for more efficient program implementation by permitting personnel performing containment examinations to be qualified to written practices that are more consistent to those used for other NDE personnel.	The licensee will meet all the requirements of IWA-2300 of the 1992 Addendum as specified in Containment Relief Request CRR-09, Proposed Alternative, item 2, in its February 21, 2002, submittal. This is acceptable.
	(d) Added requirement for the Owner to define requirements for visual examination of tendon anchorage hardware, wires, or stands.	(d) Examination of wires or strands are performed by qualified subcontract quality control personnel as part of a tendon surveillance inspection contact. The examinations meet the	The licensee will meet all the requirements of IWA-2300 of the 1992 Addendum as specified in Containment Relief Request CRR-09, Proposed Alternative, item 2, in its February 21, 2002, submittal. This is

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda. and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
		requirements of IWL-2523.2.	acceptable.
2320	Changed wording slightly. Made the ASME Section XI generic change from repair and/or replacement to repair/replacement activities. Added a responsibility for the Responsible Engineer to review certain pressure test procedures.	Nonsignificant - clarifies wording Nonsignificant The added pressure test responsibilities for the Responsible Engineer ensures proper performance of pressure testing activities.	This is editorial change. Acceptable. This is editorial change. Acceptable. The added additional responsibility for the Responsible Engineer ensures completeness and consistency in pressure testing activities. Acceptable.
2400	No change	N/A	N/A
2410	Added to paragraph (c) a condition which allows for deferral of concrete visual examinations to the next scheduled plant outage for inaccessible portions of concrete surface.	This change insures that all surfaces that can be inspected are examined, but recognizes the personnel safety of the inspectors.	Acceptable, licensee states that credit for both intervals will not be taken.
2420	No change	N/A	
2421	Changed wording for sites with more than one plant. Changed	Nonsignificant - clarifies wording and accommodates plant life	This is editorial change. Acceptable.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda. and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	frequencies by adding "and every 10 years thereafter".	extension.	
2500	No change	N/A	
2510	Changed heading.	Nonsignificant	This is editorial change. Acceptable.
	Changed wording consistent with the changes to IWL-2310 addressed above.	Nonsignificant	This is editorial change. Acceptable.
	In (a), eliminated the reference to the specific revision (R-68) of ACI 201.1.	This is an editorial change for consistency in the Code. The revision of referenced documents are contained in Table IWA-1600-1 which still requires the same revision as specified in the 1992 Addenda.	This is editorial change. Acceptable.
	Added two new subparagraphs (b) and (c) providing more detailed examination requirements for tendon anchorage areas.	The added details ensure proper tendon anchorage area examinations. The addition of (c) is consistent with the rule in 10 CFR 50.	The added details ensure proper tendon anchorage area examinations. The addition of (c) is consistent with the rule in 10 CFR 50. Increase level of quality and safety of examinations. Acceptable.
2520	No change	N/A	
2521	Changed random sample	Nonsignificant - the random	This is editorial change. Acceptable.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda. and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	wording in (a)	sample was always by type of tendon as shown in Table IWL-2521-1.	
2522	Changed the heading and added a subparagraph to address tendon elongation.	The added details ensure proper tendon examinations.	The added details ensure proper tendon examinations. Acceptable.
2523	No change	N/A	
2524	Changed wording consistent with the changes to IWL-2310 addressed above.	Nonsignificant	Acceptable with licensee's commitments for visual examination requirements and acceptance criteria as stated in its February 21, 2002, submittal.
2525	Changed wording for sample analysis.	Nonsignificant	This is editorial change. Acceptable.
2526	Added a subparagraph addressing replacement of corrosion protection medium.	The added details ensure tendon integrity and provide the Responsible Engineer options from which to specify corrosion medium replacement.	The added details ensure tendon integrity . Acceptable.
3100	No change	N/A	
3110	No change	N/A	
3111	ASME Section XI generic change from repair and/or	Nonsignificant	This is editorial change. Acceptable.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda, and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	replacement to repair/replacement activities.		
3112	No change	N/A	
3113	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
3120	No change	N/A	
3200	No change	N/A	
3210	Removed the word concrete from the heading.	Nonsignificant	This is editorial change. Acceptable.
3211	Added tendon end and anchorage areas to the scope of the subparagraph and added corrosion protection medium leakage and end cap deformation as acceptance criteria attributes. ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	The added details ensure tendon integrity and provide the Responsible Engineer options from which to specify corrosion medium replacement. Insignificant	The added details ensure tendon integrity . Acceptable. This is editorial change. Acceptable.
3212	No change	N/A	

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda. and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
3213	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
3220	No change	N/A	
3221	Added acceptance criteria attributes for pre-stress loss prediction, tendon elongation, free water content and corrosion protection medium reduction.	The additions to the acceptance criteria of IWL-3221 have provided further assurance that the Responsible Engineer will evaluate all potential conditions that could impact the post-tensioning system integrity. These enhancements to the 1998 Edition increase the level of quality of the inspection program and have no adverse impact on the safety of the inspection program described in 1992 Edition. These additions are consistent with the requirements of the rule as stated in 10 CFR 50.55a. .	This is enhancement to the acceptance examination. Acceptable.
3222	No change	N/A	
3223	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda, and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
3300	No change	N/A	
3310	Added applicability for other plants at the same site. ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	The NMC is a single unit site. Nosignificant Nonsignificant	This nonsignificant change is for site with more than one unit. Acceptable. The is editorial change. Acceptable.
3320	Deleted paragraph which addressed engineering evaluations being subject to review by authorities.	Nonsignificant - there were no submittal or retention requirements changed by the deletion of the subparagraph. The regulations do not require licensees to submit their containment inspection programs.	Acceptable. The regulations do not require licensees to submit their containment inspection programs.
4000	ASME Section XI changes from repair and/or replacement to repair/replacement activities.	Nonsignificant - all related repair and replacement requirements have been consolidated into IWL-4000.	This is editorial change. Acceptable.
4100	No change	N/A	
4110	Exempted grease cups and installation screws from the scope.	Nonsignificant - the exempted items are non structural items.	The exempted items are non structural items. Acceptable.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda. and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
4120	Reworded to use the new repair/replacement activity wording and combined paragraph (a) and (b). Changed the paragraph reference to the Repair/Replacement Program and Plan to address paragraph renumbering in IWA-4000.	Nonsignificant	This is editorial change. Acceptable.
4200	ASME XI generic change from repair and/or replacement to repair/replacement activities. Added a paragraph number (IWL-4210) to the information included under IWL-4200 and changed terminology from repair and/or replacement to repair/replacement activities.	Nonsignificant Nonsignificant, this is a paragraph numbering change from the 1992 Edition.	This is editorial change. Acceptable. This is editorial change. Acceptable.
4210	Changed paragraph number to 4220, removed the word repair from heading and changed referenced paragraph numbers	Nonsignificant	This is editorial change. Acceptable.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda. and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	consistent with the addition of a new paragraph 4210 above.		
	Changed wording consistent with the changes to IWL-2310 addressed above.	Nonsignificant	This is editorial change. Acceptable.
	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
	Changed repair material to new material in several places.	Nonsignificant	This is editorial change. Acceptable.
4220	Changed paragraph number to 4230.	Nonsignificant	This is editorial change. Acceptable.
4230	Changed paragraph number to 4240 and clarified by removing the word repair.	Nonsignificant	This is editorial change. Acceptable.
	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
	Added detailed requirements for the contents of a	The added detailed requirements ensure proper repair/replacement	The added detailed requirements ensure proper repair/replacement plan

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda. and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	repair/replacement plan.	plan development for post-tensioning systems.	development for post-tensioning systems. Acceptable.
4300	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
5100	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
5200	No change	N/A	
5210	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
5220	No change	N/A	
5230	Changed wording by removing some specific IWE related requirements while maintaining the reference to IWE-5000.	Nonsignificant - the removed wording was IWE specific and is contained in IWE-5000.	This is editorial change. Acceptable.
5240	Deleted paragraph which addressed the scheduling of	Nonsignificant - the schedule of pressure tests are contained in	This is editorial change. Acceptable.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda, and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	pressure tests.	IWE-5000 as referenced in IWL-5230.	
5250	Changed wording regarding the role of the Responsible Engineer in pressure test activities.	The clarified role of the Responsible Engineer ensures proper pressure test procedures and examinations.	This is editorial change. Acceptable.
	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
	Changed visual examination terminology consistent with the changes to IWL-2310 addressed above.	The visual examination terminology changes are discussed in IWL-2310 above.	Acceptable with licensee's commitments for visual examination requirements and acceptance criteria as stated in its February 21, 2002, submittal.
5260	Changed heading from Corrective Measures to Corrective Action.	Nonsignificant	This is editorial change. Acceptable.
	ASME Section XI generic change from repair and/or replacement to	Nonsignificant	This is editorial change. Acceptable.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda, and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
	repair/replacement activities.		
5300	ASME Section XI generic change from repair and/or replacement to repair/replacement activities.	Nonsignificant	This is editorial change. Acceptable.
7000	Deleted Article including IWL-7100, 7110, 7120 consistent with the IWL-4000 changes above.	Nonsignificant - all related repair and replacement requirements have been incorporated into IWL-4000.	This is editorial change. Acceptable.
Table 2500-1	Changed item L1.11 from all areas to all accessible areas.	The addition of accessible areas provides consistency with the requirements of the scope, of IWL-1000.	The changed item L1.11provides for more practical examination implementation than previous requirements. Acceptable.
	Changed the VT-3C, VT-1C, and VT-1 examinations with general and detailed visual examination respectively, to be consistent with the terminology in paragraph IWL-2310 changes above. Note: the item L1.12 examination method in the 1998 Edition contains a publication error. The "general visual" should be "detailed visual".	The visual examination terminology changes are discussed in IWL-2310 above. The acceptability of the change to the general and detailed visual inspections is discussed with IWL-2310.	Acceptable with licensee's commitments for visual examination requirements and acceptance criteria as stated in its February 21, 2002, submittal.

IWL Paragraph (1992)	Changes between IWL 1992 Edition/Addenda. and the IWL 1998 Edition	Licensee's statement of significance and/or basis for use as an alternative examination	Comments
Table 2521-1	Changed inspection periods to state every 5th year in lieu of listing out each year and changed note 2 for having to meet acceptance criteria from "each of the earlier inspections" to "for the last 3 inspections".	Nonsignificant - accommodates plant life extensions for tendon examinations.	The repetitive periods of tendon inspection every 5th year is provided in Note 4 instead of previously shown in the table. Acceptable.
Table 2525-1 Table 2525-1 (cont)	Added optional test methods for corrosion protection medium analysis. Added acceptance criteria for water content.	Nonsignificant - additional test method options provides for more practical test implementation. Previous acceptance criteria was noted as "in course of preparation." Providing the acceptance criteria assures consistent implementation.	The additional test method options provides for more flexibility. Acceptable. Providing the acceptance criteria of water contents assures consistent in implementation. Acceptable.

Enclosure 10

NMC Response to August 27, 2005, Commitment Regarding Compressed Air Aging Management Program

(1 Page)

Enclosure 10
NMC Response to August 27, 2005, Commitment Regarding Compressed Air Aging Management Program

August 27, 2005, Commitment Regarding Compressed Air Aging Management Program

NMC Letter Dated August 27, 2005 stated,

NMC will develop a new Compressed Air Program for Palisades. This program will manage aging in carbon steel components within the compressed, saturated or moist air environments of the Compressed air systems. Compressed Air System descriptions for LRA Appendices A and B will be submitted for NRC review and approval by October 31, 2005. In addition, LRA Appendix A and B descriptions of the One-Time Inspection Program, revised to delete reference to management of compressed air components, will be provided.

NMC Response to August 27, 2005, Commitment Regarding Compressed Air Aging Management Program

Enclosure 11 provides the Compressed Air Program description as a new LRA Section B2.1.22, entitled "Compressed Air Program."

Enclosure 12 provides the FSAR description of the Compressed Air Program as a new LRA Section A2.22, entitled "Compressed Air Program."

The conforming changes to the One-Time Inspection Program to remove reference to compressed air components are as follows:

On page B-97, under heading **Program Description**, third paragraph, delete the bullet,

- To verify, for components in the Compressed Air System, that there are no aging effects requiring management in the dry air environment.

On page B-99, under heading **Scope of Program**, delete the bullet,

- Verification, for components in the Compressed Air System, that there are no aging effects requiring management in the dry air environment.

Enclosure 11
LRA Section B2.1.22, Compressed Air Program Description

(7 Pages)

Enclosure 11
LRA Section B2.1.22, Compressed Air Program Description

A new LRA Section B2.1.22 is hereby added as follows:

B2.1.22 Compressed Air Monitoring Program

Program Description

The Compressed Air Monitoring Program manages aging affects on the internal surfaces of carbon steel, low-alloy steel, copper alloys and stainless steel components within the scope of License Renewal that are exposed to a compressed air environment. These include components such as piping, traps, heat exchangers, filter housings, dryer housings, accumulators, and valve bodies made of materials such as carbon steel, low alloy steel, copper alloys and stainless steel. The program manages the aging effects of General, Crevice and Pitting Corrosion and Stress Corrosion Cracking. The program includes maintenance of the compressors, dryers and filters associated with the plant Instrument Air System, High Pressure Air System, Feedwater Purity Air System, and associated back-up systems.

NUREG-1801 Consistency

The Compressed Air Monitoring Program is an existing program that is consistent with NUREG-1801, Section, XI.M24 "Compressed Air Monitoring."

Exceptions to NUREG-1801

None.

Enhancements

None.

Aging Management Program Elements

The key elements of the Compressed Air Monitoring Program are described below. The results of an evaluation of each key element against NUREG-1801, Section, XI.M24, "Compressed Air Monitoring." are also provided.

Scope of Program

The Compressed Air Systems (CAS) consists of the Instrument Air System, the High Pressure Air System, various backup systems, and the Feedwater Purity Air system.

The Instrument Air System is a non-safety related system that is required for normal plant operation. The system is designed to provide a reliable supply of dry, oil-free air for instruments and controls, and for service air requirements.

Three air cooled, oil free compressors are provided for the system, each with an in-line air receiver tank. Two have after-coolers served by critical service water, with the third compressor after-cooler served by non-critical service water. The air receivers are connected to a common discharge air header. The common air header branches into two separate air headers, one to the instrument air dryer and filter assembly, and one to the Service Air System. The instrument air headers are divided into branch lines supplying the Turbine Building, Containment Building, Intake Structure, and Auxiliary Building.

The High Pressure Air System consists of three oil-lubricated air compressors, each with its own dryer and air receiver. One of these High Pressure Air Compressors resides in the Turbine Building and is non-safety related, while the other two are located in the East and West Safeguards Rooms. The compressors in the East and West Safeguards Rooms supply air to safety-related air receivers which supply air to valves located in the two Safeguards Rooms. The non-safety related Turbine Building system can supply either the East or West Safeguards Systems in any plant mode. Moisture is removed from the high pressure air by dryers that are in series with the compressors' air-cooled aftercoolers. Any remaining moisture is removed by periodic blowdown of the air receivers and the low point drains. The safety related portion of the High Pressure Air System in the East and West Safeguards Rooms extends from the air receivers to the control valves serviced and is isolated from the non-safety related portion by check valves.

Backup systems consist of bottled nitrogen stations, bottled air station, bulk nitrogen, local accumulators, and manual valve actuators.

The Feedwater Purity system is not a safety-related system. When manually aligned the system is capable of supplying air to the Instrument and Service air systems. During the infrequent occasions that the Feedwater Purity Air System is aligned to supply the instrument air system, the Feedwater Purity Air dryers are in service.

This element is consistent with NUREG-1801, Section XI.M24, "Compressed Air Monitoring."

Preventive Actions

The use of oil free compressors in the instrument air system ensures that no hydro carbons are introduced into the system. All critical end-use devices are equipped with pre-filters that meet or exceed the manufacture's recommendation for particulate size.

During the infrequent instances when the Feedwater Purity Air System is aligned to supply the instrument air system, the air passes through self cleaning coalescing filters and dryers to ensure the same high quality air is delivered to the instrument air system.

The High Pressure Air System has a combination of filters, dryers, and system blowdowns ensures that hydro carbons are not introduced into the end use devices. All critical end-use devices are equipped with pre-filters that meet or exceed the manufacture's recommendation for particulate size.

The Program includes maintenance of the Compressors, Drain Traps, Dryers, and Filters.

This element is consistent with NUREG-1801, Section XI.M24, "Compressed Air Monitoring."

Parameters Monitored, Inspected, and/or Tested

The Instrument Air System is managed as follows: The air flow is monitored twice daily which would provide indication of any excessive system leakage. The dew point is monitored twice daily to ensure the system dew point is maintained less than 35°F. The use of oil free compressors ensures that no hydro carbons are introduced into the system. All critical end-use devices are equipped with pre-filters that meet or exceed the manufacture's recommendation for particulate size.

During the infrequent instances when the Feedwater Purity Air System is aligned to supply the instrument air system, the air passes through self cleaning coalescing filters and dryers to ensure the same high quality air is delivered to the instrument air system.

The High Pressure Air System is managed as follows: The dew point is monitored daily to ensure the system dew point is maintained less than 35°F. The High Pressure Air System performance verification test verifies compressor capacities and system leakage. The combination of filters, dryers, and system blowdowns ensures that hydro carbons are not introduced into the end use devices. All critical end-use devices are equipped with pre-filters that meet or exceed the manufacture's recommendation for particulate size.

The Compressed Air Monitoring Program includes compressed air system training, Off Normal Procedures (ONP) and Emergency Operating Procedures (EOP). This ensures that the Compressed Air Monitoring Program is consistent with the requirements/ recommendations of ASME OM-S/G-1998, Part 17, ISA-7.0.01-1996, EPRI NP-7079, and EPRI TR-108147.

This element is consistent with NUREG-1801, Section XI.M24, "Compressed Air Monitoring."

Detection of Aging Effects

In the instrument air system the air flow is monitored twice daily which would provide indication of any excessive system leakage. All critical end-use devices are equipped with pre-filters that meet or exceed the manufacture's recommendation for particulate size. Any increase in frequency or extent of fouling of the pre-filters would indicate degradation of the piping and equipment. Any abnormal operation of components served by the compressed air system would be readily apparent to the plant operations staff and appropriate corrective actions would be initiated.

The High Pressure Air System performance verification test verifies compressor capacities and system leakage. All critical end-use devices are equipped with pre-filters that meet or exceed the manufacture's recommendation for particulate size. Any increase in frequency or extent of fouling of the pre-filters would indicate degradation of the piping and equipment. Any abnormal operation of components served by the compressed air system would be readily apparent to the plant operations staff and appropriate corrective actions would be initiated.

This element is consistent with NUREG-1801, Section XI.M24, "Compressed Air Monitoring."

Monitoring and Trending

The Instrument Air System is managed as follows: The air flow is monitored twice daily which would provide indication of any excessive system leakage. The dew point is monitored twice daily to ensure the system dew point is maintained less than 35°F. All maintenance activities (Filter, Dryer, Compressor, and Drain Traps) contain inspection requirements. Any accumulation of particulates or hydro carbons would immediately be documented and evaluated.

During the infrequent instances when the Feedwater Purity Air System is aligned to supply the instrument air system, the air passes through self cleaning coalescing filters and dryers to ensure the same high quality air is delivered to the instrument air system.

The High Pressure Air System is managed as follows: The dew point is monitored daily to ensure the system dew point is maintained less than 35°F. The High Pressure Air System performance verification test verifies compressor capacities and system leakage. All maintenance activities (Filters, Dryers, and Compressors) contain inspection requirements. Any accumulation of particulates or hydro carbons would immediately be documented and evaluated.

This element is consistent with NUREG-1801, Section XI.M24, "Compressed Air Monitoring."

Acceptance Criteria

The Instrument Air System is managed as follows: The air flow is monitored twice daily and has an acceptance value of less than 160 scfm which is less than the 200 scfm capacity of a single compressor (The system consists of two 200 scfm compressors and one 320 scfm compressor.) The dew point is monitored twice daily and has an acceptance value of minus 40°F which is significantly better than the requirements of ANSI/ISA-7.0.01-1996. The use of oil free compressors ensures that no hydro carbons are introduced into the system. All critical end-use devices are equipped with pre-filters that meet or exceed the manufacture's recommendation for particulate size.

During the infrequent instances when the Feedwater Purity Air System is aligned to supply the instrument air system, the air passes through self cleaning coalescing filters and dryers to ensure the same high quality air is delivered to the instrument air system.

The High Pressure Air System is managed as follows: The dew point is monitored daily and has an acceptance value of minus 20°F which is significantly better than the requirements of ANSI/ISA-7.0.01-1996. The High Pressure Air System performance verification test includes the acceptance criteria for the compressor capacities and system leakage. The combination of filters, dryers, and system blowdowns ensures that hydro carbons are not introduced into the end use devices. All critical end-use devices are equipped with pre-filters that meet or exceed the manufacture's recommendation for particulate size.

This element is consistent with NUREG-1801, Section XI.M24, "Compressed Air Monitoring."

Corrective Actions, Confirmation Process, Administrative Controls

These elements are consistent with the corresponding NUREG-1801 aging management program elements. See Section B1.2 for further discussion.

Operating Experience

Palisades has a comprehensive Operating Experience Program (OEP) that monitors industry issues/events and assesses these for applicability to its own operations. In addition, the Palisades Corrective Action Program (CAP) is used to track, trend and evaluate plant issues/events. Those issues and events, whether external or plant specific, that are potentially significant to the Compressed Air Monitoring Program at Palisades are evaluated. The Compressed Air Monitoring Program is augmented, as appropriate, if these evaluations show that program changes will enhance program effectiveness.

Using the OEP & CAP to focus on industry and plant operating experience ensures that Compressed Air Monitoring Program issues are addressed in a

timely manner and that age related deterioration of SSC's within the scope of the Compressed Air Monitoring Program will be effectively managed throughout the license renewal period.

A review of industry operating experience associated with the Compressed Air Monitoring Program and aging reveals issues and instances related to:

- NRC IN 81-38 A NRC review of problems related to contamination of air systems in operating nuclear power plants indicates that air-operated systems and components will occasionally become inoperable because they are contaminated with oil, water, desiccant, and rust or other corrosion products.

- IN 87-28, IN 87-28 S1 A case study report entitled "Air Systems Problems at U.S. Light Water Reactors" discusses degradations of air systems and plant responses to air systems losses. It also highlights more than two dozen events in which, contrary to licensing assumptions, a safety-related system failed as a result of an air system degradation or failure.

- (LER) 50-237/94-005-3 On April 30, 1994, Dresden Unit 2 was manually scrammed from 99% power due to rapid depressurization of the instrument air 1A header. The loss of instrument air was due to a mechanical failure of the threaded portion of the carbon steel inlet air supply piping to the 2A/1A Receiver Tank. Pipe failure is attributed to uniform pipe wall thinning from moisture induced corrosion compounded by the original construction threaded pipe installation which was contrary to the original plant (butt weld) design specification. The 2A receiver tank and inlet pipe were replaced and the compressor returned to service. The safety significance of this event was minimal. The ADS system was available for reactor pressure relief and the LPCI and Core Spray systems were available for core cooling. A previous reactor scram on loss-of-instrument-air, reported on January 16, 1993, was caused by dryer and backup air supply system failures. Corrective actions from that event would not have prevented this event.

Palisades has incorporated the recommendations/requirements of various Generic Letters, Bulletins, and Information Notices into the program as applicable. None of the industry operating issues or instances reflect any new program issues.

A review of plant specific operating experience related to the Compressed Air Monitoring Program did not reveal any issues and instances related to aging.

This element is consistent with NUREG-1801, Section XI.M24, "Compressed Air Monitoring."

Conclusion

The Compressed Air Monitoring Program is an existing program that uses as its bases, various industry and NRC standards. This program is consistent with NUREG-1801, Section XI.M24, "Compressed Air Monitoring."

The Compressed Air Monitoring Program provides reasonable assurance that aging effects will be managed such that SSC's within the scope of this program will continue to perform their intended functions consistent with the current licensing bases for the period of extended operation.

Enclosure 12
LRA Section A2.22, Compressed Air Program FSAR Description

(1 Page)

Enclosure 12
LRA Section A2.22, Compressed Air Program FSAR Description

A new LRA Section A2.22 is hereby added as follows:

A2.22 Compressed Air Program

The Compressed Air Monitoring Program manages aging affects on the internal surfaces of carbon steel, low-alloy steel, copper alloys and stainless steel components within the scope of License Renewal that are exposed to a compressed air environment. These include components such as piping, traps, heat exchangers, filter housings, dryer housings, accumulators, and valve bodies made of materials such as carbon steel, low alloy steel, copper alloys and stainless steel. The program manages the aging effects of General, Crevice and Pitting Corrosion and Stress Corrosion Cracking. The program includes maintenance of the compressors, dryers and filters associated with the plant Instrument Air System, High Pressure Air System, Feedwater Purity Air System, and associated back-up systems.

Enclosure 13

NMC Response to August 27, 2005, Commitment Regarding Aging Management Review of Auxiliary Feedwater Pump Room Insulation

(1 Page)

Enclosure 13
NMC Response to August 27, 2005, Commitment Regarding Aging Management Review of Auxiliary Feedwater Pump Room Insulation

August 27, 2005, Commitment Regarding Aging Management Review of Auxiliary Feedwater Pump Room Insulation

NMC Letter Dated August 27, 2005 stated,

NMC will update the appropriate sections of the License Renewal Application to reflect inclusion of the Auxiliary Feedwater (AFW) Pump steam supply line insulation within the AFW Pump Room in scope for license renewal, and provide the results of the aging management review. This information will be submitted for NRC review and approval by October 31, 2005.

NMC Response to August 27, 2005, Commitment Regarding Aging Management Review of Auxiliary Feedwater Pump Room Insulation

In the response to RAI 3.4-1 on August 27, 2005, NMC identified the insulation on the steam supply piping to and from the steam driven Auxiliary Feedwater (AFW) Pump within the AFW Pump Room as in scope of license renewal. NMC further committed to submit the results of the aging management review of the insulation, and updates to the appropriate sections of the LRA to reflect its inclusion, by October 31, 2005. The aging management review results of the AFW steam supply piping insulation in the AFW Pump room and associated LRA update are provided below.

The aging management review of the calcium silicate piping insulation in a plant indoor air environment resulted in no aging effects requiring management. The LRA is hereby revised as follows to identify the steam supply piping insulation to and from the AFW pump in the AFW room as in scope of license renewal and to summarize the results of the aging management review:

On page 2-174, the last sentence of the first paragraph is revised to add the following to the end of the sentence "..., including thermal pipe insulation in the AFW pump room."

On page 2-174, in the first sentence of the fifth paragraph, "pipe insulation" is added to the list of components subject to an AMR.

On page 2-180 in Table 2.3.4-3, a new line item is added for component group "Pipe Insulation" with Intended Function "Structure Functional Support".

On page 3-207 in Section 3.4.2.1.3, "Calcium Silicate" is added to the list of materials of construction for the Feedwater System components.

On page 3-234, to the end of Table 3.4.2-3, a new line item for component type "Pipe Insulation" is added, with the following entries: Intended Function - Structure Functional Support; Material - Calcium Silicate; Environment - Plant Indoor Air; AERM - None; AMP - None Required; NUREG-1801 Volume 2 Line Item - [no entry]; Table 1 Item - [no entry]; Notes - J.

This completes NMC action for this commitment.