NMC
Committed to Nuclear Excellence

Palisades Nuclear Plant
Operated by Nuclear Management Company, LLC

September 18, 2003

10 CFR 50.55a(a)(3)(i)

U S Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

PALISADES NUCLEAR PLANT
DOCKET 50-255
LICENSE No. DPR-20
REQUEST FOR RELIEF FROM ASME SECTION XI, APPENDIX VIII, SUPPLEMENT 11 CODE REQUIREMENTS

Nuclear Management Company, LLC (NMC) requests approval for relief from the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI, 1995 Edition with the 1996 Addenda, Appendix VIII, Supplement 11, "Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds," examination requirements for the Palisades Nuclear Plant. The basis for the relief request is attached describing that the proposed alternative provides an acceptable level of quality and safety, pursuant to 10 CFR 50.55a(a)(3)(i).

The technical content of the request for relief is consistent with the Electrical Power Research Institute sponsored Performance Demonstration Initiative model, which was updated to reflect changes as a result of Nuclear Regulatory Commission requests for additional information made to other licensees.

NMC requests approval of the proposed relief request by July 1, 2004, to support Palisades upcoming refueling outage.

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

Daniel J. Malone
Site Vice-President, Palisades Nuclear Plant

CC Regional Administrator, USNRC, Region III
Project Manager, Palisades Nuclear Plant, USNRC, NRR
NRC Resident Inspector – Palisades Nuclear Plant

Enclosure with Attachment

A047

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

ENCLOSURE 1

NUCLEAR MANAGEMENT COMPANY, LLC

PALISADES NUCLEAR PLANT
DOCKET 50-255

SEPTEMBER 18, 2003

REQUEST FOR RELIEF FROM ASME SECTION XI,
APPENDIX VIII, SUPPLEMENT 11 CODE REQUIREMENTS

17 Pages Follow

ENCLOSURE 1
PALISADES NUCLEAR PLANT
REQUEST FOR RELIEF FROM ASME SECTION XI,
APPENDIX VIII, SUPPLEMENT 11 CODE REQUIREMENTS

COMPONENT IDENTIFICATION

The affected components are Palisades Nuclear Plant pressure retaining welds in piping, subject to American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel (BPV) Code, Section XI, 1995 Edition with the 1996 Addenda, Appendix VIII, Supplement 11, "Qualification Requirements for Full Structural Overlaid Wrought Austenitic Piping Welds," examination.

CODE REQUIREMENTS

The following paragraphs are examples of the code requirements for which relief is requested, all of which are contained within Appendix VIII, Supplement 11.

Paragraph 1.1(d)(1), requires that all base metal flaws be cracks.

Paragraph 1.1(e)(1) requires that at least 20 percent (%) but less than 40% of the flaws shall be oriented within $\pm$20 degrees of the pipe axial direction.

Paragraph 1.1(e)(1) also requires that the rules of IWA-3300 shall be used to determine whether closely spaced flaws should be treated as single or multiple flaws.

Paragraph 1.1(e)(2)(a)(1) requires that a base grading unit shall include at least three inches of the length of the overlaid weld.

Paragraph 1.1(e)(2)(b)(1) requires that an overlay grading unit shall include the overlay material and the base metal-to-overlay interface of at least six square inches. The overlay grading unit shall be rectangular, with minimum dimensions of two inches.

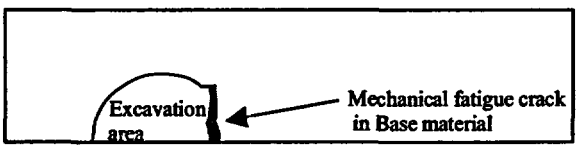
Paragraph 3.2(b) requires that all extensions of base metal cracking into the overlay material by at least 0.1 inches be reported as being intrusions into the overlay material.

BASIS FOR RELIEF

Nuclear Management Company, LLC (NMC) is requesting relief from Appendix VIII, Supplement 11, pursuant to 10 CFR 50.55a(a)(3)(i). NMC proposes an alternative to use the Performance Demonstration Initiative (PDI) Program for implementation of Appendix VIII, Supplement 11 requirements.

ENCLOSURE 1
PALISADES NUCLEAR PLANT
REQUEST FOR RELIEF FROM ASME SECTION XI,
APPENDIX VIII, SUPPLEMENT 11 CODE REQUIREMENTS

Paragraph 1.1(d)(1), requires that all base metal flaws be cracks. As illustrated below, implanting a crack requires excavation of the base material on at least one side of the flaw. While this may be satisfactory for ferritic materials, it does not produce a useable axial flaw in austenitic materials because the sound beam, which normally passes only through base material, must now travel through weld material on at least one side, producing an unrealistic flaw response. To resolve this issue, the PDI program revised this paragraph to allow use of alternative flaw mechanisms under controlled conditions. For example, alternative flaws shall be limited to when implantation of cracks precludes obtaining an effective ultrasonic response, flaws shall be semi-elliptical with a tip width of less than or equal to 0.002 inches, and at least 70 percent of the flaws in the detection and sizing test shall be cracks and the remainder shall be alternative flaws.



Relief is requested to allow closer spacing of flaws provided the flaws do not interfere with detection or discrimination. The existing specimens used to date for qualification to the tri-party (Nuclear Regulatory Commission (NRC)/Boiling Water Reactor Owners Group (BWROG)/Electrical Power Research Institute (EPRI)) agreement have a flaw population density greater than allowed by the current code requirements. These samples have been used successfully for all previous qualifications under the tri-party agreement program. To facilitate their use and provide continuity from the tri-party agreement program to Supplement 11, the PDI Program has merged the tri-party test specimens into their weld overlay program.

For example, the requirement for using IWA-3300 for proximity flaw evaluation in paragraph 1.1(e)(1) was excluded. Instead, indications will be sized based on their individual merits.

Paragraph 1.1(d)(1) includes the statement that intentional overlay fabrication flaws shall not interfere with ultrasonic detection or characterization of the base metal flaws.

Paragraph 1.1(e)(2)(a)(1) was modified to require that a base metal grading unit include at least one-inch of the length of the overlaid weld, rather than three inches.

ATTACHMENT TO ENCLOSURE 1
PALISADES NUCLEAR PLANT – REQUEST FOR RELIEF FROM
ASME SECTION XI, APPENDIX VIII, SUPPLEMENT 11 CODE REQUIREMENT

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
1.0 SPECIMEN REQUIREMENTS		
Qualification test specimens shall meet the requirements listed herein, unless a set of specimens is designed to accommodate specific limitations stated in the scope of the examination procedure (e.g., pipe size, weld joint configuration, access limitations). The same specimens may be used to demonstrate both detection and sizing qualification.	**No Change**	**No Change**
1.1 General. The specimen set shall conform to the following requirements.	**No Change**	**No Change**
(a) Specimens shall have sufficient volume to minimize spurious reflections that may interfere with the interpretation process.	**No Change**	**No Change**
(b) The specimen set shall consist of at least three specimens having different nominal pipe diameters and overlay thicknesses. They shall include the minimum and maximum nominal pipe diameters for which the examination procedure is applicable. Pipe diameters within a range of 0.9 to 1.5 times a nominal diameter shall be considered equivalent. If the procedure is applicable to pipe diameters of 24 inches or larger, the	**No Change**	*(b)* The specimen set shall consist of at least three specimens having different nominal pipe diameters and overlay thicknesses. They shall include the minimum and maximum nominal pipe diameters for which the examination procedure is applicable. Pipe diameters within a range of 0.9 to 1.5 times a nominal diameter shall be considered equivalent. If the procedure is applicable to pipe diameters of 24 inches or larger, the

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
specimen set must include at least one specimen 24 inches or larger but need not include the maximum diameter. The specimen set must include at least one specimen with overlay thickness within -0.1 inches. to +0.25 inches of the maximum nominal overlay thickness for which the procedure is applicable.		specimen set must include at least one specimen 24 inches or larger but need not include the maximum diameter. The specimen set **shall include specimens with overlays not thicker than 0.1 inches more than the minimum thickness, nor thinner than 0.25 inches of the maximum nominal overlay thickness for which the examination procedure is applicable.**
(c) The surface condition of at least two specimens shall approximate the roughest surface condition for which the examination procedure is applicable.	**No Change**	**No Change**
(d) Flaw Conditions		
(1) Base metal flaws. All flaws must be cracks in or near the butt weld heat-affected zone, open to the inside surface, and extending at least 75% through the base metal wall. Flaws may extend 100% through the base metal and into the overlay material; in this case, intentional overlay fabrication flaws shall not interfere with ultrasonic detection or characterization of the cracking. Specimens containing IGSCC shall be used when available.	(1) Base metal flaws. All flaws must be in or near the butt weld heat-affected zone, open to the inside surface, and extending at least 75% through the base metal wall. Intentional overlay fabrication flaws shall not interfere with ultrasonic detection or characterization of the cracking. Specimens containing IGSCC shall be used when available. (a) At least 70 percent of the flaws in the detection and sizing tests shall be cracks. Alternative flaw mechanisms, if used, shall	(1) Base metal flaws. All flaws must be in or near the butt weld heat-affected zone, open to the inside surface, and extending at least 75% through the base metal wall. Intentional overlay fabrication flaws shall not interfere with ultrasonic detection or characterization of the **base metal flaws.** Specimens containing IGSCC shall be used when available. At least 70 percent of the flaws in the detection and sizing tests shall be cracks **and the remainder shall be alternative flaws.** Alternative flaw

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
	provide crack-like reflective characteristics and shall be limited by the following: (1) Flaws shall be limited to when implantation of cracks precludes obtaining a realistic ultrasonic response. (2) Flaws shall be semielliptical with a tip width of less than or equal to 0.002 inches.	mechanisms, if used, shall provide crack-like reflective characteristics and shall be limited by the following: (a) **The use of Alternative flaws** shall be limited to when **the** implantation of cracks **produces spurious reflectors that are uncharacteristic of actual flaws.** (b) Flaws shall be semielliptical with a tip width of less than or equal to 0.002 inches.
(2) Overlay fabrication flaws. At least 40% of the flaws shall be non-crack fabrication flaws (e.g., sidewall lack of fusion or laminar lack of bond) in the overlay or the pipe-to-overlay interface. At least 20% of the flaws shall be cracks. The balance of the flaws shall be of either type.	**No Change**	**No Change**
(e) Detection Specimens		
(1) At least 20% but less than 40% of the flaws shall be oriented within ±20 degrees of the pipe axial direction. The remainder shall be oriented circumferentially. Flaws shall not be open to any surface to which the candidate has physical or visual access.	(1) At least 20% but less than 40% of the base metal flaws shall be oriented within ±20 degrees of the pipe axial direction. The remainder shall be oriented circumferentially. Flaws shall not be open to any surface to which the candidate has	(1) At least 20% but less than 40% of the base metal flaws shall be oriented within ±20 degrees of the pipe axial direction. The remainder shall be oriented circumferentially. Flaws shall not be open to any surface to which the candidate has

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
The rules of IWA-3300 shall be used to determine whether closely spaced flaws should be treated as single or multiple flaws.	physical or visual access.	physical or visual access.
(2) Specimens shall be divided into base and over-lay grading units. Each specimen shall contain one or both types of grading units.	(2) Specimens shall be divided into base metal and overlay fabrication grading units. Each specimen shall contain one or both types of grading units. Flaws shall not interfere with ultrasonic detection or characterization of other flaws.	(2) Specimens shall be divided into base metal and overlay fabrication grading units. Each specimen shall contain one or both types of grading units. Flaws shall not interfere with ultrasonic detection or characterization of other flaws.
(a)(1) A base grading unit shall include at least three inches of the length of the overlaid weld. The base grading unit includes the outer 25% of the overlaid weld and base metal on both sides. The base grading unit shall not include the inner 75% of the overlaid weld and base metal overlay material, or base metal-to-overlay interface.	*(a)(1)* A base metal grading unit shall include at least one-inch of the length of the overlaid weld. The base metal grading unit includes the outer 25% of the overlaid weld and base metal on both sides. The base metal grading unit shall not include the inner 75% of the overlaid weld and base metal overlay material, or base metal-to-overlay interface.	*(a)(1)***A base metal grading unit includes the overlay material and the outer 25% of the original overlaid weld. The base metal grading unit shall extend circumferentially for at least one-inch and shall start at the weld centerline and be wide enough in the axial direction to encompass one half of the original weld crown and a minimum of 0.50 inches of the adjacent base material.**
(a)(2) When base metal cracking penetrates into the overlay material, the base grading unit shall include the overlay metal within one-inch of the crack location. This portion	(a)(2) When base metal cracking penetrates into the overlay material, the base metal grading unit shall not be used as part of any overlay fabrication grading unit.	(a)(2) When base metal **flaws penetrate** into the overlay material, the base metal grading unit shall not be used as part of any overlay fabrication grading unit.

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
of the overlay material shall not be used as part of any overlay grading unit.		
(a)(3) When a base grading unit is designed to be unflawed, at least one-inch of unflawed overlaid weld and base metal shall exist on either side of the base grading unit. The segment of weld length used in one base grading unit shall not be used in another base grading unit. Base grading units need not be uniformly spaced around the specimen.	(a)(3) Sufficient unflawed overlaid weld and base metal shall exist on all sides of the grading unit to preclude interfering reflections from adjacent flaws.	(a)(3) Sufficient unflawed overlaid weld and base metal shall exist on all sides of the grading unit to preclude interfering reflections from adjacent flaws.
(b)(l) An overlay grading unit shall include the overlay material and the base metal-to-overlay interface of at least six-square-inches. The overlay grading unit shall be rectangular, with minimum dimensions of two inches.	*(b)*(l) An overlay fabrication grading unit shall include the overlay material and the base metal-to-overlay interface for a length of at least one-inch.	*(b)*(l) An overlay fabrication grading unit shall include the overlay material and the base metal-to-overlay interface for a length of at least one-inch.
(b)(2) An overlay grading unit designed to be unflawed shall be surrounded by unflawed overlay material and unflawed base metal-to-overlay interface for at least one-inch around its entire perimeter. The specific area used in one overlay grading unit shall not be used in another overlay grading unit. Overlay grading units need	(b)(2) Overlay fabrication grading units designed to be unflawed shall be separated by unflawed overlay material and unflawed base metal-to-overlay interface for at least one-inch at both ends. Sufficient unflawed overlaid weld and base metal shall exist on both sides of the overlay fabrication grading unit to preclude interfering	(b)(2) Overlay fabrication grading units designed to be unflawed shall be separated by unflawed overlay material and unflawed base metal-to-overlay interface for at least one-inch at both ends. Sufficient unflawed overlaid weld and base metal shall exist on both sides of the overlay fabrication grading unit to preclude interfering

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
not be spaced uniformly about the specimen.	reflections from adjacent flaws. The specific area used in one overlay fabrication grading unit shall not be used in another overlay fabrication grading unit. Overlay fabrication grading units need not be spaced uniformly about the specimen.	reflections from adjacent flaws. The specific area used in one overlay fabrication grading unit shall not be used in another overlay fabrication grading unit. Overlay fabrication grading units need not be spaced uniformly about the specimen.
(b)(3) Detection sets shall be selected from Table VIII-S2-1. The minimum detection sample set is five flawed base grading units, ten unflawed base grading units, five flawed overlay grading units, and ten unflawed overlay grading units. For each type of grading unit, the set shall contain at least twice as many unflawed as flawed grading units.	(b)(3) Detection sets shall be selected from Table VIII-S2-1. The minimum detection sample set is five flawed base metal grading units, ten unflawed base metal grading units, five flawed overlay fabrication grading units, and ten unflawed overlay fabrication grading units. For each type of grading unit, the set shall contain at least twice as many unflawed as flawed grading units. For initial procedure qualification, detection sets shall include the equivalent of three personnel qualification sets. To qualify new values of essential variables, at least one personnel qualification set is required.	(b)(3) Detection sets shall be selected from Table VIII-S2-1. The minimum detection sample set is five flawed base metal grading units, ten unflawed base metal grading units, five flawed overlay fabrication grading units, and ten unflawed overlay fabrication grading units. For each type of grading unit, the set shall contain at least twice as many unflawed as flawed grading units. For initial procedure qualification, detection sets shall include the equivalent of three personnel qualification sets. To qualify new values of essential variables, at least one personnel qualification set is required.
(f) Sizing Specimen		
(1) The minimum number of flaws shall be ten. At least 30% of the flaws shall be overlay fabrication flaws. At least 40% of	(1) The minimum number of flaws shall be ten. At least 30% of the flaws shall be overlay fabrication flaws. At least 40% of	(1) The minimum number of flaws shall be ten. At least 30% of the flaws shall be overlay fabrication flaws. At least 40% of

ENCLOSURE 1
PALISADES NUCLEAR PLANT
REQUEST FOR RELIEF FROM ASME SECTION XI,
APPENDIX VIII, SUPPLEMENT 11 CODE REQUIREMENTS

Paragraph 1.1(e)(2)(a)(3) was modified to require sufficient unflawed overlaid weld and base metal to exist on all sides of the grading unit to preclude interfering reflections from adjacent flaws, rather than the one-inch requirement of Supplement 11.

Paragraph 1.1(e)(2)(b)(I) was modified to define an overlay fabrication grading unit as including the overlay material and the base metal-to-overlay interface for a length of at least one-inch, rather than the six-square-inch requirement of Supplement 11.

Paragraph 1.1(e)(2)(b)(2) states that overlay fabrication grading units designed to be unflawed shall be separated by unflawed overlay material and unflawed base metal-to-overlay interface for at least one-inch at both ends, rather than around its entire perimeter.

Additionally, the requirement for axially oriented overlay fabrication flaws in paragraph 1.1(e)(1) was excluded from the PDI Program as an improbable scenario. Weld overlays are typically applied using automated gas tungsten arc welding techniques with the filler metal being applied in a circumferential direction. Because resultant fabrication induced discontinuities would also be expected to have major dimensions oriented in the circumferential direction, axial overlay fabrication flaws are unrealistic.

The requirement in paragraph 3.2(b) for reporting all extensions of cracking into the overlay is omitted from the PDI Program because it is redundant to the root-mean-squared (RMS) calculations performed in paragraph 3.2(c) and the presence of RMS adds confusion and ambiguity to depth sizing as required by paragraph 3.2(c). This also makes the weld overlay program consistent with the Supplement 2 depth sizing criteria.

These changes are contained in code case N-653. A comparison between the 1995 Edition and 1996 Addenda of Supplement 11, code case N-653, and the PDI Program is attached as supporting documentation. The first column identifies the code requirements, while the second (middle) column identifies the changes made by the code case.

There are, however, some additional changes that were inadvertently omitted from code case N-653. In paragraph 1.1(a)(1) the phrase *"and base metal on both sides"* was inadvertently included in the description of a base metal grading unit. The PDI program intentionally excludes this requirement because some of

the qualification samples include flaws on both sides of the weld. To avoid confusion several instances of the term "cracks" or "cracking" were changed to the term "flaws" because of the use of alternative flaw mechanisms.

Additionally, to avoid confusion, the overlay thickness tolerance contained in paragraph 1.1(b) last sentence, was reworded and the phrase "*and the remainder shall be alternative flaws*" was added to the next to the last sentence in paragraph 1.1(d)(1). Additional editorial changes were made to the PDI program to address earlier requests for additional information from the NRC to other licensees (Southern Nuclear Company for the Edwin Hatch Nuclear Plant and Progress Energy Carolinas, Inc. for the Brunswick Steam Electric Plant). The changes described above are identified by **bold** print in the third column of the enclosure.

PROPOSED ALTERNATIVE EXAMINATION

NMC proposes that in lieu of the requirements of the ASME Section XI, BPV Code, 1995 Edition with the 1996 Addenda, Appendix VIII, Supplement 11, the PDI Program be used for examination requirements, as described in the attachment to this enclosure. This alternative provides an acceptable level of quality and safety.

CONCLUSION

In summary, NMC is requesting relief from the requirements of Appendix VIII, Supplement 11, in order to utilize the PDI Program. Based on the information presented, and pursuant to 10 CFR 50.55a(a)(3)(i), NMC requests approval for the proposed alternative on the basis that the alternative provides an acceptable level of quality and safety.

PERIOD FOR WHICH RELIEF IS REQUESTED

NMC requests approval of the proposed alternative for the remainder of the third ten-year interval of the Inservice Inspection Program for Palisades, which is expected to conclude on December 12, 2006.

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
the flaws shall be cracks open to the inside surface.	the flaws shall be cracks open to the inside surface. For initial procedure qualification, sizing sets shall include the equivalent of three personnel qualification sets. To qualify new values of essential variables, at least one personnel qualification set is required.	the flaws **shall be open** to the inside surface. **Sizing sets shall contain a distribution of flaw dimensions to assess sizing capabilities.** For initial procedure qualification, sizing sets shall include the equivalent of three personnel qualification sets. To qualify new values of essential variables, at least one personnel qualification set is required.
(2) At least 20% but less than 40% of the flaws shall be oriented axially. The remainder shall be oriented circumferentially. Flaws shall not be open to any surface to which the candidate has physical or visual access.	**No Change**	**No Change**
(3) Base metal cracking used for length sizing demonstrations shall be oriented circumferentially.	**No Change**	(3) Base metal **flaws** used for length sizing demonstrations shall be oriented circumferentially.
(4) Depth sizing specimen sets shall include at least two distinct locations where cracking in the base metal extends into the overlay material by at least 0.1 inches in the through-wall direction.	**No Change**	(4) Depth sizing specimen sets shall include at least two distinct locations where **a base metal flaw extends** into the overlay material by at least 0.1 inches in the through-wall direction.
2.0 CONDUCT OF PERFORMANCE DEMONSTRATION		

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
The specimen inside surface and identification shall be concealed from the candidate. All examinations shall be completed prior to grading the results and presenting the results to the candidate. Divulgence of particular specimen results or candidate viewing of unmasked specimens after the performance demonstration is prohibited.	The specimen inside surface and identification shall be concealed from the candidate. All examinations shall be completed prior to grading the results and presenting the results to the candidate. Divulgence of particular specimen results or candidate viewing of unmasked specimens after the performance demonstration is prohibited. The overlay fabrication flaw test and the base metal flaw test may be performed separately.	The specimen inside surface and identification shall be concealed from the candidate. All examinations shall be completed prior to grading the results and presenting the results to the candidate. Divulgence of particular specimen results or candidate viewing of unmasked specimens after the performance demonstration is prohibited. The overlay fabrication flaw test and the base metal flaw test may be performed separately.
2.1 Detection Test.		
Flawed and unflawed grading units shall be randomly mixed. Although the boundaries of specific grading units shall not be revealed to the candidate, the candidate shall be made aware of the type or types of grading units (base or overlay) that are present for each specimen.	Flawed and unflawed grading units shall be randomly mixed. Although the boundaries of specific grading units shall not be revealed to the candidate, the candidate shall be made aware of the type or types of grading units (base metal or overlay fabrication) that are present for each specimen.	Flawed and unflawed grading units shall be randomly mixed. Although the boundaries of specific grading units shall not be revealed to the candidate, the candidate shall be made aware of the type or types of grading units (base metal or overlay fabrication) that are present for each specimen.
2.2 Length Sizing Test		
(a) The length sizing test may be conducted separately or in conjunction with the detection test.	**No Change**	**No Change**
(b) When the length sizing test is conducted in conjunction with the detection	**No Change**	**No Change**

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
test and the detected flaws do not satisfy the requirements of 1.1(f), additional specimens shall be provided to the candidate. The regions containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the length of the flaw in each region.		
(c) For a separate length sizing test, the regions of each specimen containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the length of the flaw in each region.	**No Change**	**No Change**
(d) For flaws in base grading units, the candidate shall estimate the length of that part of the flaw that is in the outer 25% of the base wall thickness.	*(d)* For flaws in base metal grading units, the candidate shall estimate the length of that part of the flaw that is in the outer 25% of the base metal wall thickness.	*(d)* For flaws in base metal grading units, the candidate shall estimate the length of that part of the flaw that is in the outer 25% of the base metal wall thickness.
2.3 Depth Sizing Test.		
For the depth sizing test, 80% of the flaws shall be sized at a specific location on the surface of the specimen identified to the candidate. For the remaining flaws, the regions of each specimen containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the maximum depth of the flaw in each region.	The candidate shall determine the depth of the flaw in each region.	**(a) The depth sizing test may be conducted separately or in conjunction with the detection test.**

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
		(b) When the depth sizing test is conducted in conjunction with the detection test and the detected flaws do not satisfy the requirements of 1.1(f), additional specimens shall be provided to the candidate. The regions containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the maximum depth of the flaw in each region.
		(c) For a separate depth sizing test, the regions of each specimen containing a flaw to be sized shall be identified to the candidate. The candidate shall determine the maximum depth of the flaw in each region.

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
3.0 ACCEPTANCE CRITERIA		
3.1 Detection Acceptance Criteria.		
Examination procedures, equipment, and personnel are qualified for detection when the results of the performance demonstration satisfy the acceptance criteria of Table VIII-S2-1 for both detection and false calls. The criteria shall be satisfied separately by the demonstration results for base grading units and for overlay grading units.	Examination procedures are qualified for detection when all flaws within the scope of the procedure are detected and the results of the performance demonstration satisfy the acceptance criteria of Table VIII-S2-1 for false calls. Examination equipment and personnel are qualified for detection when the results of the performance demonstration satisfy the acceptance criteria of Table VIII-S2-1 for both detection and false calls. The criteria shall be satisfied separately by the demonstration results for base metal grading units and for overlay fabrication grading units.	**(a) Examination procedures are qualified for detection when;**
		(1) All flaws within the scope of the procedure are detected and the results of the performance demonstration satisfy the acceptance criteria of Table VIII-S2-1 for false calls.
		(2) At least one successful personnel demonstration has been performed

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
		meeting the acceptance criteria defined in (b).
		(b)Examination equipment and personnel are qualified for detection when the results of the performance demonstration satisfy the acceptance criteria of Table VIII-S2-1 for both detection and false calls.
		(c) The criteria in (a), (b) shall be satisfied separately by the demonstration results for base metal grading units and for overlay fabrication grading units.
3.2 Sizing Acceptance Criteria.		
Examination procedures, equipment, and personnel are qualified for sizing when the results of the performance demonstration satisfy the following criteria.	**No Change**	**No Change**
(a) The RMS error of the flaw length measurements, as compared to the true flaw lengths, is less than or equal to 0.75 inch. The length of base metal cracking is measured at the 75% through-base-metal position.	**No Change**	*(a)* The RMS error of the flaw length measurements, as compared to the true flaw lengths, is less than or equal to 0.75 inch. The length of base metal flaws is measured at the 75% through-base-metal position.
(b) All extensions of base metal cracking	**This requirement is omitted.**	**This requirement is omitted.**

SUPPLEMENT 11 – QUALIFICATION REQUIREMENTS FOR FULL STRUCTURAL OVERLAID WROUGHT AUSTENITIC PIPING WELDS	CODE CASE N-653 (Provided for Information Only)	PDI PROGRAM: The Proposed Alternative to Supplement 11 Requirements
into the overlay material by at least 0.1 in. are reported as being intrusions into the overlay material.		
(c) The RMS error of the flaw depth measurements, as compared to the true flaw depths, is less than or equal to 0.125 in.	*(b)* The RMS error of the flaw depth measurements, as compared to the true flaw depths, is less than or equal to 0.125 in.	*(b)* The RMS error of the flaw depth measurements, as compared to the true flaw depths, is less than or equal to 0.125 in.