Florida Power & Light Company, 6501 S. Ocean Drive, Jensen Beach, FL 34957

May 6, 2004

L-2004-095
EA-03-09 IV.F(2)

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

Re: St. Lucie Unit 2
Docket No. 50-389
Order (EA-03-009) Relaxation Request Nos. 3 and 4
Examination Coverage of Reactor
Pressure Vessel Head Penetration Nozzles

On February 11, 2003 the NRC issued Order (EA-03-009) requiring specific inspections of the reactor pressure vessel (RPV) head and associated penetration nozzles at pressurized water reactors. On February 20, 2004, the NRC issued the First Revised Order EA-03-009. Pursuant to the procedure specified in Section IV, paragraph F of the Order, Florida Power & Light (FPL) requests relaxation from the requirements specified in Section IV, paragraphs C(1)(a) and C(1)(b)(i) for St. Lucie Unit 2 reactor pressure vessel head (RPVH) inspections.

Attachments 1 and 2 to this letter provide Relaxation Request Nos. 3 and 4. As demonstrated in the attachments hereto, the requested relaxation meets item IV.F(2) of the Order, as compliance with this Order for the specific areas described in the requests would result in hardship or unusual difficulty without a compensating increase in the level of quality or safety.

FPL requests approval of the subject relaxation requests by November 28, 2004, the currently scheduled start date for St. Lucie Unit 2 refueling outage (SL2-15).

Please contact George Madden at (772) 467-7155 if there are any questions about the relaxation requests.

Very truly yours,

William Jefferson, Jr.
Vice President
St. Lucie Plant

Attachments

A101

St. Lucie Unit 2 Relaxation Request No. 3
From The First Revised NRC Order EA-03-009

Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety

1. ASME COMPONENTS AFFECTED

St. Lucie (PSL) Unit 2 has 102 ASME Class 1 reactor pressure vessel (RPV) head penetrations (including the vent). The scope of this relaxation is only applicable to the 89 RPV head penetrations with original J-groove welds and attached threaded guide funnels.

The St. Lucie Unit 2 Order Inspection Category in accordance with Section (IV.A. & IV.B.) is currently determined as "high" based on 15.2 EDY at this refueling outage (RFO).

FPL Drawing No. 2998-3130, Rev. 3

2. FIRST REVISED NRC ORDER EA-03-009 APPLICABLE EXAMINATION REQUIREMENTS:

The First Revised NRC Order (EA-03-009) Order[1] was issued on February 20, 2004, establishing interim inspection requirements for reactor pressure vessel heads of pressurized water reactors. Section IV.C. of the Order states the following:

All Licensees shall perform inspections of the RPV head using the following frequencies and techniques:

(1) For those plants in the High category, RPV head and head penetration nozzle inspections shall be performed using the techniques of paragraph IV.C.(5)(a) [Bare Metal Visual] and paragraph IV.C.(5)(b) [Non Visual NDE] every refueling outage.

> (5)(b) For each penetration, perform a non visual NDE in accordance with either (i), (ii) or (iii):
>
> (i) Ultrasonic testing of the RPV head penetration nozzle volume (i.e., nozzle base material) from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 2 inches below the lowest point at the toe of the J-groove weld on a horizontal plane perpendicular to the nozzle axis (or the bottom of the nozzle if less than 2 inches [see Figure IV-1]); OR from 2 inches above the highest point of the

[1] US NRC Letter EA-09-009, Issuance Of First Revised NRC Order (EA-03-009) Establishing Interim Inspection Requirements For Reactor Pressure Vessel Heads At Pressurized Water Reactors, from William Borchardt (NRC) to all Pressurized Water Reactor Licensees, Dated February 20, 2004.

root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 1.0-inch below the lowest point at the toe of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) and including all RPV head penetration nozzle surfaces below the J-groove weld that have an operating stress level (including all residual and normal operation stresses) of 20 ksi tension and greater (see Figure IV-2). In addition, an assessment shall be made to determine if leakage has occurred into the annulus between the RPV head penetration nozzle and the RPV head low-alloy steel.

(ii) Eddy current testing or dye penetrant testing of the entire wetted surface of the J-groove weld and the wetted surface of the RPV head penetration nozzle base material from at least 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 2 inches below the lowest point at the toe of the J-groove weld on a horizontal plane perpendicular to the nozzle axis (or the bottom of the nozzle if less than 2 inches [see Figure IV-3]); OR from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 1.0-inch below the lowest point at the toe of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) and including all RPV head penetration nozzle surfaces below the J-groove weld that have an operating stress level (including all residual and normal operation stresses) of 20 ksi tension and greater (see Figure IV-4).

(iii) A combination of (i) and (ii) to cover equivalent volumes, surfaces and leak paths of the RPV head penetration nozzle base material and J-groove weld as described in (i) and (ii). Substitution of a portion of a volumetric exam on a nozzle with a surface examination may be performed with the following requirements:

1. On nozzle material below the J-groove weld, both the outside diameter and inside diameter surfaces of the nozzle must be examined.
2. On nozzle material above the J-groove weld, surface examination of the inside diameter surface of the nozzle is permitted provided a surface examination of the J-groove weld is also performed.

Relaxation is requested from part IV.C.(5)(b)(i) of the Order to perform ultrasonic testing (UT) of the RPV head penetration inside the tube from 2 inches above the highest point of the root of the J-groove weld to 2 inches below the lowest point at the toe of the J-groove weld toward the bottom of the penetration. Specifically, the relaxation is related to UT examination below the toe of the weld due to the presence of permanently installed guide funnels on the control element drive mechanism (CEDM) penetration nozzles.

3. REASON FOR REQUEST:

Pursuant to the First Revised Order Section IV.F which states "all Licensees shall notify the Commission if (1) they are unable to comply with any of the requirements of Section IV or (2) compliance with any of the requirements of Section IV is

unnecessary," FPL is requesting this relaxation for St. Lucie Unit 2 since compliance with the Order for specific nozzles would result in hardship or unusual difficulty, without a compensating increase in the level of quality and safety.

A typical example of the internally threaded nozzle, including the externally threaded guide funnel, at a high hillside angle is shown in Figure 1.

The hardship is based on the following points:

- There is no available inspection method (including the available UT) that can inspect the threaded portion of the nozzle from the inside diameter (ID).
- There are certain penetrations where existing conditions preclude examination of more than 0.50 inches on the downhill side of the penetration.
- Removal of the guide funnels would require a hardware change to remove the threaded, pinned and welded guide sleeves to expose the ID surface of the threaded portion of the nozzle.

There are 89 RPV head penetrations with the original J-groove weld configuration (2 RPV nozzle were previously repaired in 2003) that will contain areas of coverage less than that required by the First Revised NRC Order based on data collected in Spring 2003. The First Revised Order requires examination from 2 inches above the highest point of the root of the J-groove weld to 2 inches below the lowest point at the toe of the J-groove weld toward the bottom of the penetration. Alternatively the exam may be limited to 1 inch below the lowest point at the toe of the J-groove weld and including all RPV head penetration surfaces below the J-groove weld that have an operating stress level of 20 ksi tension and greater.

Reduced coverage below the weld on the 89 CEDM nozzles is caused by the nozzle configuration associated with an internally threaded guide funnel that limits the Ultrasonic (UT) examination or any surface examination from the nozzle ID surface. During the spring 2003 inspection, the examination coverage for 18 of the nozzles was less than 0.50 inches on the downhill side of the weld because there is less than 0.50 inches of unthreaded material below the weld in this area.

Accordingly, FPL is requesting a reduction of the examination coverage area based on a flaw tolerance analysis approach. As discussed below, this approach will provide an acceptable level of quality and safety with respect to reactor vessel structural integrity and leak integrity.

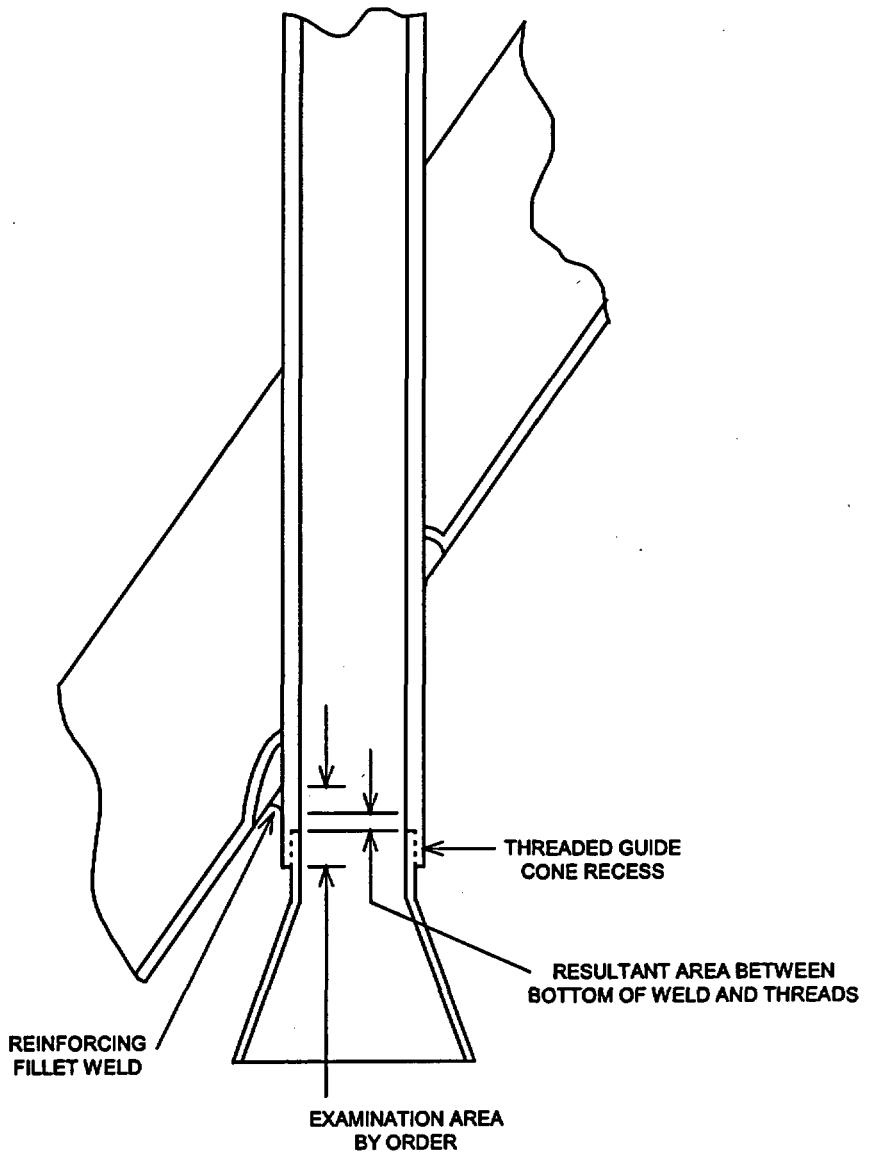

Figure 1
Typical St. Lucie Unit 2 CEDM Nozzle Configuration

4. PROPOSED ALTERNATIVE AND BASIS FOR USE:

The proposed alternative is to perform the UT examination to the extent practical. This is defined as follows:

- Perform UT examination to include the nozzle base material from 2 inches above the weld down to the bottom of the weld.
- Perform UT examination from the bottom of the weld to the maximum extent possible below the weld.
- In the areas below the weld where the coverage is <0.50 inches, the

examination will be supplemented by a non visual NDE method from the outside diameter (OD) surface. The non visual NDE examination area will extend below the weld to the maximum extent practical but not less than 0.5 inches below the lowest point at the toe of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis).

Basis for the Relaxation:

Area From 2 Inches Above the Weld to the Bottom Toe of the Weld:

No relaxation is requested in this area.

UT Examination of Area from the Bottom Toe of the Weld to ≥0.50 Inches Below the Weld:

For the limiting nozzle location, a postulated axial through wall flaw a distance of 0.28 inches from the bottom of the weld, will take 18 months of operation to reach the weld. This is based on plant specific flaw evaluation documented in WCAP-16038-P.[2] This approach was submitted[3] and approved[4] using a minimum of 0.41 inches for the spring 2003 outage. If a postulated axial through wall flaw was a distance of 0.50 inches from the bottom of the weld it would take greater than 5 years of operation to reach the pressure boundary weld. Therefore the proposed ≥0.50 inches extent of UT inspection below the weld will support one 18-month period of operation (one refueling cycle) for St. Lucie Unit 2 with significant additional margin.

Method:

A flaw tolerance approach was developed to determine the minimum coverage distance below the weld required to assure that a postulated flaw would not grow into the weld in one 18-month period of operation. The basis for the approach is documented in WCAP-16038-P (previously transmitted to the NRC) and shown in WCAP Figures 6-12 through 6-18 for the CEDMs. These figures show that for all nozzle intersection angles evaluated, if an axial through wall flaw were to exist 0.50 inches below the end of the weld, the predicted time for the flaw to grow to a point of contacting the weld would take greater than 5 years of operation.

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[2] WCAP-16038-P, Structural Integrity Evaluation of Reactor Vessel Upper Head Penetrations to Support Continued Operation: St. Lucie Unit 2, Westinghouse Electric Co. LLC, Revision 0, March 2003.

[3] FPL letter L-2003-129, St. Lucie Unit 2, Docket Nos. 50-389, Order (EA-03-009) Interim RPVH Inspection Requirements Revised Relaxation Requests 1 and 2 – Supplement 4, W. Jefferson Jr. to NRC, May 11, 2003.

[4] NRC Safety Evaluation, Saint Lucie Nuclear Plant, Unit 2, Order EA-03-009 Relaxation Requests Nos. 1 and 2 Regarding Examination Coverage of Reactor Pressure Vessel Head Penetration Nozzles (Tac Nos. MB8165 and MB8166), from Scott W. Moore (NRC) to J. A. Stall, Dated May 29, 2003.

Table 1: Inspection Coverage Distance Below The Weld To Support an 18-Month Operation Period (Locations shown bound all others in between) and Additional Margin Periods for 0.50 inches.

Nozzle Intersection Angle In Degrees	Upper Crack Tip (Distance In Inches from Bottom of Weld)	Period (months)
7.8° Downhill (Figure 6-14, WCAP-16038-P)	0.27 0.50	18.0 72.0
29.1° Downhill(Figure 6-16, WCAP-16038-P)	0.28 0.50	18.0 75.0
49.7° Downhill (Figure 6-18, WCAP-16038-P)	0.27 0.50	18.0 92.0

An added conservatism is that no credit is taken for the time that it will take for the postulated flaw to grow through the weld to the point of initiating a leak, or initiation of a circumferential flaw.

If the Extent of the UT Examination Below the Bottom of the Weld is <0.50 Inches, a Supplemental Non Visual NDE Method Is Proposed:

FPL proposes to perform a nonvisual NDE method from the OD surface of any nozzles that had UT exam coverage <0.50 inches below the bottom of the weld. The vertical height of the non visual NDE exam area proposed on the nozzle OD will overlap the UT examination area obtained from the ID and will extend below the weld to the maximum extent practical but not less than 0.5 inches below the lowest point at the toe of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis). The non visual NDE method will be either dye penetrant, eddy current or UT performed from the OD surface of the tube material

The 0.50-inch distance below the weld toe is selected based on the plant specific hoop stress plots of nozzles presented in WCAP-16038-P. Figures E-1, E-2, E-4, and E-6 of WCAP-16038-P show that the operational hoop stresses on the outside surface of the RPV nozzles drop below 20 ksi within 0.50 inches of the lowest point below the weld toe (on the downhill side) which meets the stress criteria in the Order. This reduces the potential for cracking to exist in the uninspected area, greater than 0.50 inches below the weld, on the downhill side of the nozzle.

Historical Data:

The heats of material used for the CEDM penetrations (all Standard Steel) are identified in Table 4-1 of WCAP-16038-P. A review of the industry wide

experience with the same heats of Standard Steel penetrations as St. Lucie Unit 2 indicates the following:

- 100% of the population of the material heats used at St. Lucie Unit 2 have had an UT inspection within the last 2 years. The only flaws identified for these heats were during the last St. Lucie Unit 2 refueling outage.
- The other inspected plants have similar EDY.
- St. Lucie Unit 2 has the largest population of heats A6785 and EO3045 but only had one nozzle of each heat affected with an axial crack.
- Each St. Lucie Unit 2 nozzle had a single axial flaw identified. No circumferential or multiple flaws were identified.
- The flaws identified in the previous RPV head inspection were OD initiated and found in the high stress area, in close proximity to the weld (WCAP-16038-P Appendix E). There were no flaws identified in low stress areas.

Over ten years of inspection experience with reactor vessel head penetrations has shown that cracks have only initiated in regions where the stresses have been at or near the material yield strength. The source of these stresses, in this case, is the J-groove attachment weld. The stresses decrease rapidly with distance away from the weld.

In the ten years of inspections, there has never been a case where a flaw existed only in the low stress region of the head penetration, without also extending into the high stress region. The only cases where cracks have been found near the bottom of the reactor vessel head penetrations have been in B&W designed plants, where multiple cracks were found. In these B&W plants inspected with UT, there were no cases where indications were recorded in the base material below the weld region that were not associated with other cracking extending from the high stress weld region. The Standard Steel materials used for the St. Lucie penetrations have shown significantly more resistant to cracking than the B&W Tubular product heats used in the B&W designed plants.

Conclusion:

Compliance with the First Revised Order requirement for UT coverage from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 2 inches below the lowest point at the toe of the J-groove weld on a horizontal plane perpendicular to the nozzle axis is unnecessary to show structural integrity of the reactor vessel and RPV nozzle penetrations. Inspection to a point ≥0.50 inches below the weld will provide reasonable assurance of structural integrity.

This conclusion is based on the following conditions:

- UT inspection of the most highly stressed pressure boundary portion of the nozzle (the area adjacent to the weld zone) is unaffected by the lack of coverage below the weld.

- UT of the interference fit zone above the weld (for leakage assessment) is unaffected by the lack of coverage below the weld.
- Cracks initiating in the unexamined bottom portion (non-pressure boundary area) of the nozzle would be of minimal safety significance with respect to pressure boundary leakage or nozzle ejection. This portion of the nozzle is below the pressure boundary and any cracks would have to grow through the examined portion of the tube to reach the pressure boundary.

Additional efforts to achieve the Order required examination area (below the weld) would result in a hardship due to unusual difficulty without a compensating increase in the level of quality and safety.

5. DURATION OF PROPOSED ALTERNATIVE:

This relaxation is requested to be applicable to the fall 2004 and spring 2006 refueling outages for St. Lucie Unit 2 (SL2-15 & SL2-16).

6. PRECEDENTS:

1) NRC Safety Evaluation, St. Lucie Nuclear Plant, Unit 2, Order EA-03-009 Relaxation Requests Nos. 1 and 2 Regarding Examination Coverage of Reactor Pressure Vessel Head Penetration Nozzles (Tac Nos. MB8165 and MB8166), from Scott W. Moore (NRC) to J. A. Stall, Dated May 29, 2003.

   St. Lucie used the flaw tolerance approach to address a postulated through wall flaw in the uninspected non pressure boundary portion of the RPV head penetration which starts no less than 0.41 inches from the J-groove weld for an operational period of 18 months for 9 nozzles.

2) Calvert Cliffs Nuclear Power Plant, Unit Nos. 1 and 2 Relaxation of the Requirements of Order (EA-03-009), Regarding Reactor Pressure Vessel Head Inspections (Tac Nos. MB7752 And MB7753 Dated April 18, 2003);

   Calvert Cliffs used a flaw tolerance approach to address a postulated through wall flaw in the uninspected non pressure boundary portion of the RPV head penetration, which starts no less than 0.40 inches (specifically 0.376 inches) from the J-groove weld for an operational period of 2 years. This request was for 6 months longer than the period of operation requested for St. Lucie Unit 2 by this relaxation request.

St. Lucie Unit 2 Relaxation Request No. 4
From The First Revised NRC Order EA-03-009

Hardship or Unusual Difficulty Without Compensating Increase in Level of Quality or Safety

1. ASME COMPONENTS AFFECTED

St. Lucie (PSL) Unit 2 has 102 ASME Class 1 reactor pressure vessel (RPV) head penetrations (including the vent).

The St. Lucie Unit 2 Order Inspection Category in accordance with Section (IV.A. & IV.B.) is currently determined as "high" based on 15.2 EDY at this refueling outage (RFO).

FPL Drawing No. 2998-1714, Rev. 3
FPL Drawing No. 2998-4331, Rev. 2
FPL Drawing No. 2998-4318, Rev. 2
FPL Drawing No. 2998-4319, Rev. 3
FPL Drawing No. 2998-4332, Rev. 2

2. FIRST REVISED NRC ORDER EA-03-009 APPLICABLE EXAMINATION REQUIREMENTS:

The First Revised NRC Order (EA-03-009)[1] was issued on February 20, 2004, establishing interim inspection requirements for reactor pressure vessel heads of pressurized water reactors. Section IV.C. of the Order states the following :

All Licensees shall perform inspections of the RPV head using the following frequencies and techniques:

(1) For those plants in the High category, RPV head and head penetration nozzle inspections shall be performed using the techniques of paragraph IV.C.(5)(a) [Bare Metal Visual] and paragraph IV.C.(5)(b) [Non Visual NDE] every refueling outage.

(5)(a) Bare metal visual examination of 100 percent of the RPV head surface (including 360° around each RPV head penetration nozzle). For RPV heads with the surface obscured by support structure interferences which are located at RPV head elevations downslope from the outermost RPV head penetration, a bare metal visual inspection of no less than 95 percent of the RPV head surface may be performed provided that the examination shall include those areas of the RPV head upslope and downslope from the

[1] US NRC Letter EA-03-009, Issuance Of First Revised NRC Order (EA-03-009) Establishing Interim Inspection Requirements For Reactor Pressure Vessel Heads At Pressurized Water Reactors, from William Borchardt (NRC) to all Pressurized Water Reactor Licensees, Dated February 20, 2004.

support structure interference to identify any evidence of boron or corrosive product. Should any evidence of boron or corrosive product be identified, the licensee shall examine the RPV head surface under the support structure to ensure that the RPV head is not degraded.

Relaxation is requested from part IV.C.(5)(a) of the First Revised Order to perform "bare metal visual examination of 100 percent of the RPV head surface (including 360° around each RPV head penetration nozzle)" at St. Lucie Unit 2. Specifically, FPL is unable to completely comply with this requirement due to inaccessibility to a small portion of the RPV head surface. The inaccessible areas under the 32 horizontal reflective metal insulation (RMI) support legs and the areas under the approximately 2 ¼ inches wide vertical leg of the RMI that contacts the twelve 6-inch wide shroud lugs.

3. REASON FOR REQUEST:

Pursuant to the First Revised Order Section IV.F which states "all Licensees shall notify the Commission if (1) they are unable to comply with any of the requirements of Section IV or (2) compliance with any of the requirements of Section IV is unnecessary." FPL is requesting this relaxation for St. Lucie Unit 2. FPL is unable to comply with the requirement for 100% visual examination coverage due to lack of access. The requirement is considered to be unnecessary in this case. The inaccessible areas are located underneath the horizontal insulation panel support legs and vertical insulation panels at the shroud lugs. The lack of access to these small areas does not preclude performance of an effective bare metal visual examination of either 360° of the nozzle-to-top-of-head interface region or the RPV head to identify evidence of wastage. Side views of the RPV head showing the horizontal RMI support feet and vertical insulation panels (Figure 1) are included below. The limitations described above are identical to those identified in Relaxation Request 2[2] that was reviewed and approved.[3]

[2] FPL letter L-2003-129, St. Lucie Unit 2, Docket Nos. 50-389, Order (EA-03-009) Interim RPVH Inspection Requirements Revised Relaxation Requests 1 and 2 – Supplement 4, W. Jefferson Jr. to NRC, May 11, 2003.

[3] NRC Safety Evaluation, Saint Lucie Nuclear Plant, Unit 2, Order EA-03-009 Relaxation Requests Nos. 1 and 2 Regarding Examination Coverage of Reactor Pressure Vessel Head Penetration Nozzles (Tac Nos. MB8165 and MB8166), from Scott W. Moore (NRC) to J. A. Stall, Dated May 29, 2003.

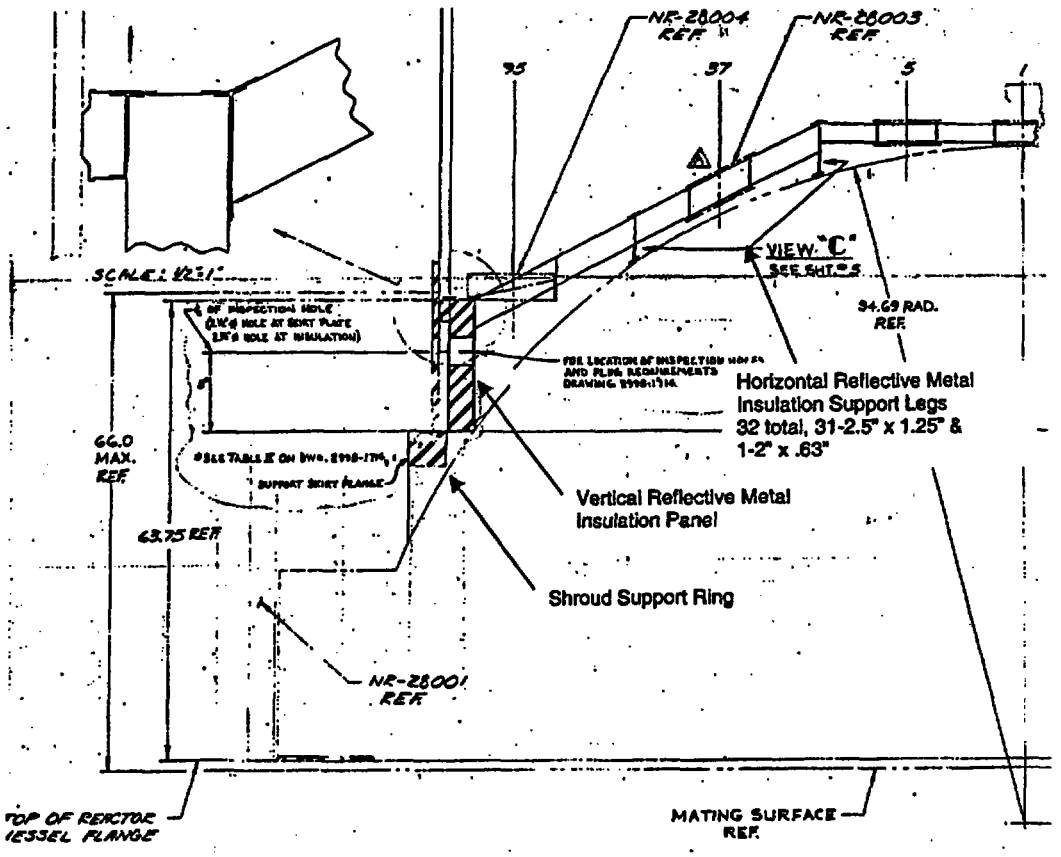

Figure 1: RPV Head Side View showing Horizontal Insulation Support Leg Locations and Vertical Insulation Panels

4. PROPOSED ALTERNATIVE AND BASIS FOR USE:

FPL will achieve substantial compliance with the 100% requirement upslope of the outer most RPV head penetration by conducting a bare metal visual examination of the RPV head surface to the extent practical, excluding the inside of the 54 RPV stud holes. Specifically, the examination includes a visual examination of 100% of the nozzle-to-top-of-head interface region (360°) of each RPV head penetration nozzle for evidence of leakage and an examination of the bare head surface for evidence of wastage or corrosive products.

BASIS FOR RELAXATION:

The scope of the examination is to perform a bare metal visual examination of 100% of the RPV head surface (including 360° around each RPV head penetration nozzle). The St. Lucie Unit 2 RPV top head surface has areas of inaccessibility due to the presence of approximately 32 horizontal RMI support legs on the RPV

head surface between the RPV head penetrations and the areas under the approximately 2¼ inches wide vertical leg of the reflective metal insulation that contacts the twelve 6-inch wide shroud lugs. These support legs (31 each at 2.5 x 1.25 inches and 1 each at 2 x 0.63 inches) represent a total area of less than 100 square inches and the vertical panels that contact the support lugs (12 each: 2.25 x 6 inches) represents 162 square inches. The total inaccessible area is less than 1.0 percent of the 39,000 square inches of RV head surface to be examined. Improving access to these inaccessible areas by removal of the horizontal panel support legs and the vertical panels, for visual examination would require major disassembly of the CEDM coil stacks and lifting of the shroud and shroud ring to allow access for the destructive RMI removal. This activity would result in a substantial increase in radiation dose and the potential for damage to removed components. The performance of this disassembly is not practical and does not enhance the quality of the examination because the RPV head penetration nozzles, where leakage would originate, are not located in or adjacent to the inaccessible area. The required 360° visual examination around each RPV head penetration nozzle is unaffected by this limitation. Also, the head surfaces immediately uphill and downhill of the inaccessible areas will be examined for evidence of boric acid leakage under the RMI. No evidence of corrosive products has been identified in past inspections.

In November 2001, SL2-13, FPL performed a bare metal visual examination of the accessible portions of the RPV head inside the RMI, including 360° visual examination around each RPV head penetration nozzle, to identify any evidence of leakage from the 102 penetrations. There were no indications of staining leading downhill on the head surface or evidence of leakage identified around the 102 penetrations.

During April/May 2003, SL2-14, FPL performed a bare metal visual examination of the accessible portions of the RPV head inside the RMI, including 360° visual examination around each RPV head penetration nozzle, to identify any evidence of leakage from the 102 penetrations. Additionally, as shown below in Figure 2, many of the horizontal RMI support legs were tilted allowing additional visual access to the RPV head base material. The bare metal visual examination resulted in inspection of approximately 99% of the RPV head. This percentage does not take credit for the additional coverage obtained by the tilted support legs. A relaxation request was submitted by FPL letter L-2003-129 and approved by the NRC documenting the examination coverage obtained.

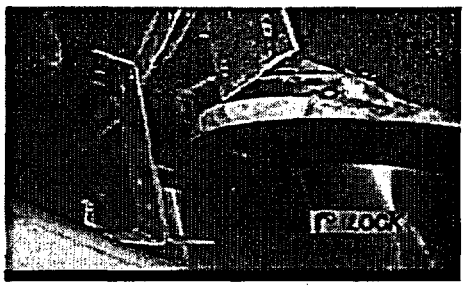

Figure 2: Picture showing Horizontal RMI Support Leg

It can be concluded that a hardship or unusual difficulty without a compensating increase in level of quality or safety would result if physical modifications were performed to achieve the complete coverage of the RPV head base material required by the First Revised Order. These modifications would include coil stack disassembly, to accommodate lifting of the shroud ring, and removal of the horizontal RMI panels to permit examination.

This conclusion is based on the following results:

- The visual examination performed during SL2-13 of the base material adjacent to the 102 penetration nozzle-to-top-of-head interface region (360° coverage was obtained) identified no evidence of leakage.
- The visual examination performed during SL2-14 of the base material adjacent to the 102 penetration nozzle-to-top-of-head interface region (360° coverage was obtained) identified no evidence of leakage.
- The visual examination performed during SL2-14 of the RPV head base material identified no evidence of wastage of the head base material, corrosive products or staining leading into the inaccessible areas.
- The assessment of UT data performed during SL2-14 to determine if leakage had occurred into the interference fit zone identified no evidence of leakage.
- The visual examination to be performed during SL2-15 and SL2-16 will look for any evidence of wastage of the head base material, corrosive products or staining leading into or from the inaccessible areas.

5. DURATION OF PROPOSED ALTERNATIVE:

This relaxation is requested to be applicable to the fall 2004 and spring 2006 refueling outages for St. Lucie Unit 2 (SL2-15 & SL2-16).

6. PRECEDENTS:

NRC Safety Evaluation, St. Lucie Nuclear Plant, Unit 2, Order EA-03-009 Relaxation Requests Nos. 1 and 2 Regarding Examination Coverage of Reactor Pressure Vessel Head Penetration Nozzles (Tac Nos. MB8165 and MB8166), from Scott W. Moore (NRC) to J. A. Stall, Dated May 29, 2003.