Entergy

Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802
Tel 479-858-4601

Dale E. James
Acting Director,
Nuclear Safety Assurance

0CAN070404

July 27, 2004

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

SUBJECT: Response to NRC Bulletin 2004-01 Regarding Inspection of Alloy 82/182/600 Materials Used In Pressurizer Penetrations and Steam Space Piping Connections
Arkansas Nuclear One, Units 1 and 2
Docket Nos. 50-313 and 50-368
License Nos. DPR-51 and NPF-6

REFERENCES:

1 NRC letter dated May 28, 2004, *NRC Bulletin 2004-01: Inspection of Alloy 82/182/600 Materials Used In the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors* (0CNA050408)

Dear Sir or Madam:

On May 28, 2004, the Nuclear Regulatory Commission (NRC) issued NRC Bulletin 2004-01, *Inspection of Alloy 82/182/600 Materials Used In the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors.* The NRC requested that all Pressurized Water Reactor addressees provide description of their pressurizer heater and steam space penetrations and inspection plans for the forthcoming and subsequent refueling outages.

The Arkansas Nuclear One, Unit One (ANO-1) and Unit Two (ANO-2) responses to the bulletin is provided in Attachment 1 to this submittal. The response to NRC Bulletin 2004-01 includes new commitments as summarized in Attachment 2. As discussed in Attachment 1, Entergy is proactively planning to replace or modify the ANO-1 and ANO-2 pressurizers in forthcoming outages.

If you have any questions or require additional information, please contact Steve Bennett at 479-858-4626.

A110

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 27, 2004.

Sincerely,

DEJ/sab

Attachments:

1. Response to Bulletin 2004-01, Inspection of Alloy 82/182/600 Materials Used In Pressurizer Penetrations and Steam Space Piping Connections

2. List of Regulatory Commitments

cc: Dr. Bruce S. Mallett
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

NRC Senior Resident Inspector
Arkansas Nuclear One
P.O. Box 310
London, AR 72847

U.S. Nuclear Regulatory Commission
Attn: Mr. Thomas Alexion
Mail Stop 0-7 D1
Washington, DC 20555-0001

U.S. Nuclear Regulatory Commission
Attn: Mr. Drew Holland
Mail Stop 0-7 D1
Washington, DC 20555-0001

**Attachment 1**

**0CAN070404**

**Response to Bulletin 2004-01, Inspection of Alloy 82/182/600 Materials Used In Pressurizer Penetrations and Steam Space Piping Connections**

**Arkansas Nuclear One**
**Response to Bulletin 2004-01,**
**Inspection of Alloy 82/182/600 Materials Used In Pressurizer Penetrations and Steam Space Piping Connections**

On May 28, 2004, the Nuclear Regulatory Commission (NRC) issued Bulletin 2004-01, *Inspection of Alloy 82/182/600 Materials Used In the Fabrication of Pressurizer Penetrations and Steam Space Piping Connections at Pressurized-Water Reactors.* The 60-day response to the bulletin for Arkansas Nuclear One, Units 1 and 2 (ANO) is provided below.

**NRC Request 1(a):** *A description of the pressurizer penetrations and steam space piping connections at your plant. At a minimum, this description should include materials of construction (e.g., stainless steel piping and/or weld metal, Alloy 600 piping/sleeves, Alloy 82/182 weld metal or buttering, etc.), joint design (e.g., partial penetration welds, full penetration welds, bolted connections, etc.), and, in the case of welded joints, whether or not the weld was stress-relieved prior to being put into service. Additional information relevant with respect to determining the susceptibility of your plant's pressurizer penetrations and steam space piping connections to PWSCC should also be included.*

**Entergy Response to Request 1(a):** The ANO-1 pressurizer is a vertically mounted carbon steel vessel clad with stainless steel. The pressurizer heater penetrations consist of three flanged connections having stainless steel heater bundles. The pressurizer also contains penetrations for three relief/safety valve nozzles, two liquid space temperature sensing nozzles, a vent/sample nozzle, two steam space and two liquid space level sensing taps, one water space sample line, a spare steam space instrument tap, and a spray line. The following table provides the pressurizer water space and steam space penetration descriptions for ANO-1.

**ANO-1 Pressurizer Nozzle Description**

| Penetration/ Description (#) | Penetration or Attachment | Joint Design | Filler Material | Stress Relief? |
|---|---|---|---|---|
| Heater Bundles (3) | SS Bundle w/bolted diaphragm plate | Plate Seal weld to vessel and heater sheath | SS | No |
| CV-1000, 2.5" Pressure Relief Nozzle to Flange | CS Nozzle to CS vessel | Full penetration | E-8018 | Yes |
| | CS nozzle to SS Flange | Butt Weld | I-182 weld w/I-182 butter at nozzle | Butter Yes Butt Weld No |
| PSV-1001, 3" Pressure Relief Nozzle to Flange. | CS Nozzle to CS vessel | Full Penetration | E-8018 | Yes |
| | CS nozzle to SS Flange | Butt Weld | I-182 weld w/I-182 butter at nozzle | Butter Yes Butt Weld No |

| Penetration/ Description (#) | Penetration or Attachment | Joint Design | Filler Material | Stress Relief? |
|---|---|---|---|---|
| PSV-1002, 3" Pressure Relief Nozzle to Flange. | CS Nozzle to CS vessel | Full Penetration | E-8018 | Yes |
| | CS nozzle to SS Flange | Butt Weld | I-182 weld w/I-182 Butter at nozzle | Butter Yes Butt Weld No |
| 4" Spray Nozzle to Safe End (SE), SE to Pipe | CS Nozzle to CS vessel | Full Penetration | E-8018 | Yes |
| | CS Nozzle to A-600 Safe-End | Butt Weld | I-182 | Yes |
| | A-600 Safe-End to SS-Pipe. | Butt Weld | I-82 or I-182 | No |
| SS-36, 1" Steam Sample and Pressurizer Vent Nozzle. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-182 | J-weld Yes |
| | A-600 Nozzle to SS Tee | Socket | I-82 or I-182 | No |
| SS-37, 1" Water Sample Nozzle. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-182 | J-weld Yes |
| | A-600 Nozzle to SS Fitting | Socket | I-82 or I-182 | No |
| RC-1000A/B, 1" Spare Nozzle. (upper vessel) | A-600 Nozzle to CS Vessel. | Partial Penetration | I-182 | J-weld Yes |
| | A-600 Nozzle to SS Fitting | Socket | I-82 or I-182 | No |
| RC-1001A/B, 1" Upper Level Pressure Tap Nozzle. (modified nozzle w/half nozzle repair) | A-600 Nozzle remnant to CS Vessel. | Partial Penetration | I-182 | J-weld Yes |
| | A-600 Nozzle to I-182 weld pad, I-182 weld pad to CS Vessel. | Weld pad Partial Penetration | I-182 | Weld Pad & J-weld No |
| | A-600 Nozzle to SS Fitting. | Socket | I-82 or I-182 | No |
| RC-1002A/B, 1" Upper Level Pressure Tap. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-182 | J-weld Yes |
| | A-600 Nozzle to SS Fitting. | Socket | I-82 or I-182 | No |
| RC-1001C/D, 1" Lower Level Pressure Tap. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-182 | J-weld Yes |
| | A-600 Nozzle to SS Valve/ Fitting. | Socket | I-82 or I-182 | No |

| Penetration/ Description (#) | Penetration or Attachment | Joint Design | Filler Material | Stress Relief? |
|---|---|---|---|---|
| RC-1002C/D, 1" Lower Level Pressure Tap. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-182 | J-weld Yes |
| | A-600 Nozzle to SS Valve/ Fitting. | Socket | I-82 or I-182 | No |
| TE-1001A/B, 1.5" Lower Level Temp. Element | A-600 Thermowell to CS vessel | Partial Penetration | I-182 | J-weld Yes |
| TE-1002A/B, 1" Lower Level sensing nozzle. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-182 | J-weld Yes |
| (1" Level sensing nozzle modified in 1984 to accept 3/4" thermowell) | A-600 Thermowell to A-600 nozzle | Full Penetration | I-82 or I-182 | U-weld Yes |

The ANO-2 pressurizer is a vertically mounted cylindrical carbon steel vessel with stainless steel clad side shell and upper head surfaces. The bottom head is clad with Ni-Cr-Fe alloy. The Pressurizer was furnished with ninety-six (96) immersion heaters installed in sleeve assemblies in the bottom head. Currently there are eighty-two (82) heaters installed and fourteen heater nozzles have been plugged. The heater sleeve assemblies are welded to the cladding of the vessel lower head and the heaters are welded to the sleeves. The pressurizer heater sleeve nozzles are all fabricated from Alloy 600 material. The pressurizer is also furnished with six pressure/level instrument nozzles, a steam space sample nozzle, two safety relief nozzles, a pressurizer spray nozzle, one vent nozzle, and one temperature instrument nozzle. The following table provides the pressurizer water space and steam space penetration descriptions for ANO-2.

**ANO-2 Pressurizer Nozzle Description**

| Penetration/ Description (#) | Penetration or Attachment | Joint Design | Filler Material | Stress Relief? |
|---|---|---|---|---|
| Heater Sleeves 1.156" to vessel (82). | A-600 sleeve to CS Vessel. | Partial Penetration | I-82 weld | Cladding Yes |
| | | | | J-Weld No |
| | A-600 sleeve to A-600 heater. | Locking Collar W/ Seal weld | I-82 | No |
| Heater Sleeve 1.156" w/Heater Removed (12). | A-600 sleeve remnant to CS Vessel. | Partial Penetration | I-82 weld w | Cladding Yes |
| | | | | J-Weld No |
| Sleeve Plugged. | I-152 Weld Pad to CS Vessel and A-690 Plug & Weld Dam. | Weld Pad Partial Penetration | I-152 | No |

| Penetration/ Description (#) | Penetration or Attachment | Joint Design | Filler Material | Stress Relief? |
|---|---|---|---|---|
| Heater Sleeve 1.156" to vessel (2). | A-600 Nozzle flush w/Inconel clad at Vessel interior. | Seal | Autogenous | No |
| Heater and sleeve removed / new nozzle installed w/plug. | A-600 Nozzle to CS Vessel exterior. | Partial Penetration | I-182 | Butter Yes<br>J-Weld No |
| | A-600 Nozzle to A-600 Plug. | Socket | I-182 | No |
| 2PSV-4633, 6" Safety Relief Nozzle to Flange. | CS Nozzle to CS Vessel. | Full Penetration | E-8018 | Yes |
| | CS Nozzle to SS Flange. | Butt Weld | I-82 weld w/I-182 butter at nozzle. | Butter Yes,<br>Butt Weld No |
| 2PSV-4634, 6" Safety Relief Nozzle to Flange. | CS Nozzle to CS Vessel. | Full Penetration | E-8018 | Yes |
| | CS Nozzle to SS Flange. | Butt Weld | I-82 weld w/I-182 butter at nozzle. | Butter Yes,<br>Butt Weld No |
| 2CV-4730-1 and 2CV-4730-2 , 6" LTOP Vent. | CS Nozzle to CS Vessel. | Full Penetration | E-8018 | Yes |
| | CS Nozzle to SS Flange. | Butt Weld | I-82 weld w/I-182 butter at nozzle. | Butter Yes,<br>Butt Weld No |
| 4" Pzr Spray Nozzle to Safe-End. | CS Nozzle to CS Vessel. | Full Penetration | E-8018 | Yes |
| | CS Nozzle to SS Safe-End. | Butt Weld | I-82 weld w/I-182 butter at nozzle. | Butter Yes,<br>Butt Weld No |
| 2RC-4624A, 3/4" Steam Space Pressure Tap Nozzle. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-82 weld w/I-182 butter at vessel. | Butter Yes,<br>J-Weld No |
| | A-600 Nozzle to SS Safe-End. | Butt Weld | I-182 | No |
| 2RC-4623A, 3/4" Steam Space Pressure Tap Nozzle. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-82 weld w/I-182 butter at vessel. | Butter Yes,<br>J-Weld No |
| | A-600 Nozzle to SS Safe-End. | Butt Weld | I-182 | No |
| 2FO-4632, 3/4" Refueling Level/ Steam Sample Nozzle. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-82 weld w/I-182 butter at vessel. | Butter Yes,<br>J-Weld No |
| | A-600 Nozzle to SS Safe-End. | Butt Weld | I-182 | No |

| Penetration/ Description (#) | Penetration or Attachment | Joint Design | Filler Material | Stress Relief? |
|---|---|---|---|---|
| 2RC-4627A, 3/4" Steam Space Level Tap Nozzle. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-82 weld w/I-182 butter at vessel. | Butter Yes, J-Weld No |
| | A-600 Nozzle to SS Safe-End. | Butt Weld | I-182 | No |
| 2RC-4627E, 3/4" Steam Space Level Tap Nozzle. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-82 weld w/I-182 butter at vessel. | Butter Yes, J-Weld No |
| | A-600 Nozzle to SS Safe-End. | Butt Weld | I-182 | No |
| 2RC-4627C, 1" Water Level Tap Nozzle to Modified Nozzle. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-82 weld w/I-182 butter at vessel. | Butter Yes, J-Weld No |
| | A-600 Nozzle to SS Nozzle insertion. | Fillet | I-82 or I-182 | No |
| 2RC-4627G, 1" Water Level Tap Nozzle to Modified Nozzle. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-82 weld w/I-182 butter at vessel. | Butter Yes, J-Weld No |
| | A-600 Nozzle to SS Nozzle insertion. | Fillet | I-82 or I-182 | No |
| 2TE-4627-2, Water Space 1" Temperature Nozzle to Safe-End. | A-600 Nozzle to CS Vessel. | Partial Penetration | I-82 weld w/I-182 butter at vessel. | Butter Yes, J-Weld No |
| | A-600 Nozzle to SS Safe-End. | Butt Weld | I-82 | No |

**NRC Request 1(b):** *A description of the inspection program for Alloy 82/182/600 pressurizer penetrations and steam space piping connections that has been implemented at your plant. The description should include when the inspections were performed; the areas, penetrations and steam space piping connections inspected; the extent (percentage) of coverage achieved for each location which was inspected; the inspection methods used; the process used to resolve any inspection findings; the quality of the documentation of the inspections (e.g., written report, video record, photographs); and, the basis for concluding that your plant satisfies applicable regulatory requirements related to the integrity of pressurizer penetrations and steam space piping connections. If leaking pressurizer penetrations or steam space piping connections were found, indicate what follow-up NDE was performed to characterize flaws in the leaking penetrations.*

**Entergy Response to Request 1(b):**

ANO RCS/Pressurizer Inspection Program - At ANO, Entergy utilizes ANO Procedure 2311.009, *ANO Unit 1 and Unit 2 Alloy 600 Inspection*, to facilitate inspections concerned with Alloy 600 primary water stress corrosion cracking (PWSCC). The procedure contains guidance for inspection of the specific small bore and pressurizer nozzles that are susceptible to PWSCC for both units. The procedure identifies specific RCS locations that

are to be inspected and documents and corrects leaks from Alloy 600 components. The procedure specifies a 360 degree inspection around the nozzle annulus.

Other program controls include the ANO-1 and ANO-2 ASME Section XI Inservice Inspection programs (CEP-ISI-002 and CEP-ISI-004, respectively) that include the examination of welds, rigid restraints and pressure boundaries of components and piping on Class 1, 2 and 3 systems. The weld and rigid restraint examinations are performed during the specified periods. Prior to returning the units to operation, ANO Quality Control procedures (5120.242 and 5120.243) are used for the Post Outage Pressure Test for Unit 1 and Unit 2, respectively for performing a VT-2 inspection of the RCS pressure boundary.

During plant cooldown and heatup walkdowns, Operations and Quality Control personnel perform an inspection of the RCS to document any leakage including signs of boric acid deposits. A list of boric acid leakage sites is compiled from the walk down and evaluated for repair. Each leak path evaluation is assigned an evaluation number and tracked to resolution. Repairs are performed under the ANO Work Order process and condition reports are generated, as appropriate.

Generic Letter (GL) 88-05, *Boric Acid Corrosion of Carbon Steel Reactor Pressure Boundary Components in PWR Plants*, required four areas to be considered for ensuring that licensees boric acid inspection processes were adequate to identify reactor coolant pressure boundary (RCPB) leakage that could degrade carbon steel piping and components. The ANO boric acid program has been established under procedural control for compliance to our commitments for GL 88-05 as well as site wide improvements in boric acid identification and control.

Alloy 600 butt welds that connect piping or instruments to the pressurizer nozzles have not been specifically identified for inspection on a refueling outage basis. However, the walkdowns associated with the Alloy 600 and boric acid program would identify boric acid leakage from these locations because the end of the nozzles are only a few inches from the external surface of the pressurizer, and removal or repositioning of the insulation to allow visual examination of the nozzle/vessel interface would also expose the end of the nozzle and the associated butt welds. ANO has not experienced any Alloy 600 weld failures of piping or instruments connected to the pressurizer nozzles.

Previous ANO Pressurizer Inspection Findings and Repairs –

ANO-1 – In December 1990, while performing a repair on a pressurizer level tap isolation valve during power, a leak on the associated instrument nozzle was identified. Non-destructive examination of the nozzle was conducted, which indicated an axially oriented flaw of approximately 0.4 inches in length. A partial nozzle repair was performed using an Alloy 600 nozzle and weld material. There have been no other identified Alloy 600 nozzle or weld failures associated with the ANO-1 pressurizer.

ANO-2 - In April 1987, a containment entry was made to inspect an ANO-2 safety injection tank. It was subsequently identified that pressurizer heater sleeves X1 and T4 were leaking and the unit was shutdown to perform the repair. It was suspected that a particular heater design of 23 of the heaters could have hastened sleeve failure. The other 21 suspect heaters were removed and the sleeves inspected and found to not have similar flaws. The two leaking sleeves were removed and the penetration was plugged.

During a mid cycle outage in July 2000, while ANO 2 was in cold shutdown for inspection of the steam generators, boric acid was discovered on the cables of two heaters (B2 and D2). Insulation was removed from all of the heaters to perform additional inspection. It was discovered that ten additional heater sleeves (AA3, A2, B4, D4, D3, B3, C3, AA4, B1, and G2) exhibited similar evidence of leakage. Eight of the sleeves had heaters installed, while four of the sleeves had dummy heaters. Nine of the twelve leaking heater sleeves were located in the first row around the pressurizer surge line nozzle, which is in the middle of the bottom head. Eddy current examination of two of the heater sleeves (C3 and D3) revealed a single, through-wall, axial crack in both sleeves below the J-groove weld that joins the sleeve to the cladding on the inside surface of the pressurizer. All heaters were removed and were plugged with Alloy 690 plugs.

During 2R15 in April 2002, six Alloy 600 ANO-2 pressurizer heater sleeves were discovered to be leaking. Five of these heater sleeves (C2, E1, E2, F4, and G1) were identified during plant cooldown while the remaining leaking heater sleeve (N2) was discovered during plant heatup. A second generation Mechanical Nozzle Seal Assembly (MNSA-2) was installed on each of the six leaking pressurizer heater sleeves which restored the pressure boundary integrity of the sleeves. Since the apparent failure was consistent with previous heater sleeve failures, no additional nondestructive examination was performed.

There have been no instrument line failures on the ANO-2 pressurizer.

Basis for Concluding that Your Plant Will Satisfy Applicable Regulatory Requirements:
Entergy has established an Alloy 600 nozzle inspection program, which is performed on a refueling outage basis in accordance with site procedures. In addition, the ISI program inspections, required by 10CFR50.55a and ASME Section XI, do support interval based piping integrity. Entergy has established RCS integrity program inspections that assure that pressure boundary leaks will be detected and repaired. Based on the ASME Code required inspections, the Alloy 600 program inspections, as well as the GL 88-05 inspections, Entergy has confidence that the ANO pressurizer nozzle inspections provide RCS integrity and meet all regulatory requirements.

**NRC Request 1(c):** *A description of the Alloy 82/182/600 pressurizer penetration and steam space piping connection inspection program that will be implemented at your plant during the next and subsequent refueling outages. The description should include the areas, penetrations and steam space piping connections to be inspected; the extent (percentage) of coverage to be achieved for each location; inspection methods to be used; qualification standards for the inspection methods and personnel; the process used to resolve any inspection indications; the inspection documentation to be generated; and the basis for concluding that your plant will satisfy applicable regulatory requirements related to the structural and leakage integrity of pressurizer penetrations and steam space piping connections. If leaking pressurizer penetrations or steam space piping connections are found, indicate what follow-up NDE will be performed to characterize flaws in the leaking penetrations. Provide your plans for expansion of the scope of NDE to be performed if circumferential flaws are found in any portion of the leaking pressurizer penetrations or steam space piping connections.*

**Entergy Response to NRC Request 1(c):** Entergy at ANO will continue to perform bare metal visual inspections of pressurizer penetrations in accordance with Procedure 2311.009 in future refueling outages for those penetrations that contain Alloy 600 material. Procedure 2311.009 will be revised to include inspection of other pressurizer Alloy 600 nozzle to stainless steel connections not previously inspected. If leakage is found on ANO-2 Alloy 600 pressurizer heater sleeves, Entergy will perform additional NDE to characterize the degradation present in the leaking penetration in accordance with the January 30, 2004 Westinghouse Owners Group letter and NRC Bulletin 2004-01. Entergy is planning to replace the ANO-2 pressurizer by the fall 2006 refueling outage with improved Alloy 690 material. Entergy also intends to replace the ANO-1 Alloy 600 J-welded pressurizer nozzles and stress improve the butt welded joints.

**NRC Request 1(d)** *In light of the information discussed in this bulletin and your understanding of the relevance of recent industry operating experience to your facility, explain why the inspection program identified in your response to item (1)(c) above is adequate for the purpose of maintaining the integrity of your facility's RCPB and for meeting all applicable regulatory requirements which pertain to your facility.*

**Entergy Response to NRC Request 1(d):** The proposed actions by Entergy for ANO, meet the expectations requested by Bulletin 2004-01 and are considered appropriate for maintaining the integrity of ANO's RCPB. Entergy's inspection program meets applicable regulatory requirements which pertain to ANO.

**NRC Request 2:** *Within 60 days of plant restart following the next inspection of the Alloy 82/182/600 pressurizer penetrations and steam space piping connections, the subject PWR licensees should either:*

*(a) submit to the NRC a statement indicating that the inspections described in the licensee's response to item (1)(c) of this bulletin were completed and a description of the as-found condition of the pressurizer shell, any findings of relevant indications of through-wall leakage, follow-up NDE performed to characterize flaws in leaking penetrations or steam space piping connections, a summary of all relevant indications found by NDE, a summary of the disposition of any findings of boric acid, and any corrective actions taken and/or repairs made as a result of the indications found,*

*or*

*(b) if the licensee was unable to complete the inspections described in response to item (1)(c) of this bulletin, submit to the NRC a summary of the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the pressurizer shell, any findings of relevant indications of through-wall leakage, follow-up NDE performed to characterize flaws in leaking penetrations or steam space piping connections, a summary of all relevant indications found by NDE, a summary of the disposition of any findings of boric acid, and any corrective actions taken and/or repairs made as a result of the indications found. In addition, supplement the answer which you provided to item (1)(d) above to explain why the inspections that you completed were adequate for the purpose of maintaining the integrity of your facility's RCPB and for meeting all applicable regulatory requirements which pertain to your facility.*

*For lines attached directly to the pressurizer, with the exception of the surge line, the information requested in (1) and (2) above should be provided for any locations, including those remote from the pressurizer shell, which contain Alloy 82/182/600 materials which are exposed to conditions similar to those of the pressurizer environment.*

**Entergy Response to NRC Request 2:** Entergy will submit the requested information within 60 days of plant restart from the refueling outages of ANO-1 (fall of 2005) and ANO-2 (spring of 2005) per NRC Bulletin 2004-01, Request 2.

**Attachment 2**

**0CAN070404**

**List of Regulatory Commitments**

## List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

| COMMITMENT | TYPE (Check one) | | SCHEDULED COMPLETION DATE (If Required) |
|---|---|---|---|
| | ONE-TIME ACTION | CONT COMP | |
| Procedure 2311.009 will be revised to include inspection of other pressurizer Alloy 600 nozzle to stainless steel connections not previously inspected. | | X | Prior to 2R17 (Spring 2005) |
| For ANO-1, Entergy at ANO will perform bare metal visual inspections of pressurizer penetrations in accordance with Procedure 2311.009 during future refueling outages for penetrations that contain Alloy 600 material. . | | X | Beginning 1R19 (Fall 2005) |
| For ANO-2, Entergy at ANO will perform bare metal visual inspections of pressurizer penetrations in accordance with Procedure 2311.009 during future refueling outages for penetrations that contain Alloy 600 material. | | X | Beginning 2R17 (Spring 2005) |
| If leakage is found on ANO-2 Alloy 600 pressurizer heater sleeves, Entergy will perform additional NDE to characterize the degradation present in the leaking penetration in accordance with the January 30, 2004 Westinghouse Owners Group letter and NRC Bulletin 2004-01. | | X | Conditional |
| Entergy will submit the requested information for NRC Request 2 to Bulletin 2004-01 within 60 days of plant restart. | X | | Within 60 days of plant restart following 1R19 |
| Entergy will submit the requested information for NRC Request 2 to Bulletin 2004-01 within 60 days of plant restart. | X | | Within 60 days of plant restart following 2R17 |