Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802
Tel 479-858-4619

Dale E. James
Manager, Licensing
Nuclear Safety Assurance
Arkansas Nuclear One

2CAN040806

April 22, 2008

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

SUBJECT: 60-Day Report for ANO-2 Reactor Pressure Vessel Head Inspection for Refueling Outage 2R19
Arkansas Nuclear One, Unit 2
Docket No. 50-368
License No. NPF-6

REFERENCES:
1. NRC letter dated February 20, 2004, "Issuance of First Revised Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors", EA-03-009 (0CNA020404)
2. NRC letter to Entergy dated May 17, 2006, Arkansas Nuclear One, Unit 2 (ANO-2) – "Relaxation Request from Nuclear Regulatory Commission (NRC) Order EA-03-009 for the Control Element Drive Mechanism (CEDM) Nozzles" (2CNA050601)

Dear Sir or Madam:

On February 20, 2004, the Nuclear Regulatory Commission (NRC) issued the revised Order addressing inspection requirements for reactor pressure vessel (RPV) heads at pressurized water reactors (Reference 1). Section IV.E of the Order requires licensees to submit a report detailing the inspection results within sixty (60) days after returning the plant to operation.

Entergy has previously sought and was granted a relaxation from the Order for Arkansas Nuclear One, Unit 2 (ANO-2). The relaxation was for augmented examinations at the blind zones on the lower portion of the Control Element Drive Mechanism (CEDM) nozzles (Reference 2). As noted in Reference 2, Entergy is authorized to use the proposed alternative inspection for all CEDM RPV head nozzles for the remainder of the current, 10 year in-service inspection (ISI) interval. The current ANO-2 ISI interval expires on March 26, 2010. This relaxation was utilized during the spring 2008 2R19 refueling outage.

In addition, Entergy has sought and was granted a relaxation from the Order with regard to only performing a limited bare metal visual (BMV) inspection. This relaxation was not required for the 2R19 refueling outage. This is due to the fact that the new RPV head cooling shroud and insulation package was installed in the 2R19 outage. This shroud and insulation package has been described in several previous ANO-2 submittals. This new shroud and insulation package will allow ANO-2 to perform full BMV inspections of the RPV in the future.

ANO-2 resumed operation on April 10, 2008 from the 2R19 refueling outage. As a result of the inspections performed, Entergy did not identify any boric acid leakage or flaws associated with the RPV head inspections. The results of the RPV head inspections are summarized in the attachment to this letter.

This letter does not contain any NRC commitments. If you have any questions or require additional information, please contact me.

Sincerely,

DEJ/rwc

Attachment: 60-Day Report for Reactor Vessel Head Inspection Results for ANO-2 Refueling Outage 2R18

cc: Mr. Elmo E. Collins
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. Alan B. Wang
MS O-7 D1
Washington, DC 20555-0001

Mr. Bernard R. Bevill
Director Division of Radiation
Control and Emergency Management
Arkansas Department of Health & Human Services
P.O. Box 1437
Slot H-30
Little Rock, AR 72203-1437

Attachment

2CAN040806

60-Day Report for Reactor Vessel Head Inspection Results for ANO-2 Refueling Outage 2R19

60-Day RV Head Inspection Results for ANO-2 Refueling Outage 2R19

Arkansas Nuclear One, Unit 2 (ANO-2) is a CE designed unit with Alloy 600 reactor pressure vessel (RPV) head penetrations which is subject to NRC Order EA-03-009. For ANO refueling outage 2R19, Entergy either complied with the Order or was granted relaxation in accordance with the Order where necessary. In accordance with Section IV.E of the Order, licensees are required to submit a report detailing the inspection results within sixty (60) days after returning the plant to operation. The following provides the results of the 2R19 inspections performed on ANO-2.

Inspection Area	Inspection Method	Extent of Inspection	2R19 Findings
Visual Inspection of RPV Head	BMV of ICI Nozzles	Perform a 360° bare metal visual inspection around the ICI nozzles from inside the cooling shroud.	A BMV inspection of the 8 ICI nozzles at the annulus was conducted. No evidence of boric acid leakage was observed.
	BMV of CEDM Nozzles	Perform a 360° bare metal visual inspection around the CEDM nozzles.	A visual inspection of all 81 CEDM nozzles was conducted. No evidence of boric acid leakage was observed.
	BMV of Vent Line Nozzle	Perform a 360° bare metal visual inspection around the vent line nozzle.	A visual inspection of the vent line nozzle was conducted. No evidence of boric acid leakage was observed.
	Visual Inspection of RPV Head Flange	Inspect the peripheral portion of the head and flange external to the cooling shroud.	A visual inspection of the external surface of the RPV head flange was conducted. No evidence of boric acid leakage was observed.
	Pressure Retaining Components	Perform visual inspections of the pressure retaining components above the RPV head to identify potential boric acid deposits.	A visual inspection was performed to assess leakage from pressure retaining components above the head. No evidence of leakage was observed.

Inspection Area	Inspection Method	Extent of Inspection	2R19 Findings
NDE of CEDM Penetrations (81)	UT of Nozzle Wall including Triple Point Augmented Exam	Inspect 2" above the J-weld to the blind zone of the CEDM nozzle.	The 81 CEDMs were scanned and analyzed from the ID using Westinghouse UT probes. No flaws were detected.
	Augmented NDE of Nozzle Blind Zone	Perform augmented ECT inspection of the blind zone region on 57 of 81 CEDM nozzles.	A manual ECT exam was conducted on the exterior surface of the nozzle by various delivery techniques. No flaws were detected.
	UT of Nozzle Annulus (Leak Path)	Review interference fit in the nozzle annulus above the J-weld for leakage path.	The open housing probe examination did not reveal any leak path present in the annulus region of the CEDM nozzles.

NDE of ICI Penetrations (8)	UT of Nozzle Wall	Inspect 2" above the J-weld to the blind zone (nozzle end).	The open housing probe UT examination did not reveal any flaws in the 8 ICI nozzles.
	ECT/UT of Nozzle Face	Perform ECT and UT of ICI nozzle face to cover blind zone region at the nozzle end.	An automated ECT/UT on the face of the ICI nozzles was performed. No flaws were detected.
	UT of Nozzle Annulus (Leak Path)	Review interference fit in nozzle annulus above the J-weld for leakage path.	The open housing probe examination did not reveal any leak path present in the annulus region of the ICI nozzles.

Inspection Area	Inspection Method	Extent of Inspection	2R19 Findings
NDE of Vent Line Penetration (1)	ECT of Wetted Surface Area	Perform ECT of wetted surface of vent line nozzle and J-weld.	The ECT examination did not detect any flaws on the weld or nozzle.

Legend:

BMV = Bare Metal Visual

CEDM = Control Element Drive Mechanism

ECT = Eddy Current Testing

ICI = Incore Instrument

NDE = Non-Destructive Examination

PT = Dye Penetrant Testing

PWSCC = Primary Water Stress Corrosion Cracking

UT = Ultrasonic Testing