



April 30, 1992

2CAN049208

U. S. Nuclear Regulatory Commission  
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Subject: Arkansas Nuclear One - Unit 2  
Docket No. 50-368  
License No. NFP-6  
Submitting Additional Information  
Concerning the First Ten Year Inservice  
Inspection Relief Requests (TAC No. M76001)

Gentlemen:

In letter 2CAN088915, dated August 31, 1989, Entergy Operations submitted relief requests for Arkansas Nuclear One, Unit 2 (ANO-2) for the first 10-year interval. These requests were for relief from certain ASME Section XI Inservice Inspection (ISI) requirements because only limited examinations could be performed. The NRC subsequently requested additional information concerning these relief requests in letter dated September 10, 1991 (2CNA099102). In letter dated February 13, 1992 (2CAN029202), Entergy Operations stated that ANO-2 was unable to provide the specific information requested but committed to submit a best estimate of the percentage of the Code-required coverage. The purpose of this submittal is to provide these best estimates for the coverage.

The Code required coverage was estimated and placed into four categories. These categories are 0 to 25%; 26 to 50%; 51 to 75%; and 76 to 100% of the Code required coverage of the weld. Attached is a listing of those welds that fell within the first, second, third, and fourth category, respectively.

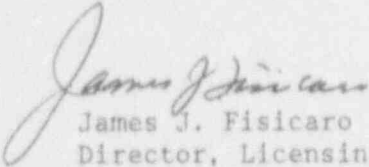
The attachment also provides additional information, including items such as a description of the examination area, examination volume and/or area, the category of the weld, and the method used to perform the examination.

Based on further review, there are several welds in which the Code required coverage was considered to be met. These welds are those identified by 100% in the attached list. It is Entergy Operations' conclusion that NRC relief is no longer necessary and the relief for those welds is herewith withdrawn.

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This submittal provides the information necessary for the NRC to complete its review of the ANO-2 first 10-year interval limited examination relief requests. Should you have any questions regarding this issue, please contact me.

Very truly yours,

  
James J. Fisicaro  
Director, Licensing

JJF/RWC/sjf  
Attachment

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## ANO-2 LIMITED ISI EXAMINATION COVERAGE ESTIMATES FOR FIRST INSPECTION INTERVAL

ISI NO. COMPONENT IDENTIFICATION EXAMINATION AREA DESCRIPTION	CAT/ITEM NO. METHOD(S) EXTENT	EXAM VOLUME AND/OR AREA REASON FOR EXAMINATION LIMITATION RFOs EXAMINED	ESTIMATED COVERAGE %				REMARKS
			0-25	26-50	51-75	76-100	
01-012 Reactor Pressure Vessel Lower Shell to Middle Shell Weld	B-A/B1.1 Vol 5%	Weld Metal + 1/2 Base Metal Surveillance Capsule Holder 2R6/2R7				✓	Code only requires 5% of weld length. Attempted 100% per Reg Guide 1.150 for Beltline Region.
01-009 Reactor Pressure Vessel Lower Shell Longitudinal Weld @ 90°	B-A/B1.1 Vol 10%	Weld Metal + 1/2 Base Metal Surveillance Capsule Holder/Flow Skirt 2R6/2R7			✓		Code only requires 10% of weld length. Attempted 100% per Reg Guide 1.150 for Beltline Region.
01-013 Reactor Pressure Vessel Middle Shell Longitudinal Weld @ 90°	B-A/B1.1 Vol 10%	Weld Metal + 1/2 Base Metal Surveillance Capsule Holder 2R6/2R7			✓		Code only requires 10% of weld length. Attempted 100% per Reg Guide 1.150 for Beltline Region.
01-001 Reactor Pressure Vessel Bottom Head Dome to Peel Segment Torus	B-B/B1.2 Vol 5%	Weld Metal + 1/2 Base Metal See Remarks 2R6				100%	Flow skirt is not noted in data as causing scan limitation. Full Code coverage achieved. Relief not necessary.
01-008 Reactor Pressure Vessel Bottom Head to Lower Shell Weld	B-B/B1.2 Vol 5%	Weld Metal + 1/2 Base Metal Flow Baffle Assembly 2R6				✓	
01-016 Reactor Pressure Vessel Middle Shell to Upper Shell Weld	B-B/B1.2 Vol 5%	Weld Metal + 1/2 Base Metal Nozzles 2R6/2R7				✓	
01-017 Reactor Pressure Vessel Upper Shell Longitudinal Weld @ 90°	B-B/B1.2 Vol 10%	Weld Metal + 1/2 Base Metal Nozzles 2R6/2R7				✓	
01-018 Reactor Pressure Vessel Upper Shell Longitudinal Weld @ 210°	B-B/B1.2 Vol 10%	Weld Metal + 1/2 Base Metal Nozzles 2R6/2R7				✓	
01-019 Reactor Pressure Vessel Upper Shell Longitudinal Weld @ 330°	B-B/B1.2 Vol 10%	Weld Metal + 1/2 Base Metal Nozzles 2R6/2R7				✓	
01-002 Reactor Pressure Vessel Peel Segment to Peel Segment @ 30°	B-B/B1.2 Vol 10%	Weld Metal + 1/2 Base Metal See Remarks 2R6				100%	Code only requires 10% of weld length. Code coverage achieved on 27% of weld length. Relief not necessary.
01-003 Reactor Pressure Vessel Peel Segment to Peel Segment @ 90°	B-B/B1.2 Vol 10%	Weld Metal + 1/2 Base Metal See Remarks 2R6				100%	Code only requires 10% of weld length. Code coverage achieved on 27% of weld length. Relief not necessary.

(1) "I" of shell or head

(3) Distributed uniformly among three areas around vessel circumference

(2) 1t of Main Piping/2" Branch Run

(4) 2t of Piping/2t of Support Attachment Member ("I" of support)

**APPENDIX 2 LIMITED ISI EXAMINATION COVERAGE ESTIMATES FOR FIRST INSPECTION INTERVAL**

IS* NO. COMPONENT IDENTIFICATION EXAMINATION AREA DESCRIPTION	CAT/ITEM NO. METHOD(S) EXTENT	EXAM VOLUME AND/OR AREA REASON FOR EXAMINATION LIMITATION RFOs EXAMINED	ESTIMATED COVERAGE %				REMARKS
			0-25	26-50	51-75	75-100	
01-004 Reactor Pressure Vessel Peel Segment to Peel Segment @ 150°	B-B/B1.2 Vol 10%	Weld Metal + 1/2 Base Metal See Remarks 2R6				100%	Code only requires 10% of weld length. Code coverage achieved on 27% of weld length. Relief not necessary.
01-005 Reactor Pressure Vessel Peel Segment to Peel Segment @ 210°	B-B/B1.2 Vol 10%	Weld Metal + 1/2 Base Metal See Remarks 2R6				100%	Code only requires 10% of weld length. Code coverage achieved on 27% of weld length. Relief not necessary.
01-006 Reactor Pressure Vessel Peel Segment to Peel Segment @ 270°	B-B/B1.2 Vol 10%	Weld Metal + 1/2 Base Metal See Remarks 2R6				100%	Code only requires 10% of weld length. Code coverage achieved on 27% of weld length. Relief not necessary.
01-007 Reactor Pressure Vessel Peel Segment to Peel Segment @ 330°	B-B/B1.2 Vol 10%	Weld Metal + 1/2 Base Metal See Remarks 2R6				100%	Code only requires 10% of weld length. Code coverage achieved on 27% of weld length. Relief not necessary.
01-022 Reactor Pressure Vessel Inlet Nozzle to Shell @ 60°	B-D/B1.4 Vol 100%	Weld Metal + 1/2 Base Metal (1) End of Nozzle Bore 2R6/2R7				✓	Examination limited for nozzle bore scanning only. Shell not limited.
01-023 Reactor Pressure Vessel Inlet Nozzle to Shell @ 120°	B-D/B1.4 Vol 100%	Weld Metal + 1/2 Base Metal (1) End of Nozzle Bore 2R6/2R7				✓	Examination limited for nozzle bore scanning only. Shell not limited.
01-025 Reactor Pressure Vessel Inlet Nozzle to Shell @ 240°	B-D/B1.4 Vol 100%	Weld Metal + 1/2 Base Metal (1) End of Nozzle Bore 2R6/2R7				✓	Examination limited for nozzle bore scanning only. Shell not limited.
01-026 Reactor Pressure Vessel Inlet Nozzle to Shell @ 300°	B-D/B1.4 Vol 100%	Weld Metal + 1/2 Base Metal (1) End of Nozzle Bore 2R6/2R7				✓	Examination limited for nozzle bore scanning only. Shell not limited.
01-021 Reactor Pressure Vessel Outlet Nozzle to Shell @ 90°	B-D/B1.4 Vol 100%	Weld Metal + 1/2 Base Metal (1) Integral Extension/End of Nozzle Bore 2R6/2R7		Shell		Bore	This weld was previously incorrectly identified as 01-027 which is not limited. The shell side & nozzle bore scanning coverages are as indicated.
01-024 Reactor Pressure Vessel Outlet Nozzle to Shell @ 180°	B-D/B1.4 Vol 100%	Weld Metal + 1/2 Base Metal (1) Integral Extension/End of Nozzle Bore 2R6/2R7		Shell		Bore	The shell side and nozzle bore scanning coverages are as indicated.

(1) 1" of shell or head

(3) Distributed uniformly among three areas around vessel circumference

(2) 1/2 of Main Piping Run/2" Branch Run

(4) 2" of Piping/2" of Support Attachment Member (1" of support)

## ANO-2 LIMITED ISI EXAMINATION COVERAGE ESTIMATES FOR FIRST INSPECTION INTERVAL

ISI NO. COMPONENT IDENTIFICATION EXAMINATION AREA DESCRIPTION	CAT/ITEM NO. METHOD(S) EXTENT	EXAM VOLUME AND/OR AREA REASON FOR EXAMINATION LIMITATION RFOs EXAMINED	ESTIMATED COVERAGE %				REMARKS
			0-25	26-50	51-75	76-100	
01-L-043 Reactor Pressure Vessel Vessel Flange Ligaments	B-G-1/B1.9 Vol 100%	FLs between Threaded Stud Holes See Remarks 2R1				100%	The limitation previously reported was for a nonremovable obstruction at the bottom 2" of the stud hole. This is outside the examination volume of the flange ligaments. The flange ligaments were fully examined. Relief not necessary.
02-001 Reactor Vessel Closure Head Flange to Peel Segment Torus Weld	B-C/B1.3 Vol 100%	Weld Metal + 1/2 Base Metal Blind Flange Configuration 2R1			✓		
03-002 Stay Cylinder Base to Lower Head Steam Generator 2E24A	B-B/B3.1 Vol 5%	Weld Metal + 1/2 Base Metal Blend Radius 2R2		✓			
03-003 Peel Segment to Peel Segment @ 60° Steam Generator 2E24A	B-B/B3.1 Vol 10%	Weld Metal + 1/2 Base Metal Nozzle 2R2			✓		
03-004 Steam Generator 2E24A Peel Segment to Peel Segment @ 138°	B-B/B3.1 Vol 10%	Weld Metal + 1/2 Base Metal Nozzle 2R2			✓		
03-005 Steam Generator 2E24A Peel Segment to Peel Segment @ 210°	B-B/B3.1 Vol 10%	Weld Metal + 1/2 Base Metal Nozzle 2R2			✓		
05-009 Pressurizer 12" Surge Nozzle to Bottom Head	B-D/B2.2 Vol 100%	Weld Metal + 1/2 Base Metal (1) Heater Penetrations 2R1				✓	
05-010 Pressurizer 4" Spray Nozzle to Top Head	B-D/B2.2 Vol 100%	Weld Metal + 1/2 Base Metal (1) Nozzles 2R2				✓	
05-120 Pressurizer 12" Surge Nozzle Inner Radius Section	B-D/B2.2 Vol 100%	Nozzle Inside Radius Section Heater Bundles 2R1				✓	
05-121 Pressurizer 4" Spray Nozzle Inner Radius Section	B-D/B2.2 Vol 100%	Nozzle Inside Radius Section Nozzles 2R2				✓	

(1) "t" of shell or head

(3) Distributed uniformly among three areas around vessel circumference

(2) 1t of Main Piping Run/2" Branch Run

(4) 2t of Piping/2t of Support; Attachment Member ("t" of support)



## ANO-2 LIMITED ISI EXAMINATION COVERAGE ESTIMATES FOR FIRST INSPECTION INTERVAL

ISI NO. COMPONENT IDENTIFICATION EXAMINATION AREA DESCRIPTION	CAT/ITEM NO. METHOD(S) EXTENT	EXAM VOLUME AND/OR AREA REASON FOR EXAMINATION LIMITATION RFOs EXAMINED	ESTIMATED COVERAGE %				REMARKS
			0-25	25-50	51-75	75-100	
05-122 Pressurizer 6" Safety Nozzle Inner Radius Section @ 0°	B-D/B2.2 Vol 100%	Nozzle Inside Radius Section Insulation Bracket, Lifting Lug, Nozzle 2R4				✓	
06-014 Reactor Coolant (2CCA-5-30") Elbow to Safe End Circumferential Weld	B-F/B4.1 Vol/Sur 100%	Weld Metal + 1/2 Base Metal Insulation Support Brackets 2R1/2R2				✓	
08-015 Reactor Coolant (2CCA-5-30") Safe End to Pump Circumferential Weld	B-J/B4.5 Vol 100%	Weld Metal + 1/2 Base Metal Insulation Support Brackets 2R2			✓		
09-009 Reactor Coolant (2CCA-6-30") Pump to Safe End Circumferential Weld	B-J/B4.5 Vol 100%	Weld Metal + 1/2 Base Metal Insulation Support Brackets 2R2			✓		
24-049 Safety Injection (2CCA-23-6") Reducer to Tee Circumferential Weld	B-J/P 1.5 Vol 100%	Weld Metal + 1/2 Base Metal See Remarks 2R6				100%	A 1 1/2 V calibration enabled full two-directional axial coverage to be achieved from reducer side. Circumferential coverage also attained. Relief not necessary.
25-017 Shutdown Cooling (2CCA-25-14") Tee to Pipe Circumferential Weld	B-J/B4.5 Vol 100%	Weld Metal + 1/2 Base Metal Hanger Support Bracket 2R6	✓				No axial scan performed due to hanger support bracket and tee configuration. 100% circumferential scan performed.
15-110 Reactor Coolant (2CCA-10-30") 12" Branch Connection	B-J/B4.6 Vol 100%	Weld Metal + 1/2 Base Metal (2) Cable Whip Restraint 2R6			✓		
03-030 Steam Generator 2E24A Intermediate Shell to Conical Shell	C-A/C1.1 Vol 20%	Weld Metal + 1/2 Base Metal (3) Insulation Support Ring 2R2/2R4/2R6				✓	
03-031 Conical Shell to Upper Shell Steam Generator 2E24A	C-A/C1.1 Vol 20%	Weld Metal + 1/2 Base Metal (3) Insulation Support Ring/Beam 2R2/2R4/2R6				✓	
03-032 Steam Generator 2E24A Upper Shell to Top Head Torus	C-A/C1.1 Vol 20%	Weld Metal + 1/2 Base Metal (3) Insulation Support Ring 2R2/2R4/2R6				✓	
03-033 Steam Generator 2E24A Top Head Torus to Top Head Dome	C-A/C1.1 Vol 20%	Weld Metal + 1/2 Base Metal (3) Insulation Supports 2R2/2R4/2R6				✓	

(1) 1" of shell or head

(3) Distributed uniformly among three areas around vessel circumference

(2) 1t of Main Piping Run/2" Branch Run

(4) 2t of Piping/2t of Support Attachment Member ("1" of support)

## ANO-2 LIMITED ISI EXAMINATION COVERAGE ESTIMATES FOR FIRST INSPECTION INTERVAL

ISI NO. COMPONENT IDENTIFICATION EXAMINATION AREA DESCRIPTION	CAT/ITEM NO. METHOD(S) EXTENT	EXAM VOLUME AND/OR AREA REASON FOR EXAMINATION LIMITATION RFOs EXAMINED	ESTIMATED COVERAGE %				REMARKS
			3-25	26-50	51-75	76-100	
03-041 Steam Generator 2E24A Snubber Lug @ 270°	C-C/C1.3 Sur 100%	Attachment Weld Metal Insulation Bracket 2R5				✓	
04-030 Steam Generator 2E24B Intermediate Shell to Conical Shell	C-A/C1.1 Vol 20%	Weld Metal + 1/2 Base Metal (3) Insulation Support Ring 2R2/2R3/2R5				✓	
04-031 Steam Generator 2E24B Conical Shell to Upper Shell	C-A/C1.1 Vol 20%	Weld Metal + 1/2 Base Metal (3) Insulation Support Ring 2R1/2R3/2R5				✓	
04-032 Steam Generator 2E24B Upper Shell to Top Head Torus	C-A/C1.1 Vol 20%	Weld Metal + 1/2 Base Metal (3) Insulation Support Ring 2R2/2R3/2R5				✓	
04-033 Steam Generator 2E24B Top Head Torus to Top Head Dome	C-A/C1.1 Vol 20%	Weld Metal + 1/2 Base Metal (3) Insulation Supports 2R1/2R3/2R6				✓	
50-015 Shutdown Cooling (2GCB-5-14") Pipe to Pipe Circumferential Weld	C-F/C2.1 Vol 100%	Weld Metal + 1/2 Base Metal Pipe Support 2R2				✓	
56-007 Shutdown Cooling (2GCB-8-6") Reducer to Pipe Circumferential Weld	C-F/C2.1 Vol 100%	Weld Metal + 1/2 Base Metal See Remarks 2R6				100%	Welded plate located outside scan area on pipe side. A 1%V calibration enabled full two-directional axial coverage to be achieved from both sides. Circumferential coverage also attained. Relief not necessary.
57-009 Shutdown Cooling (2GCB-10-10") Reducer to Heat Exchanger Weld	C-F/C2.1 Vol 100%	Weld Metal + 1/2 Base Metal See Remarks 2P2				100%	Instrumentation nozzles & lugs located inside scan area on heat exchanger side. A 1%V calibration enabled full two-directional axial coverage to be achieved from reducer side. Circumferential coverage also attained. Relief not necessary.

(1) 1" of shell or head

(3) Distributed uniformly among three areas around vessel circumference

(2) 11 of Main Piping Run/2" Branch Run

(4) 21 of Piping/21 of Support Attachment Member ("1" of support)

## ANO-2 LIMITED ISI EXAMINATION COVERAGE ESTIMATES FOR FIRST INSPECTION INTERVAL

ISI NO. COMPONENT IDENTIFICATION EXAMINATION AREA DESCRIPTION	CAT/ITEM NO. METHOD(S) EXTENT	EXAM VOLUME AND/OR AREA REASON FOR EXAMINATION LIMITATION RFOs EXAMINED	ESTIMATED COVERAGE %				REMARKS
			0-25	26-50	51-75	76-100	
58-011 Shutdown Cooling (2GCB-11-10") Reducer to Heat Exchanger Weld	C-F/C2.1 Vol 100%	Weld Metal + 1/2 t Base Metal See Remarks 2R2				100%	Two instrumentation nozzles located adjacent to weld on heat exchanger side. A 1%V calibration enabled full two-directional axial coverage to be achieved from reducer side. Circumferential coverage also attained with 1%V calibration. Relief not necessary.
59-035 Shutdown Cooling (2GCB-16-10") Heat Exchanger to Elbow Weld	C-F/C2.1 Vol 100%	Weld Metal + 1/2 t Base Metal See Remarks 2R2/2R4				100%	Instrumentation nozzles & lugs located inside scan area on heat exchanger side. A 1%V calibration enabled full two-directional axial coverage to be achieved from elbow side. Circumferential coverage also attained. Relief not necessary.
60-027 Shutdown Cooling (2GCB-17-10") Heat Exchanger to Elbow Weld	C-F/C2.1 Vol 100%	Weld Metal + 1/2 t Base Metal See Remarks 2R2				100%	Two instrumentation nozzles located adjacent to weld on heat exchanger side. A 1%V calibration enabled full two-directional axial coverage to be achieved from elbow side. Circumferential coverage also attained with 1%V calibration. Relief not necessary.
58-003B Shutdown Cooling (2GCB-3-12") Elbow Outside Long Seam Weld	C-F/C2.2 Vol 100%	Weld Metal + 1/2 t Base Metal Rigid Support Hanger 2R5				✓	
53-021A Safety Injection (2GCB-3-12") Elbow Long Seam Weld	C-F/C2.2 Vol 100%	Weld Metal + 1/2 t Base Metal Welded Identification Tag 2R2				✓	
55-029B Safety Injection (2GCB-7-14") Reducer Long Seam Weld	C-F/C2.2 Vol 100%	Weld Metal + 1/2 t Base Metal Identification Plate 2R5			✓		
17-024 Feedwater (2DBB-1-24") Elbow to Pipe Circumferential Weld	C-G/C2.1 Vol 100%	Weld Metal + 1/2 t Base Metal Nozzle 2R6				✓	
19-016 Feedwater (2DBB-2-24") Elbow to Valve Circumferential Weld	C-G/C2.1 Vol 100%	Weld Metal + 1/2 t Base Metal Nozzle/Valve Configuration 2R6				✓	

(1) "t" of shell or head

(3) Distributed uniformly among three areas around vessel circumference

(2) 1t of Main Piping Run/2" Branch Run

(4) 2t of Piping/2t of Support Attachment Member ("t" of support)



(1) 1" of shell or head

(2) 1t of Main Piping Run/2" Branch Run

(3) Distributed uniformly among three areas around vessel circumference

(4) 2t of Piping/2t of Support Attachment Member ("t" of support)