

ATTACHMENT 4

PROCEDURE 1092.193 - ADMINISTRATIVE CONTROL
OF INSERVICE INSPECTION (ISI) CALIBRATION STANDARDS

9101240146 910115
PDR ADOCK 05000368
0 PDR

Safety Related
AP&L

ARKANSAS POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: RECORD OF CHANGES AND REVISIONS

FORM 1000.006A REV 30

ENGINEERING PROGRAMS

SAFETY RELATED YES NO

PAGE 1 OF 1

ADMINISTRATIVE CONTROL OF INSERVICE
 INSPECTION (ISI) CALIBRATION STANDARDS
 1092.193 REV. 0

Controlled Copy #

PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV	PAGE	REV
1	0	17	0						
2	0	18	0						
3	0	19	0						
4	0	20	0						
5	0	21	0						
6	0	22	0						
7	0	23	0						
8	0								
9	0								
10	0								
11	0								
12	0								
13	0								
14	0								
15	0								
16	0								

FOR INFORMATION ONLY
 THIS DOCUMENT IS NOT CONTROLLED.
 VERIFY INFORMATION WITH A CONTROLLED DOCUMENT

COGNIZANT AUTHORITY APPROVAL:

M. T. Kim

APPROVAL DATE:

5/17/90

REQUIRED EFFECTIVE DATE:



AP&L

PLANT MANUAL SECTION:
ENGINEERING
PROGRAMS

PROCEDURE WORK PLAN TITLE:
ADMINISTRATIVE CONTROL OF INSERVICE
INSPECTION (ISI) CALIBRATION STANDARDS

NO:
1092.193

ARKANSAS NUCLEAR ONE

PAGE 1 of 23

REVISION 0 DATE 04/24/90

CHANGE DATE

1.0 PURPOSE

The purpose of this procedure is to establish controls for the design, fabrication, storage, and use of calibration standards utilized for Inservice Inspection (ISI) for Arkansas Nuclear One, Units 1 and 2.

2.0 SCOPE

This procedure addresses the Units 1 and 2 ISI calibration standards which are utilized to meet the requirements of Section XI of the ASME Boiler and Pressure Vessel Code as required by plant Technical Specifications.

3.0 REFERENCES

3.1 References used to develop this procedure were:

- 3.1.1 Quality Assurance Manual - Operations
- 3.1.2 ANO Unit 1 Technical Specifications
- 3.1.3 ANO Unit 2 Technical Specifications
- 3.1.4 ASME Boiler and Pressure Vessel Code Section XI, 1986 Edition (ANO-2)
- 3.1.5 ASME Boiler and Pressure Vessel Code, Section XI, 1980 Edition and Addenda through Winter 1981 (ANO-1)

4.0 DEFINITIONS

Calibration Standard - A piece or block of material which is used for calibrating or demonstrating range and sensitivity of non-destructive examination (NDE) equipment. Typically, a calibration standard is fabricated from identical or similar (metallurgical and physical properties) material to that used in the actual part or component to be examined.

Non-Destructive Examination (NDE) - The application of a non-destructive (non-damaging) examination method to a part or component to determine if the part or component can be used, or continue to be used, for its intended function. Typically, NDE methods include radiography, ultrasonics, magnetic particle, liquid penetrant, eddy current, and visual examination.



AP&L

PLANT MANUAL SECTION:
ENGINEERING
PROGRAMS

PROCEDURE/WORK PLAN TITLE:
ADMINISTRATIVE CONTROL OF INSERVICE
INSPECTION (ISI) CALIBRATION STANDARDS

NO:
1092.193

ARKANSAS NUCLEAR ONE

PAGE 2 of 23

REVISION 0 DATE 04/24/90

CHANGE DATE

5.0 RESPONSIBILITIES

- 5.1 Manager, Engineering Standards and Programs
Responsible for the implementation of this procedure.
- 5.2 Engineering Programs Superintendent/Engineering Program Supervisor
Ensure that the Engineering Programs Section complies with the requirements of this procedure addressing requirements for ISI calibration standards.
- 5.3 ISI Program Coordinator (Engineering Programs)
 - 5.3.1 Maintain a list of ISI calibration standards.
 - 5.3.2 Maintain material test reports and/or other documentation for the calibration standards.
 - 5.3.3 Ensure that the calibration standards are stored in a secure area (or areas) with limited access.
 - 5.3.4 Maintain an inventory list (check-out/check-in list) of the calibration standards.
 - 5.3.5 Specify which calibration standards are to be used for specific examinations.
 - 5.3.6 Ensure that the calibration standards are maintained in good physical condition.
 - 5.3.7 Review calibration standards, drawings, and applicable requirements against each other.
 - 5.3.8 Modify drawings and calibration standards as necessary to meet requirements.
 - 5.3.9 Incorporate vendor drawings into AP&L's drawing control program.
 - 5.3.10 Fabricate new calibration standards as necessary to meet ISI requirements.
 - 5.3.11 Coordinate with the NDE Group in order to make the ISI calibration standards available for performance of inspections, as well as personnel training and procedure writing.



PLANT MANUAL SECTION:
ENGINEERING
PROGRAMS

PROCEDURE/WORK PLAN TITLE:
ADMINISTRATIVE CONTROL OF INSERVICE
INSPECTION (ISI) CALIBRATION STANDARDS

NO:
1092.193

ARKANSAS NUCLEAR ONE

PAGE	3 of 23	
REVISION	0	DATE 04/24/90
CHANGE		DATE

6.0 INSTRUCTIONS

6.1 ISI calibration standards are required when conducting non-destructive examinations in order to assure standardization and repeatability of examinations that occur periodically during the lifetime of the plant. Specifically, the calibration standards are used to verify that certain components (Reactor Vessel, piping, etc.) are free from defects that could endanger their operability. Should an imperfection be found in a component, the ISI calibration standards are used for sizing and determining acceptance or rejection of the imperfection. For these reasons, the ISI calibration standards and their respective drawings and other documentation must be controlled and maintained in good condition at all times. The activities listed in section 5.3 of this procedure are intended to control the ISI calibration standards and to allow for ease of auditing by any regulatory agency.

6.2 Implementation

6.2.1 The ISI Coordinator, or his designated representative, will verify that the existing inventory of ISI calibration standards matches Attachments 1 and 2, which are the lists of calibration standards for ANO-1 and ANO-2, respectively. Any discrepancies will be resolved. The use of Form 1092.193A will ensure that all ISI calibration standards are accurately accounted for.

6.2.2 The ISI Coordinator, or his designated representative, will also perform all other responsibilities listed in section 5.3 of this procedure.

7.0 ATTACHMENTS AND FORMS

7.1 Attachment 1 - ANO-1 ISI Calibration Standards

7.2 Attachment 2 - ANO-2 ISI Calibration Standards

7.3 Form 1092.193A - ISI Calibration Standards Check-Out Log

ATTACHMENT 1

Page 1 of 9

ANO-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX. WT. (LBS)
40008	M11-001 PC-25614-1	Inconel 600	Stm. Gen. Tube E. T. Standard (5/8 "O. D. X .037" Wall Thickness)	1
40801	M11-002 PC-24900-2	Carbon Steel SA-515 GR 70 3/16" Stainless Steel SA-308	3" Th. X 11" X 3"	28
40802	M11-003 PC-24901-2	Carbon Steel SA-515 GR 70 3/16" Stainless Steel SA-308	1.5" Th. X 11.6" X 1.45"	7
40803	M11-004 PC-24902-2	Carbon Steel SA-515 GR 70 3/16" Stainless Steel SA-308	5" Th. X 19.9" X 5"	140
40804	M11-005 PC-24903-2	Carbon Steel SA-515 GR 70 3/16" Stainless Steel SA-308	7" Th. X 20" X 6"	237
40805	M11-006 PC-24904-2	Carbon Steel S-515 GR 70 3/16" Stainless Steel SA-308	9" Th. X 25.3" X 6"	387
40806	M11-007 PC-24905-1	Carbon Steel SA-515 GR 70 3/16" Stainless Steel SA-308	10" Th. X 26" X 6"	442



AP&L

 PLANNING SECTION
 PROGRAMS

 PROJECT/PROGRAM TITLE
 ADMINISTRATIVE CONTROL OF INSERVICE
 INSPECTION (ISI) CALIBRATION STANDARDS

NO:

1092.193

 PAGE 4 OF 23
 REVISION 0 DATE 04/24/90
 CHANGE DATE

ARKANSAS NUCLEAR ONE

ATTACHMENT 1

Page 2 of 9

ANG-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
40807	M11-008 PC-24906-1	Carbon Steel SA-515 GR 70 3/16" Stainless Steel SA-308	12" Th. X 30" X 6"	611
40808	M11-009 PC-24907-1	Carbon Steel SA-302 GR B 3/16" Stainless Steel SA-308	13" Th. X 32" X 6"	706
40809	M11-010 PC-24908-2	Stainless Steel SA-240 TP 304	1.5" Th. X 12" X 1.5"	8
40810	M11-011 PC-24909-1	Stainless Steel	.75" Th. X 12.375" X .75"	2
40811	M11-012 PC-24910-3	Stainless Steel SA-240 TP 304	10.25" O.D. X 1" Wall Th. X 3" Lg.	26
40812	M11-013 PC-24911-2	Stainless Steel SA-240 TP 304	3" Th. X 12" X 3"	31
40813	M11-014 PC-24912-3	Stainless Steel SA-240 TP 304	2.875" O.D. X 3/8" Wall X 3" Lg.	3
40814	M11-015 PC-24913-2	Inconel SB-166	10.75" O. D. X 1" Wall X 3" Lg.	28
40815	M11-016 PC-24914-3	Inconel SB-166	3" OD X .825" Wall X 3" Lg.	6



APOL

ARKANSAS NUCLEAR ONE

 ENGINEERING SECTION
 PROGRAMS

 PROJECT/PROGRAM CONTROL OF INSERVICE
 INSPECTION (ISI) CALIBRATION STANDARDS

NO.

1092.193

 PAGE 5 OF 23
 REVISION 0
 CHANGE DATE 04/24/90

ANO-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
40816	M11-017 PC-24915-2	Inconel SB-166	3.5" OD X .7" Wall X 3" Lg.	6
40817	M11-018 PC-24916-3	Inconel SB-166	4" OD X .625" Wall X 3" Lg.	7
40818	M11-019 PC-24917-3	Stainless Steel SA-240 TP 304	3.25" OD X .375" Wall X 3" Lg.	4
40819	M11-020 PC-24918-2	Carbon Steel M 1040	10.5" OD X 1.75" Wall X 1.9" Lg.	14
40820	M11-021 PC-24919-2	Stainless Steel SA-240 TP 304	3.5" OD X .6" Wall X 3.3" Lg.	3
40821	M11-022 PC-24987-1	Inconel 600	Stm. Gen. Tube ET Standard 5/8" O.D. X .037" Wall Th.	1
40823	M11-023 PC-25561-0	Carbon Steel	.732" Th. X 5.9" X 2.95"	4
40824 (UT-51)	M11-024 C6370501090- UT-51	Carbon Steel SA-515 GR 65	Main Steam, 38" OD 1.167" Th. X 12" X 6"	24
40825 (UT-48)	M11-025 D6370501058- UT-48	Carbon Steel SA-106 GR B	Main Feedwater, 18" OD 18" Sch. 80, .938" Th., 16" Lg.	57



AP&L

 PLANT INSPECTION SECTION
 PROGRAMS

ARKANSAS NUCLEAR ONE

 RESEARCH AND DEVELOPMENT CENTER
 INSPECTION (ISI) CALIBRATION STANDARDS

 PAGE 5 OF 23
 REVISION 0
 CHANGE DATE 04/24/90

 NO:
 1092.193

ATTACHMENT 1

Page 4 of 9

ANO-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
40826 (40861)	M11-026 PC-25612-0	Carbon Steel A-540 GR. B-23	RPV Closure Nut Block number changed to 40861	44
40828	M11-027 PHD-30116	Carbon Steel Stainless Steel SA-307 & SA-308	Nozzle-to-Pipe 2.85" Th X 12" X 7.5"	72
40829	M11-028 PHD-30115	Carbon Steel	Flange Ligaments 6.06" Th X 12" X 6"	124
40830	M11-029 PHD-30117	Carbon Steel Stainless Steel	Nozzle-to-Vessel Flange-to-Vessel 18" Th X 45" X 8.5"	1950
40831	M11-030 PC-25676-1	Carbon Steel A-106B Seamless	8" Sch. 60, .41" Th, 12" Lg	18
40834	M11-031 PC-25677-0	Carbon Steel A-106B Seamless	14" Sch 80, .75" Th, 12" Lg	27
40836	M11-032 PC-25680-1	Carbon Steel SA-515 GR-60	.75" Th X 6" X 3"	4
40837 (UT-50)	M11-033 C6370501080- UT-50	Carbon Steel SA-515 GR-65	Main Stream, 38" OD 1.875" Th X 12" X 6"	39



AP&L

ARKANSAS NUCLEAR ONE

 INSPECTION SECTION:
PROGRAMS

 PROJECT/PROGRAM PLAN CONTROL OF INSERVICE
ADMINISTRATIVE INSPECTION (ISI) CALIBRATION STANDARDS

NO:

1092.193

PAGE 7 of 23

REVISION 0 DATE 04/24/90

CHANGE DATE

ATTACHMENT 1

Page 5 of 9

ANO-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX. WT. (LBS)
40838	M11-034 PC-25681-1	Carbon Steel SA-516 GR-70	5" Th X 22" X 8"	250
40840	M11-035 PC-25682-1	Stainless Steel SA-182 TP F-304	6.50" OD X 1.12" Th X 12" Lg	40
40843	M11-036 PC-25675-1	Stainless Steel A-376 TP 316	8" Sch. 140, .81" Th, 12" Lg	34
40845	M11-037 PC-25679-2	Stainless Steel A-358 CL-1 304	12.75" Std Pipe, .375" Wall, 12" Lg	13
40846	M11-038 PC-25641-1	Stainless Steel A-376 TP 316	12.75", Sch 140, 1.125" Th, 12" Lg	35
40848	M11-039 PC-25678-0	Stainless Steel A-376 TP 316	14" Sch 140, 1.25" Th, 12" Lg	43
40849	M11-040 PC-25683-0	Stainless Steel SA-336-65A	15.60" OD, 1.6" Th, 12" Lg	62
40850	M11-041 PC-25684-0	Inconel 600	Stm Gen Tube E. T. 5/8" OD X .039" Wall	1
40851	M11-042 PC-25685-0	Inconel 600	Stm Gen Tube E. T. 5/8" OD X .039" Wall	1
40852	M11-043 1121229B-0	Stainless Steel A376 TP 316	4" Sch. 120, .438" Th, 6" Lg	3
40853	M11-044 1121230B-0	Stainless Steel SA 312 TP 316	2 1/2" Sch 160, .375" Th, 6" Lg	1


ARKANSAS NUCLEAR ONE

 PLANT MAINTENANCE SECTION:
PROGRAMS

 PROJECT/DEPARTMENT/PLANT TITLE:
ADDITIONAL GENERAL INSPECTION (ISI) CALIBRATION STANDARDS

NO:

1092.193

 PAGE 8 OF 23
 REVISION 0 DATE 04/24/90
 CHANGE DATE

ANO-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
40854	M11-045 1121231B-0	Stainless Steel SA-312 TP 316	4" Sch. 160, .531" Th, 6" Lg	3
40855	M11-046 1122837B-1	CS, SA540 GR23	RV Closure Stud 6 1/2" Dia. Stud 30.63" Lg With center hole	288
40856	M11-047 C6370501- 102-01	CS, SA320 L43	1 13/16" Dia Stud 2-8UN-2A 16 3/8" Lg	12
40857	M11-048 C6370501- 121-01	CS, SA320 L43	2 1/2" Dia Stud, 2 3/4 - 8UN-2A 14 3/4" Lg	21
40858	M11-049 C6370501- 122-01	CS, SA320 L43	Stud, 2 - 8UN - 2A, 11 7/16" Lg	10
40859	M11-050 C6370501- 123-01	CS, SA320 L23	1 1/4" Dia Stud, 7 1/2" Lg	3
40860	M11-051 C6370501- 124-01	CS, SA540 GR23 CL5	4 3/4" Dia Stud, 34" Lg	170
40861	M11-052 PC-25612B-1	CS, SA540 GRB23	RV Closure Nut Castle Nut 1.425" Th, 8.685" Lg Previously numbered 40826	44



ARKANSAS NUCLEAR ONE

PLANT MAINTENANCE SECTION:
PROGRAMS

PROJECT/EMPLOYEE PLAN TITLE:
ADMINISTRATIVE CONTROL OF INSERVICE
INSPECTION (ISI) CALIBRATION STANDARDS

PAGE 9 OF 23
REVISION 0 DATE 04/24/90
CHANGE DATE

NO:
1092.193

ATTACHMENT 1

Page 7 of 9

ANO-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
40863	M11-053 C6370501- 125-01	CS, A193 B7	MS Safety Valve Stud 1 3/8" Stud, 10" Lg	4
40864	M11-054 1122840B-1	SS, A312 or 376 TP 304	Decay Heat Piping 10" Pipe 10.667" OD, 8" Lg, .4" Wall	17
40865	M11-055 1122841B-2	SS, A312 or 376 TP 304	Decay Heat Piping 6" Pipe 6.625" OD, 8" Lg, Sch. 40S	6
40866	M11-056 C6370501- 126-01	CS, NA	Stud, 1 1/8 - 8UN - 2A, 6 1/2" Lg	2
40867	M11-057 1122980C-0	SS, SA-320 L43	Secondary Handhole Stud 1" Stud 5" Lg	1
40868	M11-058 C6370501- 127-01	CS, SA 193 B14	Feedwater Flange Stud 1" Stud 4 3/4" Lg	1
40869	M11-059 C6370501- 128-01	CS, SA 193 B14	Handhole and Feedwater Flange Stud 3/4" Stud, 5 1/4" Lg	1
40870	M11-060 C6370501- 129-01	304 SS	3 1/2" Dia, .75" Th Wall, 11" Lg	10


ARKANSAS NUCLEAR ONE

 PLANT ENGINEERING SECTION
 PROGRAMS

 PROJECT/REWORK PLAN TITLE
 ADMINISTRATION/PLANT CONTROL OF INSERVICE
 INSPECTION (ISI) CALIBRATION STANDARDS

NO.

1092.193

 PAGE 10 OF 23
 REVISION 0 DATE 04/24/90
 CHANGE DATE

ANO-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
40872	MII-061 C6370501- 130-01	CS, SA 193 B7	Stud, 1 7/8 - 8UN - 2A, 10 5/8" Lg	8
40900	MII-062 1135870C-1	Stainless Steel Clad CS, SA533 GR-B	R. V. Core Circumferential Weld 8.75" Th X 36" X 8"	713
40901	MII-063 1135871C-1	Stainless Steel Clad SA 508 CL-2	R. V. Lower Head to Dutchman 5" Th X 21" X 6" Flat	178
40902	MII-064 1135872C-1	Stainless Steel Clad SA 508 CL-2	R. V. Inlet & Outlet Nozzles 11.86" Th X 45" X 6" Curved	906
40903	MII-065 1135873C-1	Stainless Steel Clad CS, SA508 CL-2	Core Flood Nozzle 12.25" ID X 1.70" Wall Th X 12" Lg	126
40904	MII-066 1135874C-1	SS, SA376 TY-316	Core Flood Nozzle Safe End 14" Sch 140, 1.25" Wall Th X 12" Lg	85
40905	MII-067 1135875B-1	Stainless Steel Clad CS, ASTM A106 GR-C	R. V. Nozzle-to-Pipe 43" OD X 3.125" Wall Th X 12" Lg	135


ARKANSAS NUCLEAR ONE

 PLANT MEETING SECTION:
PROGRAMS

 PROGRAMS FOR PLANT CONTROL:
INSPECTION (ISI) CALIBRATION STANDARDS

 PAGE 11 OF 23
 REVISION 0 DATE 04/24/90
 CHANGE DATE

 NO:
1092.193

ATTACHMENT 1

Page 9 of 9

ANO-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX. WT. (LBS)
40906	M11-068 1135876B-1	Stainless Steel Clad A-106 GR-C	R. V. Nozzle-to-Pipe 33" OD X 2.5 Wall Th X 12" Lg	86
40930	M11-069 1135953B-0	Inconel, C-163	Stm Gen Tube ET 5/8" OD X .03825" Wall Th	1
40931	M11-070 1135952B-0	Inconel, SB-163	Stm Gen Tube ET 5/8" OD X .03825" Wall Th	1
RCP-7	M11-071 D-1970-601 Rev. A	Cast Stainless Steel SA-351, CF8M	RCP Casing Welds	492
RCP-2	M11-072 D-1970-600 Rev. A	Cast Stainless Steel SA-351, CF8M	RCP Casing Welds	520
40813R	M11-073 D-6370-501- 153	Stainless Steel SA-240 TP 304	Piping 2.875" OD X 3/8" Wall X 16" Lg	5
40815R	M11-074 D-6370-501 154	Inconel SB-166	Piping 3" OD, .825" Wall X 16" Lg	13
40817R	M11-075 D-6370-501 152	Inconel SB-166	Piping 4" OD, .625" Wall X 16" Lg	12
40818R	M11-076 D-6370-501 155	Stainless Steel SA-240 TP 304	Piping 3.25" OD, .33" Wall X 16" Lg	5



AP&L

 MAINTENANCE SECTION:
 ENGINEERING PROGRAMS

ARKANSAS NUCLEAR ONE

 PROJECT/PROGRAM PLAN TITLE:
 ADMINISTRATIVE CONTROL OF INSERVICE
 INSPECTION (ISI) CALIBRATION STANDARDS

NO:

1092.193

 PAGE 12 OF 23
 REVISION 0 DATE 04/24/90
 CHANGE DATE

ATTACHMENT 2

Page 1 of 10

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-1	M-2001- I1-001 B-245-273-4 C-6370-501- 089, Rev. 1	SA-533, GR B, CL 1 Stainless Steel Clad	Reactor Vessel Upper Shell 10.75" Th X 10.75" X 38.25"	1251
UT-2	M-2001- I1-002 B-245-274-4 C-6370-501- 087, Rev. 1	SA-533, GR B, CL 1 Stainless Steel Clad	Reactor Vessel Middle and Lower Shells Steam Generator Primary Head, Reactor Vessel Closure Head, Reactor Vessel Shear Keys 7" Th X 7" X 27"	375
UT-3	M-2001- I1-003 B-245-275-2 C-6370-501- 088, Rev. 1	SA-533, GR B, CL 1 Stainless Steel Clad	Pressurizer Shell, Reactor Vessel Bottom Head 5" Th X 6" X 21"	178
UT-4	M-2001- I1-004 B-245-276-3	SA-533, GR B, CL 1 Stainless Steel Clad	Pressurizer Shell - (not utilized) 3" Th X 6" X 18"	92
UT-5	M-2001- I1-005 C-246-383-3	SA-516, GR 70 SS 304 Clad	Primary Piping 3 1/2" thick roll bond clad X 6" X 18"	107
UT-6	M-2001 I1-006 B-246-374-3	Alloy Steel, SA-533, Grade B, Class 1	Steam Generator Support Skirt, Pressurizer Support Skirt 3" thick unclad X 6" X 18"	92



APPL

 PLANT INQUIRY SECTION:
 ENGINEERING PROGRAMS

 PROJECT ENGINEERING CONTROL OF INSERVICE
 ADMINISTRATION OF THE
 INSPECTION (ISI) CALIBRATION STANDARDS

NO.

1092 193

ARKANSAS NUCLEAR ONE

 PAGE 13 OF 23
 REVISION 0
 CHANGE DATE 04/24/90

ATTACHMENT 2

Page 2 of 10

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-7	M-2001-11-007 C-245-592-1	SA-533, GR B, CL 1 Stainless Steel Clad	Reactor Vessel Flange and Ligament 11" X 7" X 32"	665
UT-8	M-2001-11-008 C-246-390-1 C-6370-501-083, Rev. 2	SA-533, GR B, CL 1 Stainless Steel Clad	Reactor Vessel Inlet Nozzle Profile 11" X 22" X 30"	1223
UT-9	M-2001-11-009 C-246-391-1 C-6370-501-084, Rev. 2	SA-533, GR B, CL 1 Stainless Steel Clad	Reactor Vessel Outlet Nozzle Profile 11" X 24" X 35"	1793
UT-10	M-2001-11-010 C-246-377-5	Alloy Steel, SA-533 Grade B, Class 1 Stainless Steel Clad	Steam Generator Nozzle Inner Radii 12" X 10" X 16"	435
UT-11	M-2001-11-011 C-246-386-3	Alloy Steel, SA-533 Grade B, Class 1 Stainless Steel Clad	Pressurizer Surge Nozzle Inner Radius 14" X 33" dia., 120° segment	500
UT-12	M-2001-11-012 C-246-385-5	Alloy Steel, SA-533 Grade B, Class 1 Stainless Steel Clad	Pressurizer Spray Nozzle Inner Radius 11" X 19" dia., 120° segment	143
UT-13	M-2001-11-013 C-246-439-3	Alloy Steel, SA-533 Grade B, Class 1 Stainless Steel Clad	Pressurizer Safety Nozzle Inner Radius 7" X 19" dia., 120° segment	33



PLANT MAINTENANCE SECTION:
PROGRAMS

PROGRAMS CONTROL OF INSERVICE
ADMINISTRATIVE CONTROL OF INSERVICE
INSPECTION (ISI) CALIBRATION STANDARDS

PAGE 14 OF 23
REVISION 0 DATE 04/24/90
CHANGE DATE

NO: 1092.193

ARKANSAS NUCLEAR ONE

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-14	M-2001- I1-014 C-246-388-4	Stainless Steel, SA-351, Grade CF8M	Reactor Coolant Pump to Primary Coolant Piping Safe-End 12" X 36" dia., 3 1/8" thick	121
UT-15	M-2001- I1-015 N/A	Deleted	None. Replaced by UT-54 due to incom- patible wall thickness with components Deleted	N/A
UT-16	M-2001- I1-016 C-246-365-3 C-6370-501- 096, Rev. 1	Alloy Steel SA-508, Class 2, Stainless Steel SA-182, Type 316, Weld Material, and Cladding	Pressurizer Safety Nozzle Safe-End 12" X 8" dia. 1 1/2" thick	33
UT-17	M-2001- I1-017 C-246-389-3 C-6370-501- 095, Rev. 1	Carbon Steel SA-106 Grade B, Stainless SA-182, Type 316, Weld Material, and Cladding	Primary Coolant Charging Nozzle Safe-End 12" X 5" dia. 1 1/4" thick	15
UT-18	M-2001- I1-018 C-246-373-4 C-6370-501- 094, Rev. 1	Alloy Steel SA-508, Class 2, Stainless Steel SA-182, Type 316, Weld Material, and Cladding	Pressurizer Spray Nozzle Safe-End, Primary Coolant Drain and Spray Nozzle Safe-Ends 12" X 4 1/2" dia. 3/4" thick	8
UT-19	M-2001- I1-019 B-245-135-1	Carbon Steel, A-540	Reactor Vessel Stud 6 1/2" dia., 26" long	244



APPL
ARKANSAS NUCLEAR ONE

PLANT MAINTENANCE SECTION:
ENGINEERING PROGRAMS

PROSPECTIVE CONTROL OF INSERVICE
INSPECTION (ISI) CALIBRATION STANDARDS

NO:

1092, 193

PAGE 15 OF 23
REVISION 0 DATE 04/24/90
CHANGE DATE

ATTACHMENT 2

Page 4 of 10

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-20	M-2001- I1-020 B-245-134-1	Carbon Steel, A-540 GR B 23	Reactor Vessel Nut 10" X dia. ring, 7" long	90
UT-21	M-2001- I1-021 C-245-591-1	SA-182 F-316	Closure Head Instrument Nozzle 5 21/32" dia. ring, 12" long	33
UT-22	M-2001- I1-022 C-245-378-4	Stainless Steel SA-351 Grade CF8M and Weld Material	Surge Line 12" X 13" dia., 1 1/2" thick	46
UT-23	M-2001- I1-023 C-6370-501- 010, Rev. 1	Carbon Steel, SA-540, GR B23	Reactor Coolant Pump Stud 18" long X 4 3/4" dia.	86
UT-24	M-2001- I1-024 C-6370-501- 009, Rev. 1	A-193, Type 4140	Reactor Coolant Pump Nut 4" high X 8 1/2" dia.	64
UT-25	M-2001- I1-025 D-6370-501- 028, Rev. 1	SA-312, Type 304	Regenerative Heat Exchanger 8" Sch 160	33
UT-26	M-2001- I1-026 D-6370-501- 030, Rev. 1	SA-312, Type 304	Letdown Heat Exchanger 18" dia. X .625" Th	51



AP&L

 PLANT ENGINEERING SECTION:
PROGRAMS

 POSITIVE CONTROL OF INSERVICE
INSPECTION (ISI) CALIBRATION STANDARDS

NO:

1092.193

 PAGE 16 OF 23
 REVISION 0 DATE 04/24/90
 CHANGE DATE

ARKANSAS NUCLEAR ONE

ATTACHMENT 2

Page 5 of 10

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-27	M-2001- I1-027 D-6370-501- 008, Rev. 1	SA-312 Type 316	Branch Piping, CEDM Upper Pressure Housing 2" Sch 160	5
UT-28	M-2001- I1-028 D-6370-501- 032, Rev. 1	SA-316	Branch Piping CL-1 3" Sch 160	10
UT-29	M-2001- I1-029 D-6370-501- 034, Rev. 1	SA-312 T316	Branch Piping CL-1 4" Sch 120	13
UT-30	M-2001- I1-030 C-6370-501- 035, Rev. 1	SA-316	Branch Piping CL-1 8" Sch 120	27
UT-31	M-2001- I1-031 C-6370-501- 036, Rev. 1	SA-316	Branch Piping CL-1 12" Sch 140	62
UT-32	M-2001- I1-032 C-6370-501- 037, Rev. 1	SA-312 Type 316	Branch Piping CL-1 14" Sch 140	76


ARKANSAS NUCLEAR ONE

 PLANT MAINTENANCE SECTION:
PROGRAMS

 PROGRAMS MAINTENANCE PLAN TITLE:
ADMINISTRATIVE CONTROL OF INSERVICE
INSPECTION (ISI) CALIBRATION STANDARDS

NO:

1092.193

 PAGE 17 OF 23
 REVISION 0 DATE 04/24/90
 CHANGE DATE

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-33	M-2001- I1-033 C-ISI-511- 026, Rev. 2	SA-182, F403, and SB-166	CEDM Motor Housing Upper Weld 9 5/8" long X 6.44" dia.	43
UT-34	M-2001- I1-034 C-ISI-511- 027, Rev. 1	SA-182 F403 and SB-166	CEDM Motor Housing Lower Weld 15 1/2" long X 7 3/16" dia.	96
UT-35	M-2001- I1-035 C-246-565-3	Alloy Steel, SA-533 Grade B, Class 1	Steam Generator Secondary Side Shell Welds 5 1/2" thick unclad	471
UT-36	M-2001- I1-036 C-246-567-2	Carbon Steel SA-516 Grade 70	Steam Generator Stay Dome 2" thick unclad	87
UT-37	M-2001- I1-037 C-246-566-1 C-6370-501- 086, Rev. 1	Carbon Steel SA-516 Grade 70	Steam Outlet Nozzle Extension, Shutdown Cooling Heat Exchanger 1 5/8" thick unclad	23
UT-38	M-2001- I1-038 C-246-564-0 C-6370-501- 085, Rev. 1	Carbon Steel SA-516 Grade 70	Feedwater Nozzle Extension 1" thick X 18 1/8" dia.	50



ENGINEERING SECTION:
PROGRAMS

PROCESS/WORK PLAN CONTROL OF INSERVICE
ADMINISTRATIVE PROGRAMS
INSPECTION (ISI) CALIBRATION STANDARDS

PAGE 18 OF 25
REVISION 0 DATE 04/24/90
CHANGE DATE

NO: 1092.193

ARKANSAS NUCLEAR ONE

ATTACHMENT 2

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-39	M-2001- I1-039 C-6370-501- 041, Rev. 1	SA-193 B7 Nickel Plated	Shutdown Cooling Heat Exchanger Bolting 1 1/2" dia. X 15" long	8
UT-40	M-2001- I1-040 C-6370-501- 042, Rev. 1	4140 ASTM A193 Grade B7	LPSI Pump Bolting 1 1/4" dia. X 4 11/16" long	2
UT-41	M-2001- I1-041 D-6370-501- 044, Rev. 1	SA-312 T316	Branch Piping CL 1 and 2 6" Sch 120	25
UT-42	M-2001- I1-042 D-6370-501- 045, Rev. 1	SA-358 T304	Branch Piping CL 2 6" Sch 40	13
UT-43	M-2001- I1-043 D-6370-501- 046, Rev. 1	SA-358 T304	Branch Piping CL 2 8" Sch 20	10
UT-44	M-2001- I1-044 D-6370-501- 047, Rev. 1	SA-358 T304	Branch Piping CL 2 10" Sch 20	13



PLANT MAINTENANCE SECTION:
ENGINEERING PROGRAMS

PROJECT: PLENUM CONTROL OF INSERVICE
ADMINISTRATIVE INSPECTION (ISI) CALIBRATION STANDARDS

NO: 1092.193

PAGE 19 of 23
REVISION 0 DATE 04/24/90
DATE

ARKANSAS NUCLEAR ONE

ATTACHMENT 2

Page 8 of 10

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPT' N	APPROX WT. (LBS)
UT-45	M-2001- I1-045 D-6370-501- 048, Rev. 1	SA-358 T304	Branch Piping CL 2 12" Sch 20	15
UT-46	M-2001- I1-046 D-6370-501- 049, Rev. 1	SA-358 T304	Branch Piping CL 2 14" Sch 20	27
UT-47	M-2001- I1-047 D-6370-501- 013, Rev. 1	SA-106 Grade B	Branch Piping CL 2 10" Sch 60	24
UT-48	M-2001- I1-048 D-6370-501- 058, Rev. 2	SA-106 Grade B	Main Feedwater Piping .938" thick X 18" dia.	76
UT-49	M-2001- I1-049 D-6370-501- 074, Rev. 1	SA-106 Grade B	Main Feedwater Piping 1.21" thick X 24" dia.	99
UT-50	M-2001- I1-050 C-6370-501- 090, Rev. 1	SA-515 Grade 65	Main Steam Piping 1.875" thick, Flat Plate	24

AP&L


ARKANSAS NUCLEAR ONE

 PLANT ENGINEERING SECTION:
PROGRAMS

 PROCEEDING FROM PLANT TITLE:
ADMINISTRATIVE CONTROL OF INSERVICE
INSPECTION (ISI) CALIBRATION STANDARDS

NO:

1092.193

 PAGE 20 OF 23
 REVISION 0 DATE 04/24/90
 CHANGE DATE

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-51	M-2001- I1-051 D-6370-501- 080, Rev. 1	SA-515 Grade 65	Main Steam Piping 1.167" thick, Flat Plate	38
UT-52	M-2001- I1-052 C-6370-501- 052, Rev. 1	SA-516 Grade 70, Clad SA-298 T304	Shutdown Heat Exchanger 1.375" thick	28
UT-53	M-2001- I1-053 C-6370-501- 073, Rev. 1	SA-312 T304	Regenerative Heat Exchanger 12" Sch 160, 1.312" Thick	71
UT-54	M-2001- I1-054 D-246-626-2	Stainless Steel SA-351 Grade CF8M, Carbon Steel SA-106 Grade B	Surge Nozzles, Safety Injection Nozzle and Shutdown Cooling Nozzle Safe Ends 12" X 13" dia., 11/16" T Replaced UT-15	81
UT-161-034	M-2001- I1-055 A-62787- 034-0	SA-533 GR-B CL1	Pressurizer .9993" Thick X 5" X 1"	2
UT-161-035	M-2001- I1-056 A-62787- 035-1	SA-533 GR-B CL1	Pressurizer Heater Plug 1.270" OD X .674" ID	2



ARKANSAS NUCLEAR ONE

PLANT INTERNAL SECTION
PROGRAMS

PROCESSES/WORK PLAN/CONTROL OF INSERVICE
ADMINISTRATIVE INSPECTION (ISI) CALIBRATION STANDARDS

NO:

1092.193

PAGE 21 OF 23
REVISION 0 DATE 04/24/90
CHANGE DATE

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-161-036	M-2001- I1-057 A-62787- 036-0	SA-533 GR-B CL1	Pressurizer 2.002" Thick X 2" X 1"	2
UT-99	M-2001- I1-099	A-516 GR-70	RCP Flywheel 6" Thick X 35" X 13 3/4"	700



ARKANSAS NUCLEAR ONE

PLANT ENGINEERING SECTION:
PROGRAMS

PROCESSES/EMERGENCY PLAN TITLE:
ADMINISTRATIVE CONTROL OF INSERVICE
INSPECTION (ISI) CALIBRATION STANDARDS

NOR

1092.193

PAGE 22 OF 23
REVISION 0 DATE 04/24/90
CHANGE DATE

ATTACHMENT 5

FIRST 10-YEAR INTERVAL RELIEF REQUESTS

A N O - 2

RELIEF REQUEST 1991-1

COMPONENT NUMBER(S):

02-B-82 thru 02-B-89

COMPONENT DESCRIPTION:

Bolting for the Eight (8) Incore Instrumentation (ICI) Flanges on the Reactor Vessel Closure Head. (See Figures 4.2-13 and 4.2-14)

EXAMINATION CATEGORY:

Tables IWB-2500 and IWB-2600, Category B-G-2, Item B4.12, Pressure Retaining Bolting Smaller than 2 Inches in Diameter.

CODE CLASS:

1

APPLICABLE ASME CODE SECTION XI EDITION AND ADDENDA:

1974 Edition with Addenda thru Summer 1975. (First 10-Year Interval 3/26/80 to 3/26/90)

EXAMINATION REQUIREMENT:

All pressure-retaining bolting (bolts, studs, nuts) shall receive a visual (VT) examination. Later editions and addenda of Section XI further clarify the requirement by specifying a VT-1 examination which is conducted to determine the condition of the component including such conditions as cracks, wear, corrosion, erosion, or physical damage.

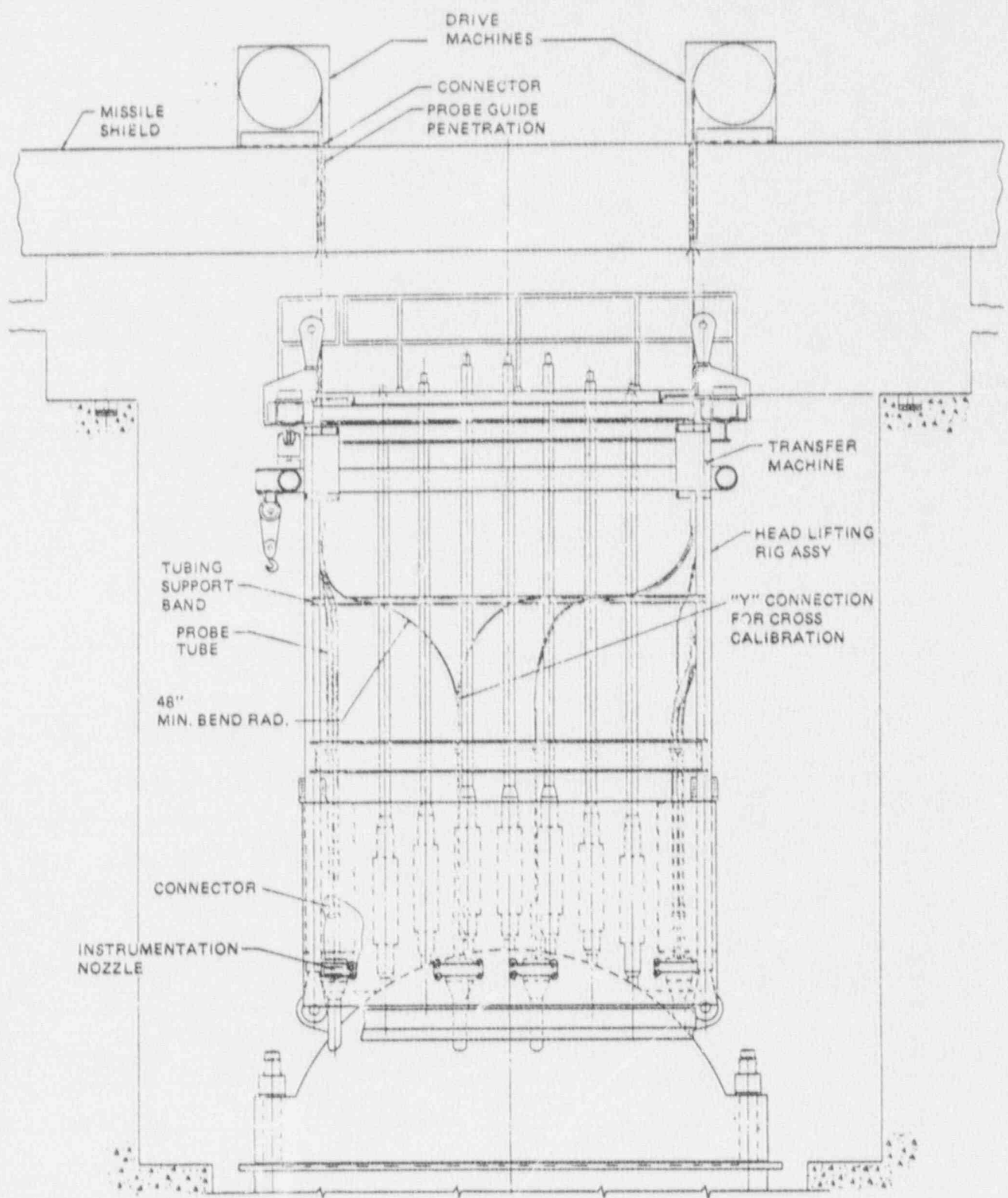
BASIS FOR RELIEF:

Impractical code requirement due to limitation of design. During the first 10-year interval of commercial operation (March 26, 1980, to March 26, 1990), the ICI bolting was inaccessible due to the design of the reactor vessel shroud that covers the reactor vessel closure head.

ALTERNATIVE TESTING:

A visual (VT-2) examination for leakage was performed on this general area of the reactor vessel closure head during each system leakage test or hydrostatic test following each reactor refueling outage. In addition, the original design of these

flanged joints was replaced with a different design in May 1988. Presently, plans have been developed to modify the design of the reactor vessel shroud to allow for greater access to items enclosed by the shroud, including these ICI flanges. This bolting should be more accessible during the second 10-year interval and will be examined to the extent practical, up to and including a full Section XI examination, if possible. The VT-2 examination for leakage will continue as in the past.

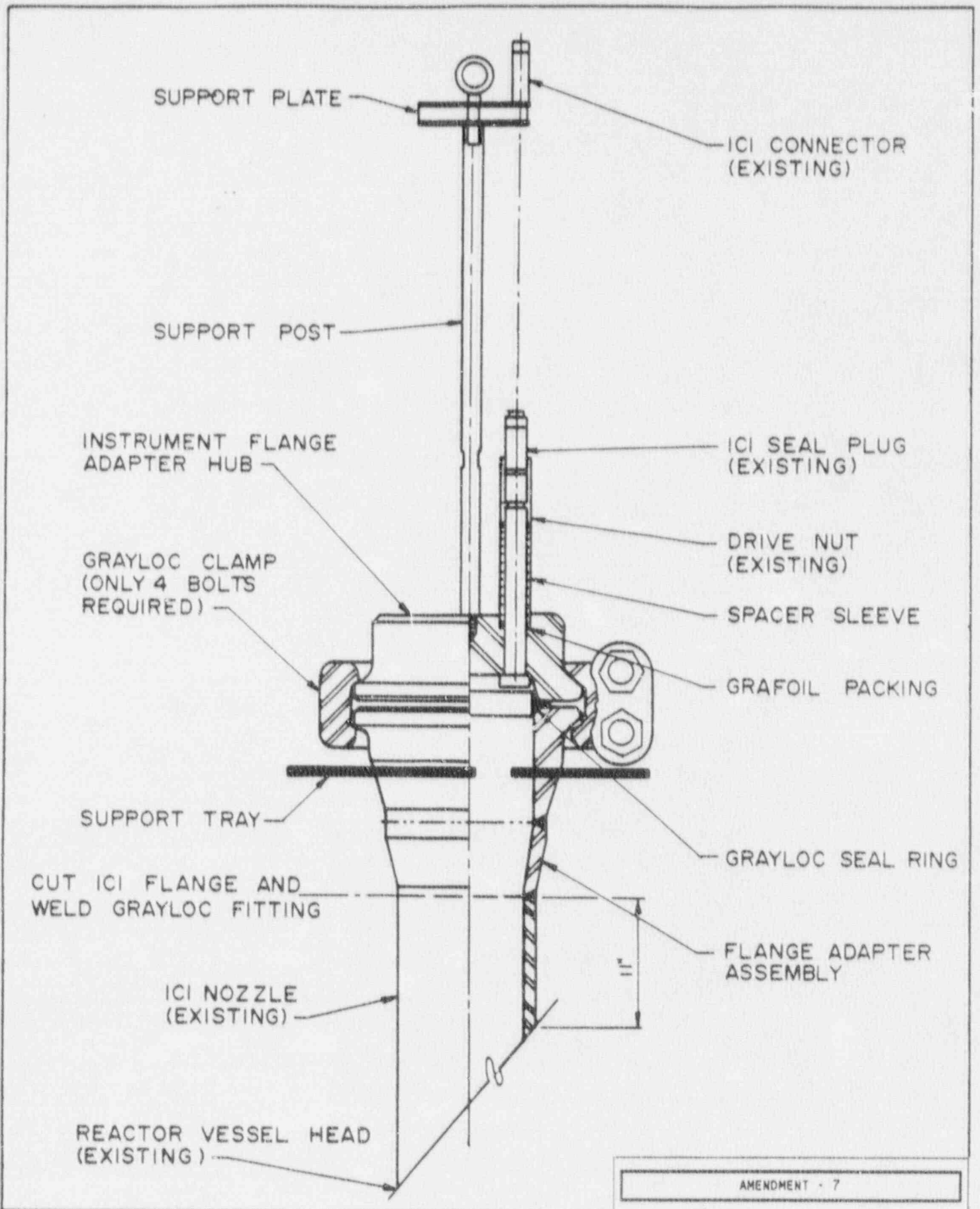


AMENDMENT - 7

ARKANSAS
POWER & LIGHT CO.
Arkansas
Nuclear One - Unit 2

MOVABLE DETECTOR SYSTEM LAYOUT

Figure
4.2-13



ARKANSAS
POWER & LIGHT CO.
Arkansas
Nuclear One - Unit 2

IN-CORE INSTRUMENT NOZZLE

Figure
4.2-14

A N O - 2

RELIEF REQUEST 1991-2

COMPONENT NUMBER(S):

N/A

COMPONENT DESCRIPTION:

All four welds in each of three peripheral Control Element Drive Mechanisms (CEDMs) on the Reactor Vessel Head. (See Figure 8, "Closure Head Assembly")

EXAMINATION CATEGORY:

Subarticle IWB-2500 and Tables IWB-2500 and IWB-2600, Category B-O, Item B1.18, "Control Rod Drive Housings"

CODE CLASS:

1

APPLICABLE ASME CODE SECTION XI EDITION AND ADDENDA:

1974 Edition with Addenda thru Summer 1975. (First 10-Year Interval 3/26/80 to 3/26/90)

EXAMINATION REQUIREMENT:

Volumetric examination of 100% of the welds in 10% of the 28 peripheral control rod drive housings.

BASIS FOR RELIEF:

Impractical code exam due to limitations of access due to design. The CEDMs are inaccessible due to the design of the Reactor Vessel Shroud that covers the Reactor Vessel Closure Head.

ALTERNATIVE TESTING:

A visual (VT-2) examination for leakage was performed on this general area of the Reactor Vessel Closure Head during each system leakage test or hydrostatic test following each reactor refueling outage. Presently,

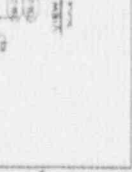
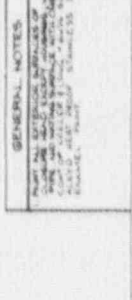
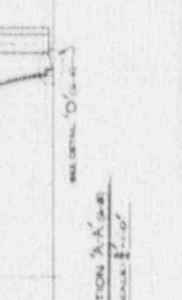
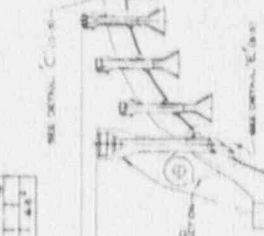
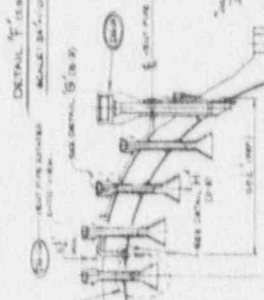
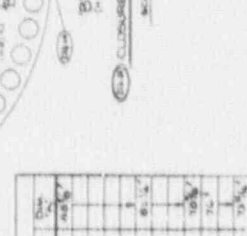
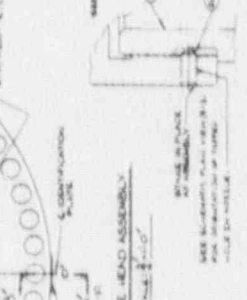
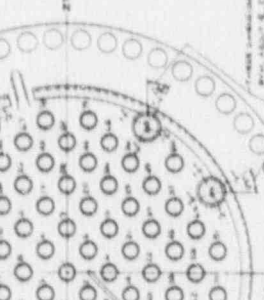
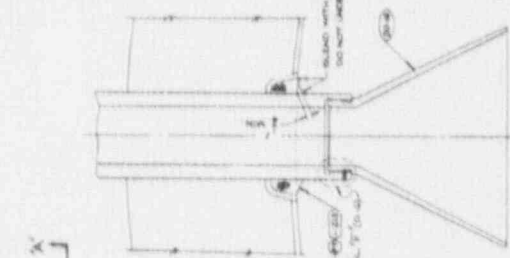
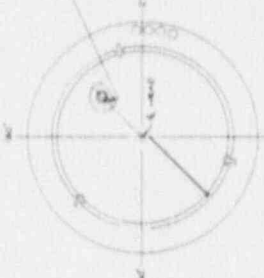
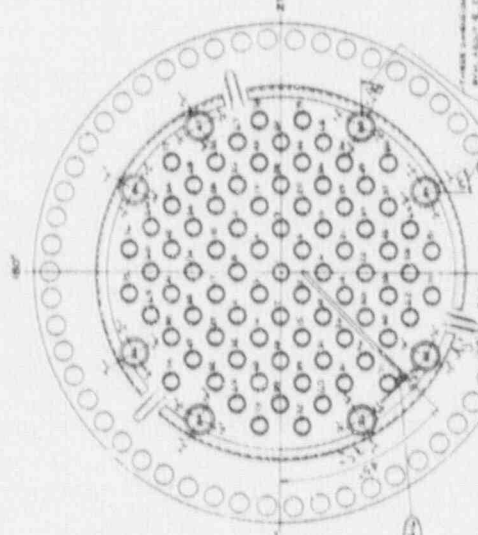
ALTERNATIVE TESTING: (Cont'd)

plans have been developed to modify the design of the Reactor Vessel Shroud to allow for greater access to items enclosed by the shroud including these CEDMs. During the second 10-year interval, these three CEDMs should be more accessible and will be examined to the extent practical up to, and including, a full Section XI examination. The VT-2 examination for leakage will also continue as in the past.

E-234 763

TABLE I
PARTS LIST

QTY	DESCRIPTION	REF	UNIT
1	COVER PLATE	101	PC
1	CLIP	102	PC
1	CLIP	103	PC
1	CLIP	104	PC
1	CLIP	105	PC
1	CLIP	106	PC
1	CLIP	107	PC
1	CLIP	108	PC
1	CLIP	109	PC
1	CLIP	110	PC
1	CLIP	111	PC
1	CLIP	112	PC
1	CLIP	113	PC
1	CLIP	114	PC
1	CLIP	115	PC
1	CLIP	116	PC
1	CLIP	117	PC
1	CLIP	118	PC
1	CLIP	119	PC
1	CLIP	120	PC
1	CLIP	121	PC
1	CLIP	122	PC
1	CLIP	123	PC
1	CLIP	124	PC
1	CLIP	125	PC
1	CLIP	126	PC
1	CLIP	127	PC
1	CLIP	128	PC
1	CLIP	129	PC
1	CLIP	130	PC
1	CLIP	131	PC
1	CLIP	132	PC
1	CLIP	133	PC
1	CLIP	134	PC
1	CLIP	135	PC
1	CLIP	136	PC
1	CLIP	137	PC
1	CLIP	138	PC
1	CLIP	139	PC
1	CLIP	140	PC
1	CLIP	141	PC
1	CLIP	142	PC
1	CLIP	143	PC
1	CLIP	144	PC
1	CLIP	145	PC
1	CLIP	146	PC
1	CLIP	147	PC
1	CLIP	148	PC
1	CLIP	149	PC
1	CLIP	150	PC
1	CLIP	151	PC
1	CLIP	152	PC
1	CLIP	153	PC
1	CLIP	154	PC
1	CLIP	155	PC
1	CLIP	156	PC
1	CLIP	157	PC
1	CLIP	158	PC
1	CLIP	159	PC
1	CLIP	160	PC
1	CLIP	161	PC
1	CLIP	162	PC
1	CLIP	163	PC
1	CLIP	164	PC
1	CLIP	165	PC
1	CLIP	166	PC
1	CLIP	167	PC
1	CLIP	168	PC
1	CLIP	169	PC
1	CLIP	170	PC
1	CLIP	171	PC
1	CLIP	172	PC
1	CLIP	173	PC
1	CLIP	174	PC
1	CLIP	175	PC
1	CLIP	176	PC
1	CLIP	177	PC
1	CLIP	178	PC
1	CLIP	179	PC
1	CLIP	180	PC
1	CLIP	181	PC
1	CLIP	182	PC
1	CLIP	183	PC
1	CLIP	184	PC
1	CLIP	185	PC
1	CLIP	186	PC
1	CLIP	187	PC
1	CLIP	188	PC
1	CLIP	189	PC
1	CLIP	190	PC
1	CLIP	191	PC
1	CLIP	192	PC
1	CLIP	193	PC
1	CLIP	194	PC
1	CLIP	195	PC
1	CLIP	196	PC
1	CLIP	197	PC
1	CLIP	198	PC
1	CLIP	199	PC
1	CLIP	200	PC



NO.	DESCRIPTION	QTY	UNIT
1	COVER PLATE	1	PC
2	CLIP	200	PC
3	CLIP	200	PC
4	CLIP	200	PC
5	CLIP	200	PC
6	CLIP	200	PC
7	CLIP	200	PC
8	CLIP	200	PC
9	CLIP	200	PC
10	CLIP	200	PC
11	CLIP	200	PC
12	CLIP	200	PC
13	CLIP	200	PC
14	CLIP	200	PC
15	CLIP	200	PC
16	CLIP	200	PC
17	CLIP	200	PC
18	CLIP	200	PC
19	CLIP	200	PC
20	CLIP	200	PC
21	CLIP	200	PC
22	CLIP	200	PC
23	CLIP	200	PC
24	CLIP	200	PC
25	CLIP	200	PC
26	CLIP	200	PC
27	CLIP	200	PC
28	CLIP	200	PC
29	CLIP	200	PC
30	CLIP	200	PC
31	CLIP	200	PC
32	CLIP	200	PC
33	CLIP	200	PC
34	CLIP	200	PC
35	CLIP	200	PC
36	CLIP	200	PC
37	CLIP	200	PC
38	CLIP	200	PC
39	CLIP	200	PC
40	CLIP	200	PC
41	CLIP	200	PC
42	CLIP	200	PC
43	CLIP	200	PC
44	CLIP	200	PC
45	CLIP	200	PC
46	CLIP	200	PC
47	CLIP	200	PC
48	CLIP	200	PC
49	CLIP	200	PC
50	CLIP	200	PC
51	CLIP	200	PC
52	CLIP	200	PC
53	CLIP	200	PC
54	CLIP	200	PC
55	CLIP	200	PC
56	CLIP	200	PC
57	CLIP	200	PC
58	CLIP	200	PC
59	CLIP	200	PC
60	CLIP	200	PC
61	CLIP	200	PC
62	CLIP	200	PC
63	CLIP	200	PC
64	CLIP	200	PC
65	CLIP	200	PC
66	CLIP	200	PC
67	CLIP	200	PC
68	CLIP	200	PC
69	CLIP	200	PC
70	CLIP	200	PC
71	CLIP	200	PC
72	CLIP	200	PC
73	CLIP	200	PC
74	CLIP	200	PC
75	CLIP	200	PC
76	CLIP	200	PC
77	CLIP	200	PC
78	CLIP	200	PC
79	CLIP	200	PC
80	CLIP	200	PC
81	CLIP	200	PC
82	CLIP	200	PC
83	CLIP	200	PC
84	CLIP	200	PC
85	CLIP	200	PC
86	CLIP	200	PC
87	CLIP	200	PC
88	CLIP	200	PC
89	CLIP	200	PC
90	CLIP	200	PC
91	CLIP	200	PC
92	CLIP	200	PC
93	CLIP	200	PC
94	CLIP	200	PC
95	CLIP	200	PC
96	CLIP	200	PC
97	CLIP	200	PC
98	CLIP	200	PC
99	CLIP	200	PC
100	CLIP	200	PC
101	CLIP	200	PC
102	CLIP	200	PC
103	CLIP	200	PC
104	CLIP	200	PC
105	CLIP	200	PC
106	CLIP	200	PC
107	CLIP	200	PC
108	CLIP	200	PC
109	CLIP	200	PC
110	CLIP	200	PC
111	CLIP	200	PC
112	CLIP	200	PC
113	CLIP	200	PC
114	CLIP	200	PC
115	CLIP	200	PC
116	CLIP	200	PC
117	CLIP	200	PC
118	CLIP	200	PC
119	CLIP	200	PC
120	CLIP	200	PC
121	CLIP	200	PC
122	CLIP	200	PC
123	CLIP	200	PC
124	CLIP	200	PC
125	CLIP	200	PC
126	CLIP	200	PC
127	CLIP	200	PC
128	CLIP	200	PC
129	CLIP	200	PC
130	CLIP	200	PC
131	CLIP	200	PC
132	CLIP	200	PC
133	CLIP	200	PC
134	CLIP	200	PC
135	CLIP	200	PC
136	CLIP	200	PC
137	CLIP	200	PC
138	CLIP	200	PC
139	CLIP	200	PC
140	CLIP	200	PC
141	CLIP	200	PC
142	CLIP	200	PC
143	CLIP	200	PC
144	CLIP	200	PC
145	CLIP	200	PC
146	CLIP	200	PC
147	CLIP	200	PC
148	CLIP	200	PC
149	CLIP	200	PC
150	CLIP	200	PC
151	CLIP	200	PC
152	CLIP	200	PC
153	CLIP	200	PC
154	CLIP	200	PC
155	CLIP	200	PC
156	CLIP	200	PC
157	CLIP	200	PC
158	CLIP	200	PC
159	CLIP	200	PC
160	CLIP	200	PC
161	CLIP	200	PC
162	CLIP	200	PC
163	CLIP	200	PC
164	CLIP	200	PC
165	CLIP	200	PC
166	CLIP	200	PC
167	CLIP	200	PC
168	CLIP	200	PC
169	CLIP	200	PC
170	CLIP	200	PC
171	CLIP	200	PC
172	CLIP	200	PC
173	CLIP	200	PC
174	CLIP	200	PC
175	CLIP	200	PC
176	CLIP	200	PC
177	CLIP	200	PC
178	CLIP	200	PC
179	CLIP	200	PC
180	CLIP	200	PC
181	CLIP	200	PC
182	CLIP	200	PC
183	CLIP	200	PC
184	CLIP	200	PC
185	CLIP	200	PC
186	CLIP	200	PC
187	CLIP	200	PC
188	CLIP	200	PC
189	CLIP	200	PC
190	CLIP	200	PC
191	CLIP	200	PC
192	CLIP	200	PC
193	CLIP	200	PC
194	CLIP	200	PC
195	CLIP	200	PC
196	CLIP	200	PC
197	CLIP	200	PC
198	CLIP	200	PC
199	CLIP	200	PC
200	CLIP	200	PC

GENERAL NOTES

1. PARTS LIST IS SUBJECT TO CHANGE WITHOUT NOTICE.
2. ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
3. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
4. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
5. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
6. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
7. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
8. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
9. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.
10. ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

REFERENCE DRAWINGS

1. STANDARD NOTES
2. DETAIL B-B
3. DETAIL C-C
4. DETAIL D (B-B)
5. DETAIL E-E
6. DETAIL F-F
7. DETAIL G-G
8. DETAIL H-H
9. DETAIL I-I
10. DETAIL J-J
11. DETAIL K-K
12. DETAIL L-L
13. DETAIL M-M
14. DETAIL N-N
15. DETAIL O-O
16. DETAIL P-P
17. DETAIL Q-Q
18. DETAIL R-R
19. DETAIL S-S
20. DETAIL T-T
21. DETAIL U-U
22. DETAIL V-V
23. DETAIL W-W
24. DETAIL X-X
25. DETAIL Y-Y
26. DETAIL Z-Z

APPROVED FOR CONSTRUCTION

DESIGNED BY: [Signature]

CHECKED BY: [Signature]

DATE: [Date]

APPROVED FOR CONSTRUCTION

DESIGNED BY: [Signature]

CHECKED BY: [Signature]

DATE: [Date]

APPROVED FOR CONSTRUCTION

DESIGNED BY: [Signature]

CHECKED BY: [Signature]

DATE: [Date]

Fig. 8 Closure Head Assembly
Revision 2, August 1978
Contract 7317b

A N O - 2

RELIEF REQUEST 1991-3

COMPONENT NUMBER(S):

01-066, 01-067, 01-068

COMPONENT DESCRIPTION:

Reactor Vessel Shear Keys. Three lugs on the lower head of the Reactor Vessel. (See Figure E234-097, Figure 5.5-12, and Figure 1)

EXAMINATION CATEGORY:

Subarticle IWB-2500 and Tables IWB-2500 and IWB-2600, Category B-H, Item B1.12, "Integrally-Welded Vessel Supports"

CODE CLASS:

1

APPLICABLE ASME CODE SECTION XI EDITION AND ADDENDA:

1974 Edition with Addenda thru Summer 1975. (First 10-Year Interval 3/26/80 to 3/26/90)

EXAMINATION REQUIREMENT:

Volumetric examination of 100% of all integral vessel supports.

BASIS FOR RELIEF:

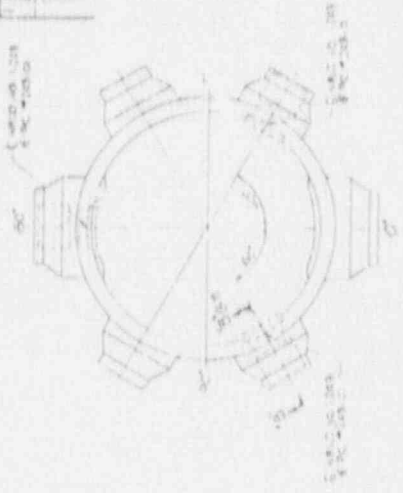
Impractical code requirement due to design and access limitations. The Reactor Vessel Shear Keys are inaccessible from the ultrasonic examination performed from the vessel interior due to the location and fabrication details. The shear key welds would be internally inaccessible due to the core stop lugs and flow baffle in the bottom of the vessel (See Figure 1). An examination from the exterior of the vessel is impractical due to restricted access from the three support columns. Additionally, the dose rate in the area of the shear keys is approximately 3 Rem per hour. While this would not absolutely prohibit access, it is high enough to be an ALARA concern due to the time to perform the exams (estimated at 1 hour each). Access is restricted in this area except in extreme cases.

BASIS FOR RELIEF: (Cont'd)

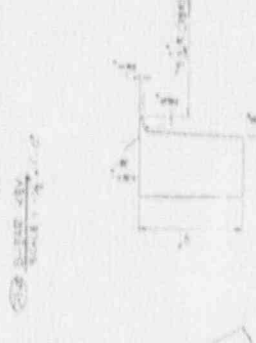
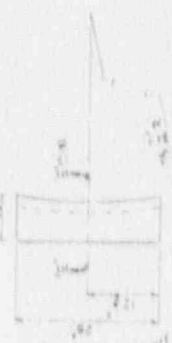
The shear keys are under no operating load and do not carry any weight. They would act as lateral stops, or bumpers, for the support columns during a seismic event. Under later editions of Section XI, these shear keys would be exempted from examination since they do not perform a component support function.

ALTERNATIVE TESTING:

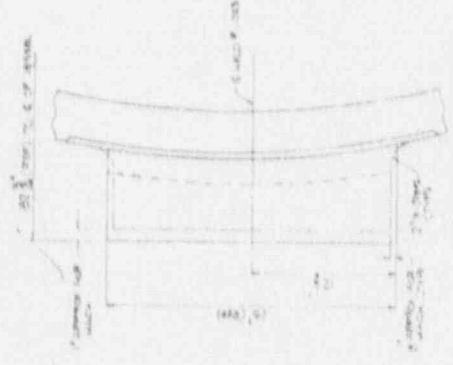
When the reactor vessel was constructed, these shear keys were inspected to the requirements of ASME Section III which required a magnetic particle examination. Later, during the Preservice Inspection of Section XI, they were inspected to the extent practical from the exterior of the vessel using ultrasonics. During the first inspection interval, they were inaccessible. During the upcoming second interval, they will be exempted from inspection per ASME Section XI, 1986 Edition, with no addenda. There appears to be no safety issue in not performing an exam. No seismic event has occurred which would have put a shear load on these supports. Therefore, no alternative testing for the first inspection interval is proposed.



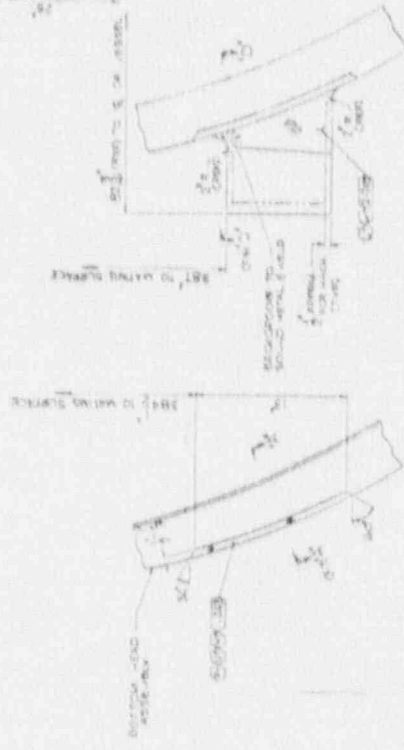
SECTION 2
SCALE 1/2" = 1"



SECTION 5
SCALE 1/2" = 1"

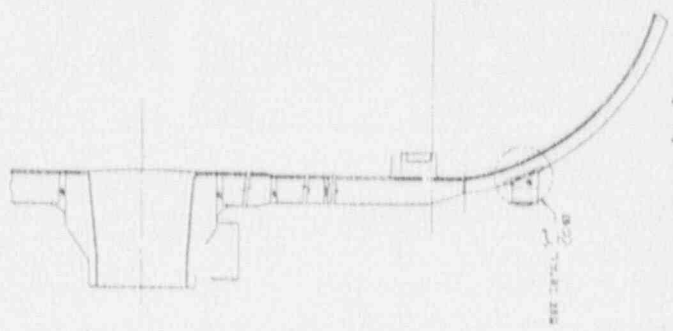


SECTION 7
SCALE 1/2" = 1"



SECTION 9
SCALE 1/2" = 1"

SECTION 10
SCALE 1/2" = 1"



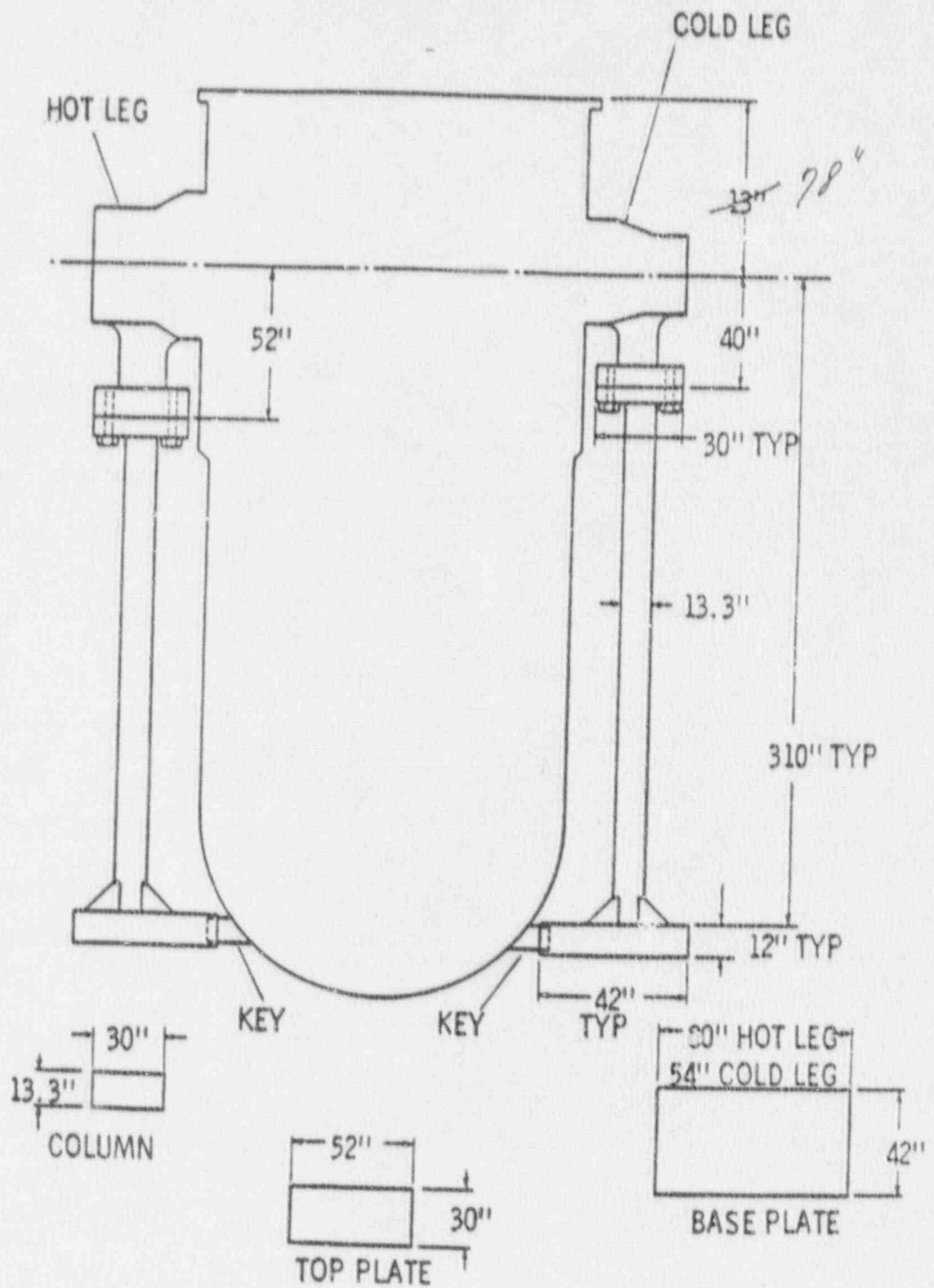
SECTION 12
SCALE 1/2" = 1"

Shear Key Detail (Total - 3)

4 1/2" DIA. WITH 1/8" DIA. #2

REV	DATE	BY	CHKD	DESCRIPTION
1				ISSUED FOR FABRICATION
2				REVISED TO SHOW 1/8" DIA. #2
3				REVISED TO SHOW 1/4" DIA. #4
4				REVISED TO SHOW 1/2" DIA. #6
5				REVISED TO SHOW 3/4" DIA. #8
6				REVISED TO SHOW 1" DIA. #10
7				REVISED TO SHOW 1 1/4" DIA. #13
8				REVISED TO SHOW 1 3/4" DIA. #16
9				REVISED TO SHOW 2" DIA. #19
10				REVISED TO SHOW 2 1/4" DIA. #22
11				REVISED TO SHOW 2 3/4" DIA. #25
12				REVISED TO SHOW 3" DIA. #28
13				REVISED TO SHOW 3 1/4" DIA. #31
14				REVISED TO SHOW 3 3/4" DIA. #34
15				REVISED TO SHOW 4" DIA. #37
16				REVISED TO SHOW 4 1/4" DIA. #40
17				REVISED TO SHOW 4 3/4" DIA. #43
18				REVISED TO SHOW 5" DIA. #46
19				REVISED TO SHOW 5 1/4" DIA. #49
20				REVISED TO SHOW 5 3/4" DIA. #52
21				REVISED TO SHOW 6" DIA. #56
22				REVISED TO SHOW 6 1/4" DIA. #59
23				REVISED TO SHOW 6 3/4" DIA. #62
24				REVISED TO SHOW 7" DIA. #66
25				REVISED TO SHOW 7 1/4" DIA. #69
26				REVISED TO SHOW 7 3/4" DIA. #72
27				REVISED TO SHOW 8" DIA. #76
28				REVISED TO SHOW 8 1/4" DIA. #79
29				REVISED TO SHOW 8 3/4" DIA. #82
30				REVISED TO SHOW 9" DIA. #86
31				REVISED TO SHOW 9 1/4" DIA. #89
32				REVISED TO SHOW 9 3/4" DIA. #92
33				REVISED TO SHOW 10" DIA. #96
34				REVISED TO SHOW 10 1/4" DIA. #99
35				REVISED TO SHOW 10 3/4" DIA. #102
36				REVISED TO SHOW 11" DIA. #106
37				REVISED TO SHOW 11 1/4" DIA. #109
38				REVISED TO SHOW 11 3/4" DIA. #112
39				REVISED TO SHOW 12" DIA. #116
40				REVISED TO SHOW 12 1/4" DIA. #119
41				REVISED TO SHOW 12 3/4" DIA. #122
42				REVISED TO SHOW 13" DIA. #126
43				REVISED TO SHOW 13 1/4" DIA. #129
44				REVISED TO SHOW 13 3/4" DIA. #132
45				REVISED TO SHOW 14" DIA. #136
46				REVISED TO SHOW 14 1/4" DIA. #139
47				REVISED TO SHOW 14 3/4" DIA. #142
48				REVISED TO SHOW 15" DIA. #146
49				REVISED TO SHOW 15 1/4" DIA. #149
50				REVISED TO SHOW 15 3/4" DIA. #152
51				REVISED TO SHOW 16" DIA. #156
52				REVISED TO SHOW 16 1/4" DIA. #159
53				REVISED TO SHOW 16 3/4" DIA. #162
54				REVISED TO SHOW 17" DIA. #166
55				REVISED TO SHOW 17 1/4" DIA. #169
56				REVISED TO SHOW 17 3/4" DIA. #172
57				REVISED TO SHOW 18" DIA. #176
58				REVISED TO SHOW 18 1/4" DIA. #179
59				REVISED TO SHOW 18 3/4" DIA. #182
60				REVISED TO SHOW 19" DIA. #186
61				REVISED TO SHOW 19 1/4" DIA. #189
62				REVISED TO SHOW 19 3/4" DIA. #192
63				REVISED TO SHOW 20" DIA. #196
64				REVISED TO SHOW 20 1/4" DIA. #199
65				REVISED TO SHOW 20 3/4" DIA. #202
66				REVISED TO SHOW 21" DIA. #206
67				REVISED TO SHOW 21 1/4" DIA. #209
68				REVISED TO SHOW 21 3/4" DIA. #212
69				REVISED TO SHOW 22" DIA. #216
70				REVISED TO SHOW 22 1/4" DIA. #219
71				REVISED TO SHOW 22 3/4" DIA. #222
72				REVISED TO SHOW 23" DIA. #226
73				REVISED TO SHOW 23 1/4" DIA. #229
74				REVISED TO SHOW 23 3/4" DIA. #232
75				REVISED TO SHOW 24" DIA. #236
76				REVISED TO SHOW 24 1/4" DIA. #239
77				REVISED TO SHOW 24 3/4" DIA. #242
78				REVISED TO SHOW 25" DIA. #246
79				REVISED TO SHOW 25 1/4" DIA. #249
80				REVISED TO SHOW 25 3/4" DIA. #252
81				REVISED TO SHOW 26" DIA. #256
82				REVISED TO SHOW 26 1/4" DIA. #259
83				REVISED TO SHOW 26 3/4" DIA. #262
84				REVISED TO SHOW 27" DIA. #266
85				REVISED TO SHOW 27 1/4" DIA. #269
86				REVISED TO SHOW 27 3/4" DIA. #272
87				REVISED TO SHOW 28" DIA. #276
88				REVISED TO SHOW 28 1/4" DIA. #279
89				REVISED TO SHOW 28 3/4" DIA. #282
90				REVISED TO SHOW 29" DIA. #286
91				REVISED TO SHOW 29 1/4" DIA. #289
92				REVISED TO SHOW 29 3/4" DIA. #292
93				REVISED TO SHOW 30" DIA. #296
94				REVISED TO SHOW 30 1/4" DIA. #299
95				REVISED TO SHOW 30 3/4" DIA. #302
96				REVISED TO SHOW 31" DIA. #306
97				REVISED TO SHOW 31 1/4" DIA. #309
98				REVISED TO SHOW 31 3/4" DIA. #312
99				REVISED TO SHOW 32" DIA. #316
100				REVISED TO SHOW 32 1/4" DIA. #319
101				REVISED TO SHOW 32 3/4" DIA. #322
102				REVISED TO SHOW 33" DIA. #326
103				REVISED TO SHOW 33 1/4" DIA. #329
104				REVISED TO SHOW 33 3/4" DIA. #332
105				REVISED TO SHOW 34" DIA. #336
106				REVISED TO SHOW 34 1/4" DIA. #339
107				REVISED TO SHOW 34 3/4" DIA. #342
108				REVISED TO SHOW 35" DIA. #346
109				REVISED TO SHOW 35 1/4" DIA. #349
110				REVISED TO SHOW 35 3/4" DIA. #352
111				REVISED TO SHOW 36" DIA. #356
112				REVISED TO SHOW 36 1/4" DIA. #359
113				REVISED TO SHOW 36 3/4" DIA. #362
114				REVISED TO SHOW 37" DIA. #366
115				REVISED TO SHOW 37 1/4" DIA. #369
116				REVISED TO SHOW 37 3/4" DIA. #372
117				REVISED TO SHOW 38" DIA. #376
118				REVISED TO SHOW 38 1/4" DIA. #379
119				REVISED TO SHOW 38 3/4" DIA. #382
120				REVISED TO SHOW 39" DIA. #386
121				REVISED TO SHOW 39 1/4" DIA. #389
122				REVISED TO SHOW 39 3/4" DIA. #392
123				REVISED TO SHOW 40" DIA. #396
124				REVISED TO SHOW 40 1/4" DIA. #399
125				REVISED TO SHOW 40 3/4" DIA. #402
126				REVISED TO SHOW 41" DIA. #406
127				REVISED TO SHOW 41 1/4" DIA. #409
128				REVISED TO SHOW 41 3/4" DIA. #412
129				REVISED TO SHOW 42" DIA. #416
130				REVISED TO SHOW 42 1/4" DIA. #419
131				REVISED TO SHOW 42 3/4" DIA. #422
132				REVISED TO SHOW 43" DIA. #426
133				REVISED TO SHOW 43 1/4" DIA. #429
134				REVISED TO SHOW 43 3/4" DIA. #432
135				REVISED TO SHOW 44" DIA. #436
136				REVISED TO SHOW 44 1/4" DIA. #439
137				REVISED TO SHOW 44 3/4" DIA. #442
138				REVISED TO SHOW 45" DIA. #446
139				REVISED TO SHOW 45 1/4" DIA. #449
140				REVISED TO SHOW 45 3/4" DIA. #452
141				REVISED TO SHOW 46" DIA. #456
142				REVISED TO SHOW 46 1/4" DIA. #459
143				REVISED TO SHOW 46 3/4" DIA. #462
144				REVISED TO SHOW 47" DIA. #466
145				REVISED TO SHOW 47 1/4" DIA. #469
146				REVISED TO SHOW 47 3/4" DIA. #472
147				REVISED TO SHOW 48" DIA. #476
148				REVISED TO SHOW 48 1/4" DIA. #479
149				REVISED TO SHOW 48 3/4" DIA. #482
150				REVISED TO SHOW 49" DIA. #486
151				REVISED TO SHOW 49 1/4" DIA. #489
152				REVISED TO SHOW 49 3/4" DIA. #492
153				REVISED TO SHOW 50" DIA. #496
154				REVISED TO SHOW 50 1/4" DIA. #499
155				REVISED TO SHOW 50 3/4" DIA. #502
156				REVISED TO SHOW 51" DIA. #506
157				REVISED TO SHOW 51 1/4" DIA. #509
158				REVISED TO SHOW 51 3/4" DIA. #512
159				REVISED TO SHOW 52" DIA. #516
160				REVISED TO SHOW 52 1/4" DIA. #519
161				REVISED TO SHOW 52 3/4" DIA. #522
162				REVISED TO SHOW 53" DIA. #526
163				REVISED TO SHOW 53 1/4" DIA. #529
164				REVISED TO SHOW 53 3/4" DIA. #532
165				REVISED TO SHOW 54" DIA. #536
166				REVISED TO SHOW 54 1/4" DIA. #539
167				REVISED TO SHOW 54 3/4" DIA. #542
168				REVISED TO SHOW 55" DIA. #546
169				REVISED TO SHOW 55 1/4" DIA. #549
170				REVISED TO SHOW 55 3/4" DIA. #552
171				REVISED TO SHOW 56" DIA. #556
172				REVISED TO SHOW 56 1/4" DIA. #559
173				REVISED TO SHOW 56 3/4" DIA. #562
174				REVISED TO SHOW 57" DIA. #566
175				REVISED TO SHOW 57 1/4" DIA. #569
176				REVISED TO SHOW 57 3/4" DIA. #572
177				REVISED TO SHOW 58" DIA. #576
178				REVISED TO SHOW 58 1/4" DIA. #579
179				REVISED TO SHOW 58 3/4" DIA. #582
180				REVISED TO SHOW 59" DIA. #586
181				REVISED TO SHOW 59 1/4" DIA. #589
182				REVISED TO SHOW 59 3/4" DIA. #592
183				REVISED TO SHOW 60" DIA. #596
184				REVISED TO SHOW 60 1/4" DIA. #599
185				REVISED TO SHOW 60 3/4" DIA. #602
186				REVISED TO SHOW 61" DIA. #606
187				REVISED TO SHOW 61 1/4" DIA. #609
188				REVISED TO SHOW 61 3/4" DIA. #612
189				REVISED TO SHOW 62" DIA. #616
190				REVISED TO SHOW 62 1/4" DIA. #619
191				REVISED TO SHOW 62 3/4" DIA. #622
192				REVISED TO SHOW 63" DIA. #626
193				REVISED TO SHOW 63 1/4" DIA. #629
194				REVISED TO SHOW 63 3/4" DIA. #632
195				REVISED TO SHOW 64" DIA. #636
196				REVISED TO SHOW 64 1/4" DIA. #639
197				REVISED TO SHOW 64 3/4" DIA. #642
198				REVISED TO SHOW 65" DIA. #646
199				REVISED TO SHOW 65 1/4" DIA. #649
200				REVISED TO SHOW 65 3/4" DIA. #652

REV	DATE	BY	CHKD	DESCRIPTION
1				ISSUED FOR FABRICATION
2				REVISED TO SHOW 1/8" DIA. #2
3				REVISED TO SHOW 1/4" DIA. #4
4				REVISED TO SHOW 1/2" DIA. #6
5				REVISED TO SHOW 3/4" DIA. #8
6				REVISED TO SHOW 1" DIA. #10
7				REVISED TO SHOW 1 1/4" DIA. #13
8				REVISED TO SHOW 1 3/4" DIA. #16
9				REVISED TO SHOW 2" DIA. #19
10				REVISED TO SHOW 2 1/4" DIA. #22
11				REVISED TO SHOW 2 3/4" DIA. #25
12				REVISED TO SHOW 3" DIA. #28
13				REVISED TO SHOW 3 1/4" DIA. #31
14				REVISED TO SHOW 3 3/4" DIA. #34
15				REVISED TO SHOW 4" DIA. #37
16				REVISED TO SHOW 4 1/4" DIA. #40
17				REVISED TO SHOW 4 3/4" DIA. #43
18				REVISED TO SHOW 5" DIA. #46
19				



AMENDMENT NO. 6

ARKANSAS
 POWER & LIGHT CO.
 Arkansas
 Nuclear One - Unit 2

REACTOR VESSEL SUPPORTS

Figure
 5.5-12

