ATTACHMENT 4

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

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 ☐

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

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COGNIZANT AUTHORITY APPROVAL: M. T. Kam

APPROVAL DATE: 5/17/90

REQUIRED EFFECTIVE 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.

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.

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

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 [illegible]	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

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ANO-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-24908-1	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

ATTACHMENT 1

ANO-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
40816	M1I-017 PC-24915-2	Inconel SB-166	3.5" OD X .7" Wall X 3" Lg.	6
40817	M1I-018 PC-24916-3	Inconel SB-166	4" OD X .625" Wall X 3" Lg.	7
40818	M1I-019 PC-24917-3	Stainless Steel SA-240 TP 304	3.25" OD X .375" Wall X 3" Lg.	4
40819	M1I-020 PC-24918-2	Carbon Steel M 1040	10.5" OD X 1.75" Wall X 1.9" Lg.	14
40820	M1I-021 PC-24919-2	Stainless Steel SA-240 TP 304	3.5" OD X .6" Wall X 3.3" Lg.	3
40821	M1I-022 PC-24987-1	Inconel 600	Stm. Gen. Tube ET Standard 5/8" O.D. X .037" Wall Th.	1
40823	M1I-023 PC-25561-0	Carbon Steel	.732" Th. X 5.9" X 2.95"	4
40824 (UT-51)	M1I-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)	M1I-025 D6370501058- UT-48	Carbon Steel SA-106 GR B	Main Feedwater, 18" OD 18" Sch. 80, .938" Th., 16" Lg.	57

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ANO-1 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
40826 (40861)	M1I-026 PC-25612-0	Carbon Steel A-540 GR. B-23	RPV Closure Nut Block number changed to 40861	44
40828	M1I-027 PHD-30116	Carbon Steel Stainless Steel SA-307 & SA-308	Nozzle-to-Pipe 2.85" Th X 12" X 7.5"	72
40829	M1I-028 PHD-30115	Carbon Steel	Flange Ligaments 6.06" Th X 12" X 6"	124
40830	M1I-029 PHD-30117	Carbon Steel Stainless Steel	Nozzle-to-Vessel Flange-to-Vessel 18" Th X 45" X 8.5"	1950
40831	M1I-030 PC-25676-1	Carbon Steel A-106B Seamless	8" Sch. 60, .41" Th, 12" Lg	18
40834	M1I-031 PC-25677-0	Carbon Steel A-106B Seamless	14" Sch 80, .75" Th, 12" Lg	27
40836	M1I-032 PC-25680-1	Carbon Steel SA-515 GR-60	.75" Th X 6" X 3"	4
40837 (UT-50)	M1I-033 C6370501080-UT-50	Carbon Steel SA-515 GR-65	Main Stream, 38" OD 1.875" Th X 12" X 6"	39

ATTACHMENT 1

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

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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-4	CS, SA540 GR23	RV Closure Nut Castle Nut 1.425" Th, 8.685" Lg Previously numbered 40826	44

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CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
40863	M1I-053 C6370501-125-01	CS, A193 B7	MS Safety Valve Stud 1 3/8" Stud, 10" Lg	4
40864	M1I-054 1122840B-1	SS, A312 or 376 TP 304	Decay Heat Piping 10" Pipe 10.667" OD, 8" Lg, .4" Wall	17
40865	M1I-055 1122841B-2	SS, A312 or 376 TP 304	Decay Heat Piping 6" Pipe 6.625" OD, 8" Lg, Sch. 40S	6
40866	M1I-056 C6370501-126-01	CS, NA	Stud, 1 1/8 - 8UN - 2A, 6 1/2" Lg	2
40867	M1I-057 1122980C-0	SS, SA-320 L43	Secondary Handhole Stud 1" Stud 5" Lg	1
40868	M1I-058 C6370501-127-01	CS, SA 193 B14	Feedwater Flange Stud 1" Stud 4 3/4" Lg	1
40869	M1I-059 C6370501-128-01	CS, SA 193 B14	Handhole and Feedwater Flange Stud 3/4" Stud, 5 1/4" Lg	1
40870	M1I-060 C6370501-129-01	304 SS	3 1/2" Dia, .75" Th Wall, 11" Lg	10

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CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
40872	M11-061 C6370501-130-01	CS, SA 193 B7	Stud, 1 7/8 - 8UN - 2A, 10 5/8" Lg	8
40900	M11-062 1135870C-1	Stainless Steel Clad CS, SA533 GR-B	R. V. Core Circumferential Weld 8.75" Th X 36" X 8"	713
40901	M11-063 1135871C-1	Stainless Steel Clad SA 508 CL-2	R. V. Lower Head to Dutchman 5" Th X 21" X 6" Flat	178
40902	M11-064 1135872C-1	Stainless Steel Clad SA 508 CL-2	R. V. Inlet & Outlet Nozzles 11.86" Th X 45" X 6" Curved	906
40903	M11-065 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	M11-066 1135874C-1	SS, SA376 TY-316	Core Flood Nozzle Safe End 14" Sch 140, 1.25" Wall Th X 12" Lg	85
40905	M11-067 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

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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, S[illegible]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-[illegible]	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" [illegible]g	5

ATTACHMENT 2

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

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ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-7	M-2001- I1-007 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- I1-008 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- I1-009 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- I1-010 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- I1-011 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- I1-012 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- I1-013 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

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 incompatible 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

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ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-20	M-2001-II-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-II-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-II-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-II-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-II-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-II-025 D-6370-501-028, Rev. 1	SA-312, Type 304	Regenerative Heat Exchanger 8" Sch 160	33
UT-26	M-2001-II-026 D-6370-501-030, Rev. 1	SA-312, Type 304	Letdown Heat Exchanger 18" dia. X .625" Th	51

ATTACHMENT 2

ANO-2 ISI CALIBRATION STANDARDS

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

APGL

ARKANSAS NUCLEAR ONE

ENGINEERING SECTION: PROGRAMS

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

NO: 1092.193

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REVISION 0 DATE 04/24/90

CHANGE DATE

ATTACHMENT 2

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	82
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

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	APPROX WT. (LBS)
UT-39	M-2001-11-039 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-2001-11-040 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-2001-11-041 D-6370-501-044, Rev. 1	SA-312 T316	Branch Piping CL 1 and 2 6" Sch 120	25
UT-42	M-2001-11-042 D-6370-501-045, Rev. 1	SA-358 T304	Branch Piping CL 2 6" Sch 40	13
UT-43	M-2001-11-043 D-6370-501-046, Rev. 1	SA-358 T304	Branch Piping CL 2 8" Sch 20	10
UT-44	M-2001-11-044 D-6370-501-047, Rev. 1	SA-358 T304	Branch Piping CL 2 10" Sch 20	13

APPL

ARKANSAS NUCLEAR ONE

PLANT MANUAL SECTION: ENGINEERING PROGRAMS

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

NO: 1092.193

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ATTACHMENT 2

ANO-2 ISI CALIBRATION STANDARDS

CAL. STD. NO.	DRAWING NUMBER	MATERIALS	DESCRIPTION	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

ATTACHMENT 2

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

ATTACHMENT 2

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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 POWER & LIGHT COMPANY
Arkansas Nuclear One

TITLE: ISI CALIBRATION STANDARDS CHECK-OUT LOG

FORM NO. 1092.193A

REV # 0

ISI CALIBRATION STANDARD NUMBER	CHECKED-OUT TO: (SIGNATURE) DATE: (DATE)	EXPECTED DATE OF RETURN	RETURNED (SIGNATURE) (DATE)	REMARKS

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.

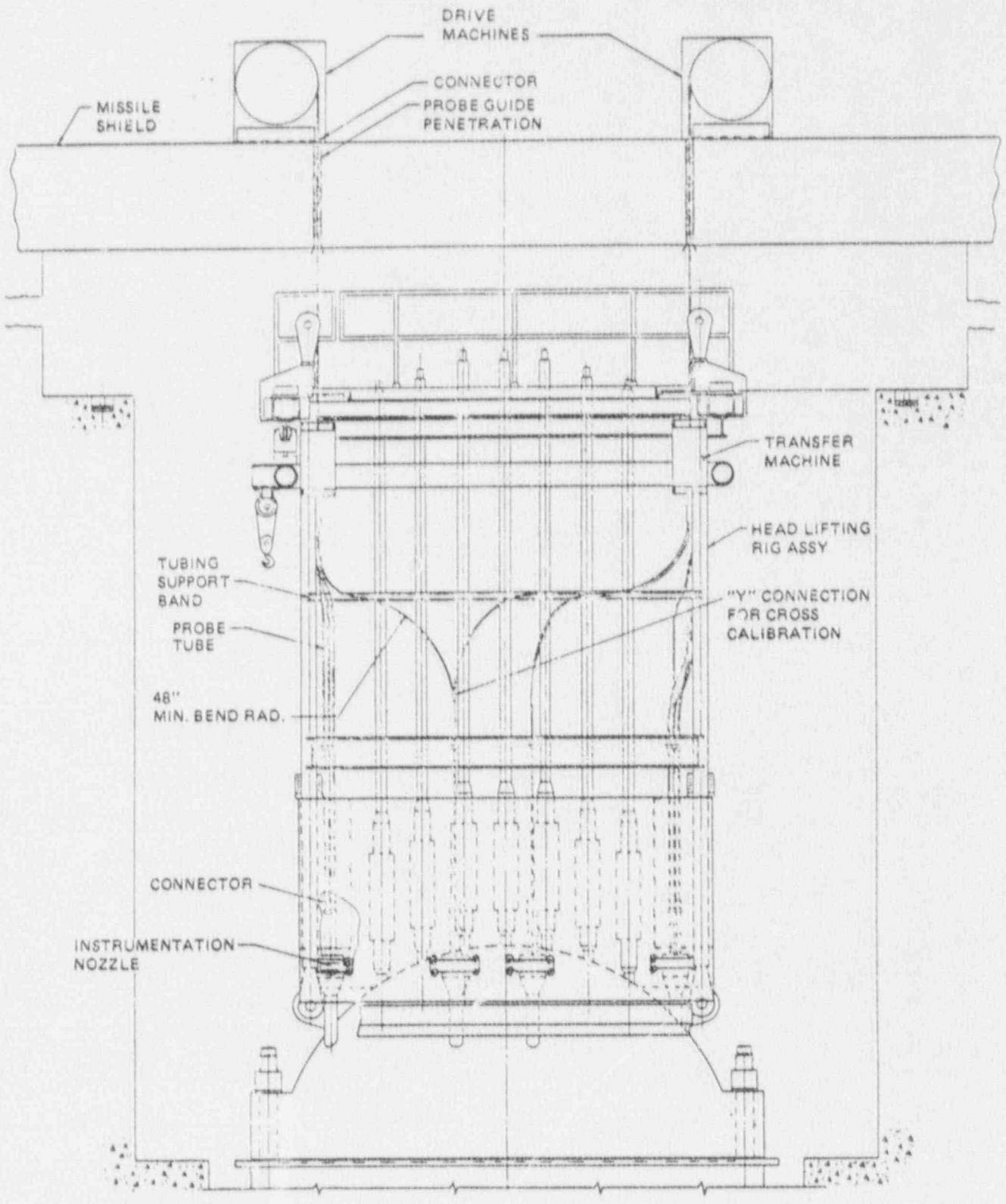
BASIS FOR RELIEF:

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:

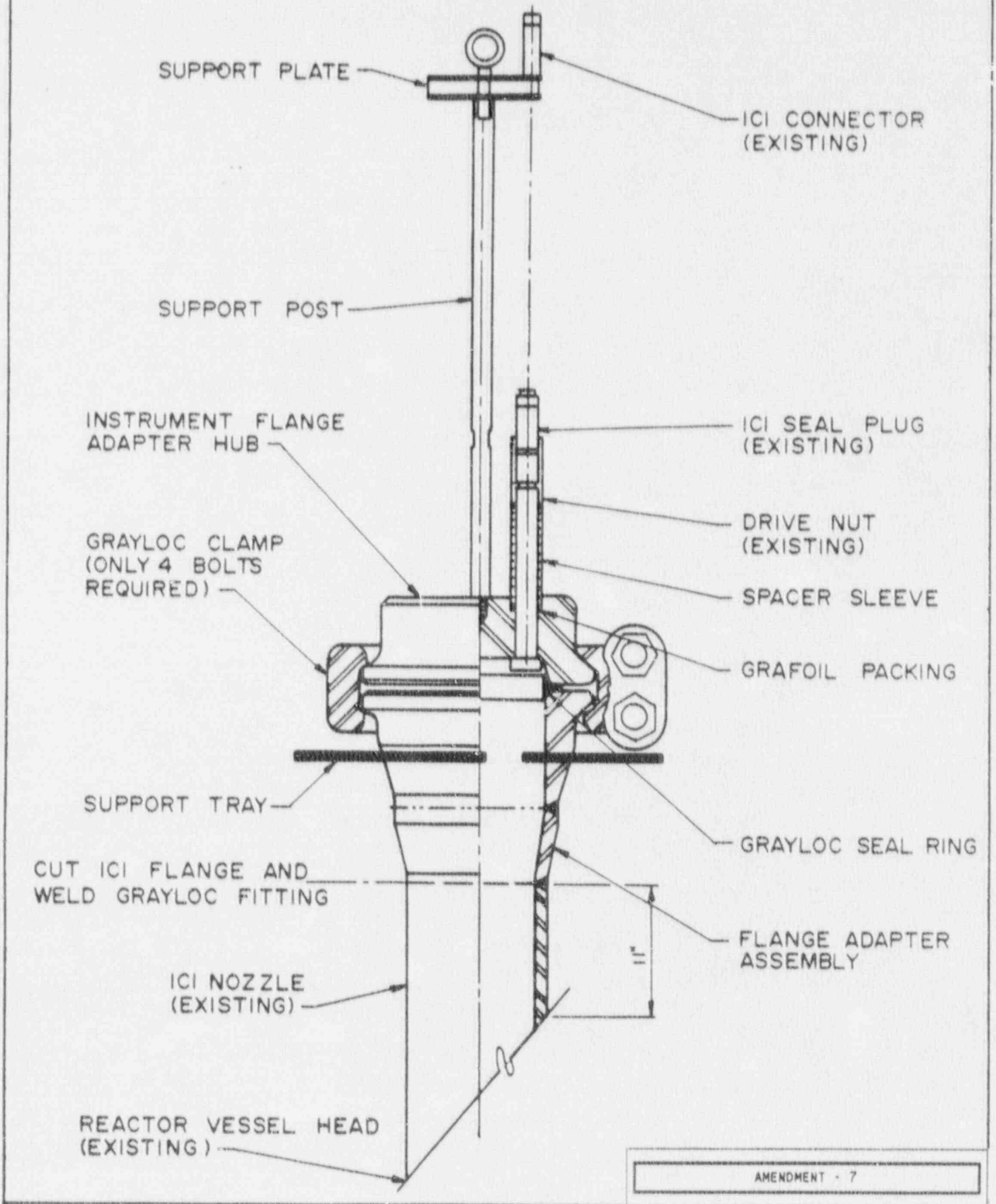
A visual (VT-2) examination for leakage was performed on this general area of the reactor vessel closure head during each system leakage test or hydrostatic test following each reactor refueling outage. In addition, the original design of these

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



AMENDMENT - 7

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 3/25/90)

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.

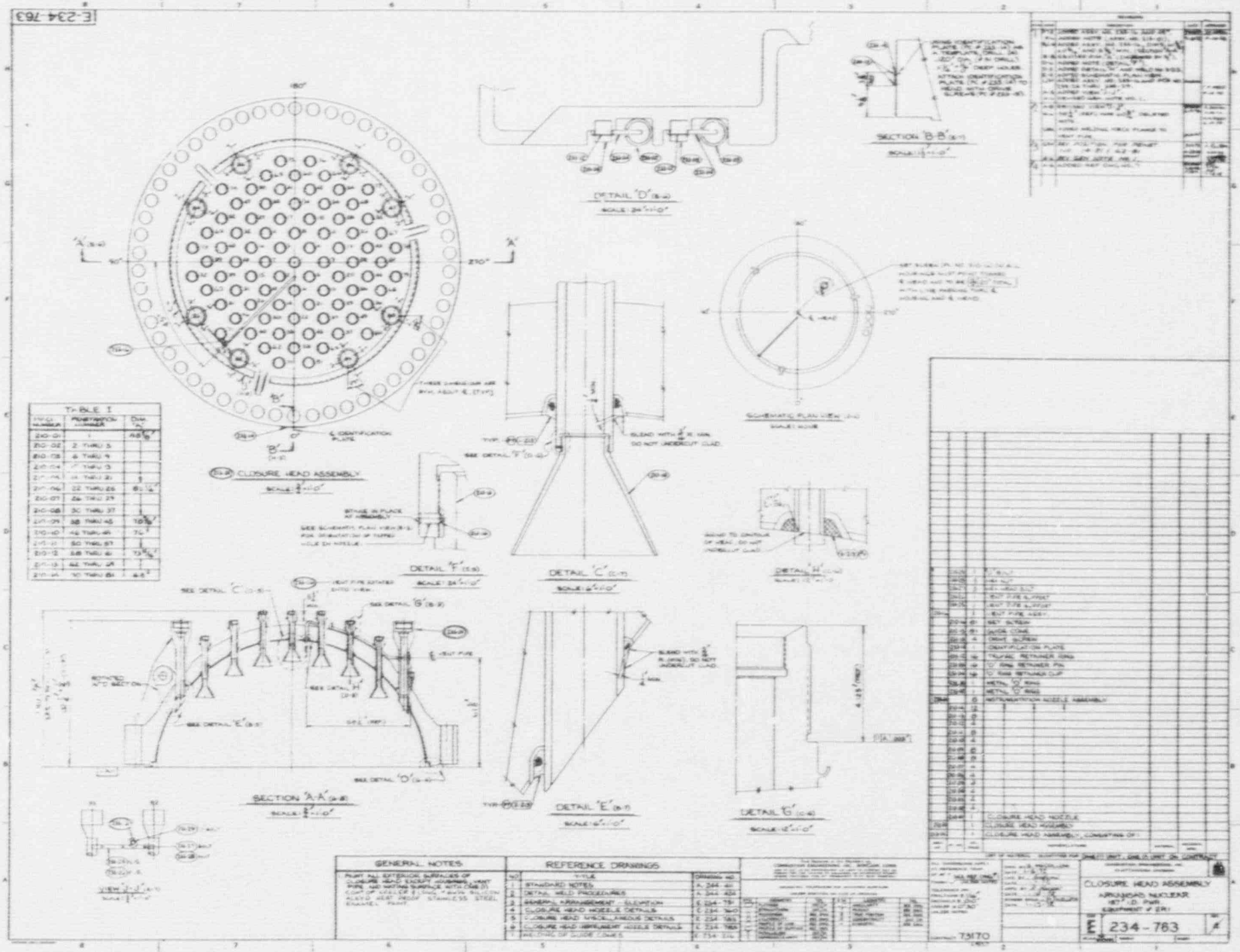


Fig. 8 Closure Head Assembly **7-17/7-18**

Revision 2, August 1978
Contract 73170

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:

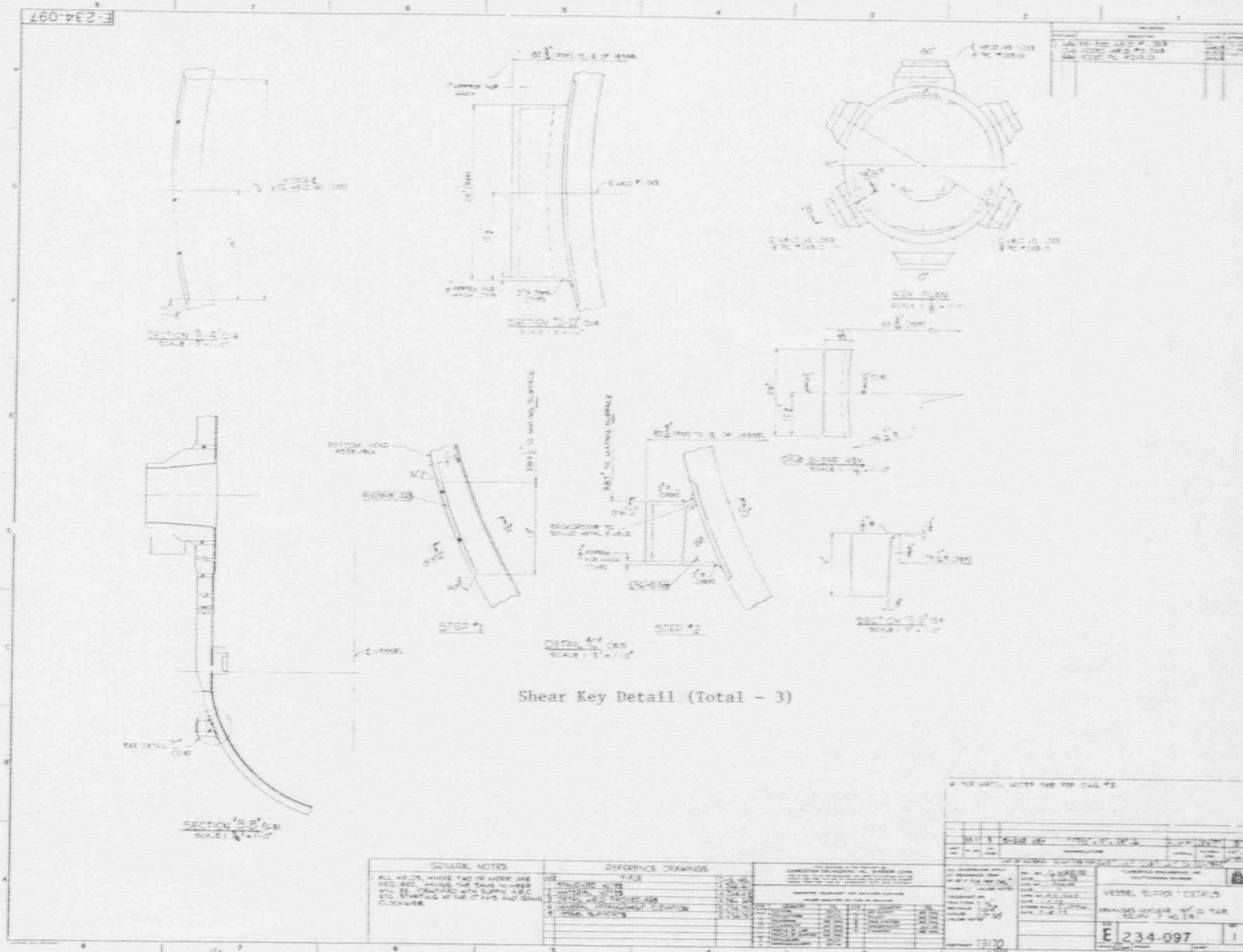
Impractical code requirement due to design and access iimitations. The Reactor Vessel Shear Keys are inaccessible from the ultrasonic examination performed from the vessel interior due to the location and fabrication details. The shear key welds would be internally inaccessible due to the core stop lugs 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)

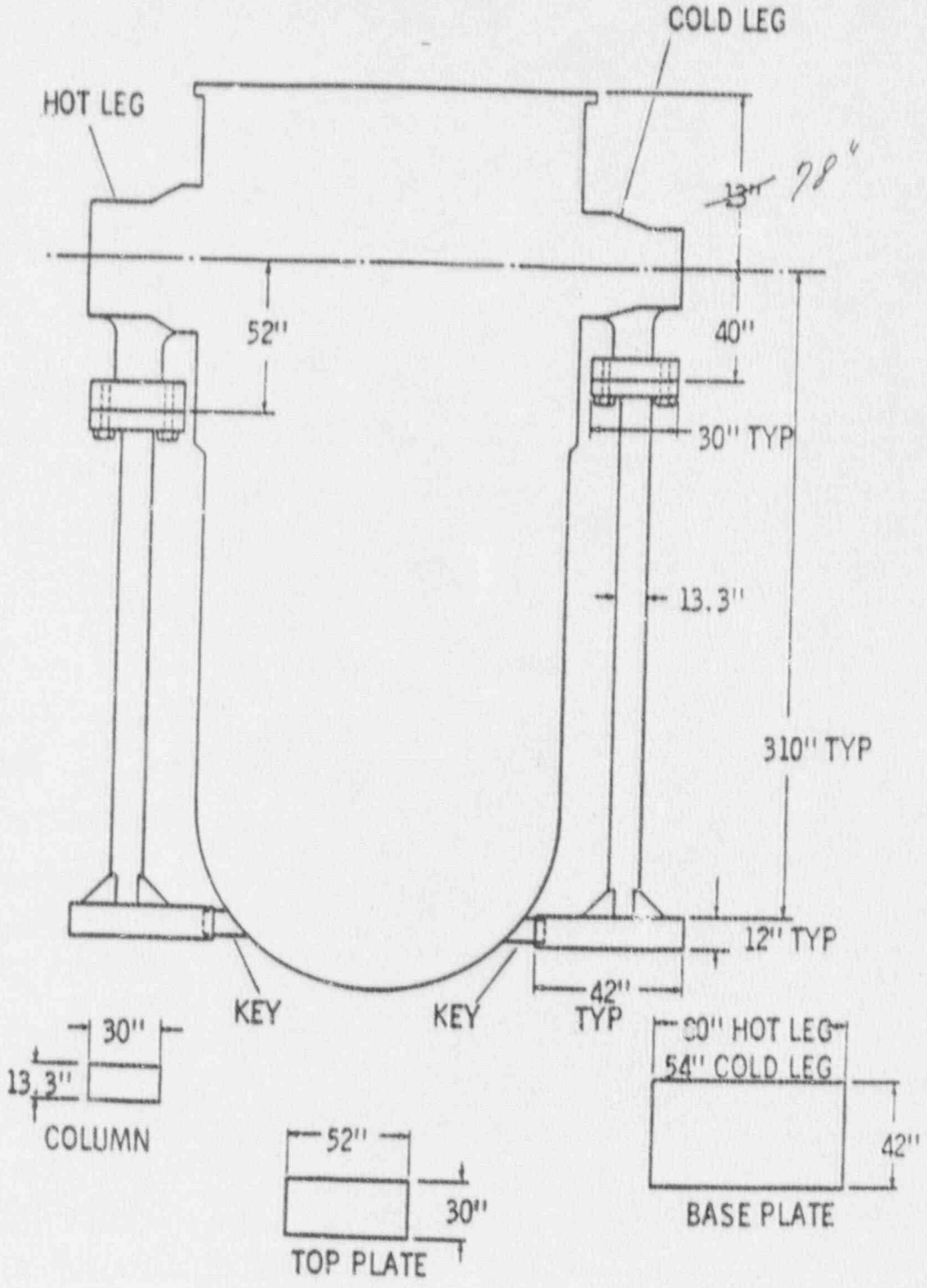
The shear keys are under no operating load and do not carry any weight. They would act as lateral stops, or bumpers, for the support columns during a seismic event. Under later editions of Section XI, these shear keys would be exempted from examination since they do not perform a component support function.

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.



Shear Key Detail (Total - 3)



AMENDMENT NO. 6

ARKANSAS POWER & LIGHT CO. Arkansas Nuclear One - Unit 2	REACTOR VESSEL SUPPORTS	Figure 5.5-12

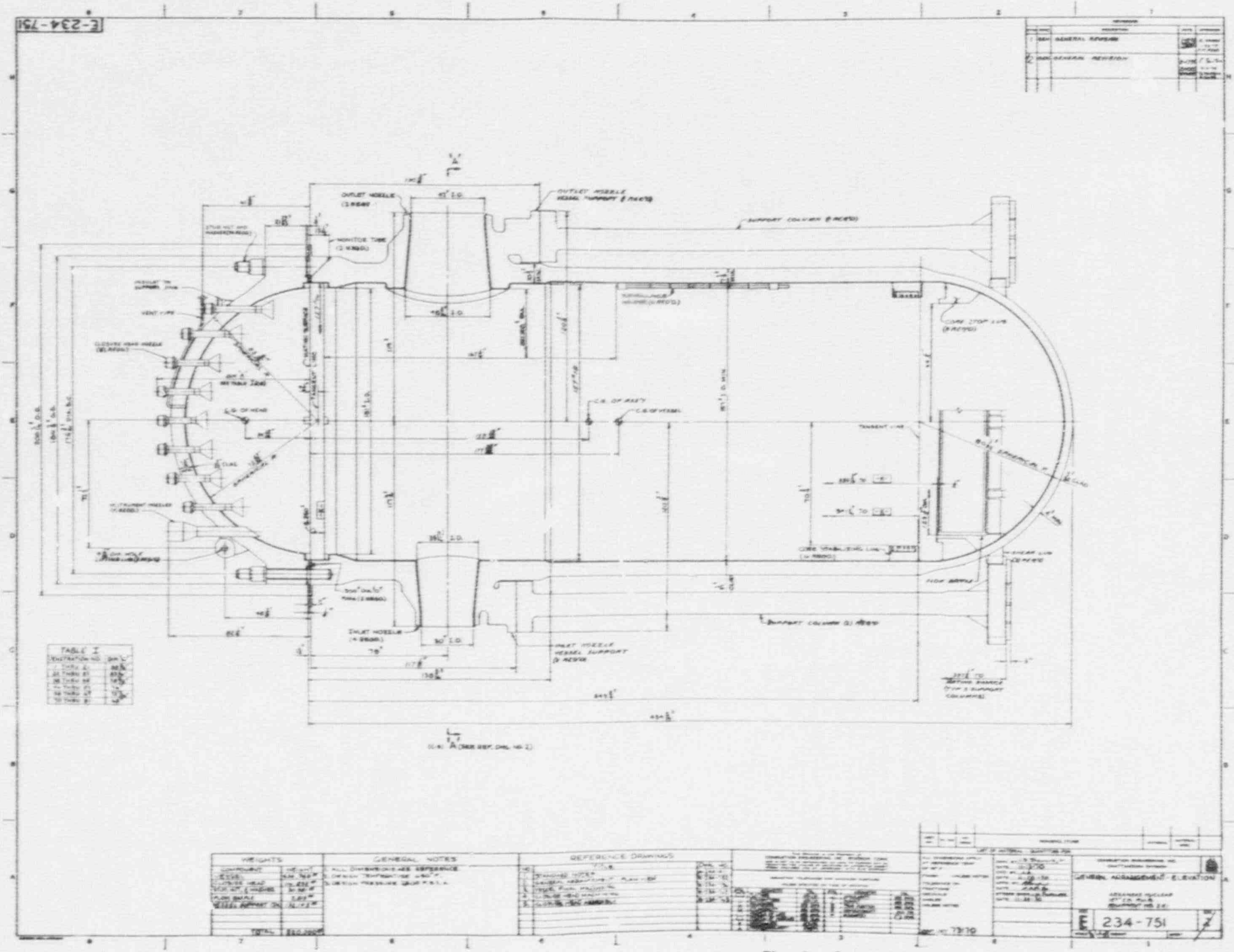


Fig. 1 General Arrangement — Elevation 7-3/7-4