

SP-G536A-536633

Rev 1

05 December 2000

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TECHNICAL SPECIFICATION
PIPING LINE SPECIFICATIONS
NUCLEAR SAFETY CLASS PIPING
KRŠKO NUCLEAR POWER PLANT

SP-G536A-536633-00027

Revision 1

SAFETY RELATED

Prepared for

NUKLEARNA ELEKTRARNA KRŠKO

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Superintendent Engineering and Design Change/Date

RECORD OF REVISION

<u>Revision Number</u>	<u>Date</u>	<u>Reason for Revision and Revision Summary</u>	<u>Affected Pages</u>
1	05-12-00	New Line Spec 2502(2 pages) Added by Modification 272-RC-L, Part 1	Line No. 2502 5
		Added ASME Code 1989 with 1990 Addenda	6
		Revised Line Spec 2501(2 pages) to correct Pressure rating of welding fittings	Line No. 2501

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ATTACHMENTS LINE SPECIFICATIONS

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1.0 SCOPE

This piping line specification provides the ASME material specifications and the dimensional standards applicable to Safety Class Piping systems installed in the Krsko Nuclear Power Plant. The dimensional standards are ANSI Standards unless otherwise noted.

2.0 Line Specification Identification

Line Specification identification numbers were assigned by the two design organizations responsible for the original plant design. The identification numbers differ in format and are recognizable by their format. The numbers that were assigned by Gilbert Associates are five or six digit alphanumeric combinations while those assigned by Westinghouse are three or four digit numeric combinations. The following sections define the characteristics of each of the identification systems.

3.0 GILBERT/ASSOCIATES, INC. PIPING CLASSIFICATION

3.1 Line Specification Number

Line Specifications are identified by a unique number composed of an abbreviated pressure class number, material identifier, code identifier, and unique number identifier as follows:

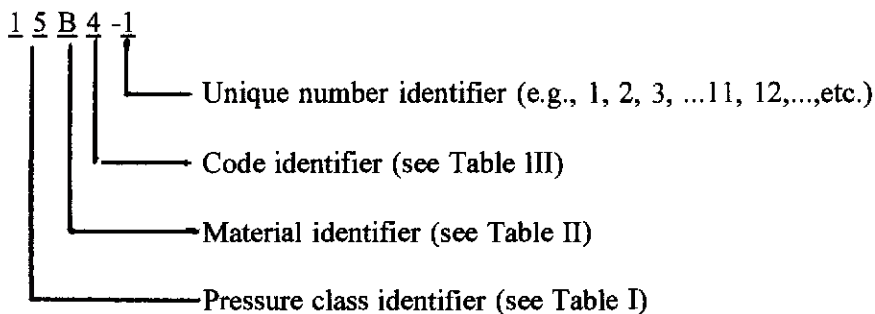


TABLE I

<u>Designator</u>	<u>Pressure Class</u>	<u>Designator</u>	<u>Pressure Class</u>
12	125	60	600
15	150	90	900
17	175	150	1500
25	250	250	2500
30	300	450	4500
40	400		

NOTE: The pressure class designator is not necessarily compatible with the "Primary Service Ratings" associated with ANSI B16.5 for flanges. Pressure-temperature ratings are listed in each Line Specification. (See Item 3.3)

TABLE II

<u>Designator</u>	<u>Material</u>
A	Carbon steel (high temperature services)
B	Carbon steel (low grade)
C	Low and intermediate alloy steel
D	Stainless steel
E	Cast iron
F	Ductile iron
G	Galvanized carbon steel
H	Lined carbon steel
I	Duriron
J	Yoloy
K	PVC, fiberglass reinforced pipe
L	Asbestos cement
M	Carpenter 20
N	Bronze, copper
P	Aluminum
Q	Carbon steel (low temperature service)
R	Clay pipe
T	Tubing

TABLE III

<u>Designator</u>	<u>Material</u>
None	ANSI B31.1
1	ASME Code Section III, Class 1
2	ASME Code Section III, Class 2
3	ASME Code Section III, Class 3
4	NFPA
5	AWWA
6	None

3.2 Service

Service is specified as to the type of fluid (e.g., steam, water, feedwater, condensate, air, oil, and gas), and nature of fluid (corrosive, noncorrosive, flashing).

3.3 Pressure-Temperature Ratings

- 3.3.1 Pressure-temperature ratings are based upon standards' ratings, specific system design, "weakest link" of components specified, or other, as listed in the Notes of each Line Specification.

3.3.2 The pressure-temperature ratings shall only be as specified in the Line Specification and are limited to those listed. The pressure is the internal pressure (external where specified) and is the maximum allowable nonshock pressure at the temperature specified (unless otherwise noted). For temperatures other than those listed, the allowable pressure may be interpolated between the temperatures listed.

3.3.3 Components specified are chosen to meet or exceed the pressure-temperature ratings listed in consideration of internal pressure only (external pressure where specified).

3.4 Material Description

3.4.1 Item

Item specifies pipe or piping component.

3.4.2 Size

Size is pipe or piping component nominal size unless otherwise indicated.

3.4.3 Schedule, Nom. (Nominal) Wall, Rating

- a. Schedule is pipe schedule as defined in dimensional standards noted.
- b. Nom. wall is wall thickness given in decimal form.
- c. Rating is pressure class or rating, as defined in dimensional standards noted. Manufacturer's rating may be specified instead.

3.4.4 ASME Specification

ASME Specification defines the number, type or class, grade and supplemental requirements of material for pipe or piping, components as defined by the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Section II.

3.4.5 Joint Type

Joint type specifies the method to be used to join pipe or piping components to each other, as follows:

- a. SW - socket weld
- b. BW - butt weld
- c. FLGD - flanged
- d. SCRD - screwed (threaded)
- e. MECH - mechanical joint

3.4.6 Dimensional Standards

Dimensional standards specifies standards organization and specific standard to which piping or piping components are sized, rated and/or dimensioned.

3.5 Remarks

3.5.1 Remarks provides additional information to the item or size of item not specified elsewhere.

3.5.2 Numbers in parentheses note additional information contained on reverse side of the Line Specification Sheets.

3.6 Stress Allowable

3.6.1 Stress Allowable indicates maximum allowable stress in material due to internal pressure and joint efficiency at temperature for piping and piping components as specified in the design code noted for the Line Specification.

3.6.2 Stress values may be interpolated between values for other temperatures.

3.7 Notes

Notes are given using the following standardized numbering system:

<u>No.</u>	<u>Note</u>
Normal Requirements	
1	Gaskets
2	Branch connections
3	Instrument connections
4	Fittings
5	Flanges
6	Weld end
7	Material
Special Requirements	
10	Internal treatment
11	External treatment
12	Special piping notes
13	Special fitting notes
14	Special joints
15	Special valve notes
20	Special standards
30	Special testing
40	Special components
50	Installation requirements
90	P-T (pressure-temperature) rating
100	Standards listing

4.0 WESTINGHOUSE PWR PIPING CLASSIFICATION

4.1 Line Number

WESTINGHOUSE Line Specifications are identified by the following category numbers, together listed with the Line Specification design pressure-temperature ratings and material:

<u>Category</u>	<u>Pressure, psig</u>	<u>Temperature, F</u>	<u>Material</u>
151	150	500	Stainless steel
152	150	500	Carbon steel
301	370	650	Stainless steel
302	300	650	Carbon steel

<u>Category</u>	<u>Pressure, psig</u>	<u>Temperature, F</u>	<u>Material</u>
601	600	600	Stainless steel
602	600	650	Carbon steel
901	900	650	Stainless steel
902	900	650	Carbon steel
1501	1400	650	Stainless steel
1502	1030	650	Carbon steel
2501/2502	2485	650	Stainless steel
2503	2500	650	Carbon steel
2505	2500	650	Stainless steel tubing

NOTE: i The piping classification category numbers are not necessarily compatible with the primary service ratings (150 lb, 300 lb, 600 lb, 900 lb, 1500 lb, or 2500 lb) associated with ANSI B16.5.

ii Temperature corresponds to the indicated design pressure. Other pressure-temperature relationships are noted in the individual Line Specifications.

4.2 Explanation of the headings, items, and notes are the same as for GAI Line Specification Classification.

5.0 RADIOACTIVE - NONRADIOACTIVE DESIGNATION

The suffix N or R may be added to a Line Specification No. (e.g., 15A2-1R or 151N) to signify nonradioactive or radioactive service respectively. The piping material within the scope of this Piping Specification for any Line Specification No. are in no way affected by the choice of these suffixes N or R.

6.0 MATERIAL STANDARDS

6.1 Materials, fabrication, examination, testing, and inspection shall conform to the applicable portions of the following codes and standards:

- a. American National Standards Institute (ANSI)
 1. B1.1-1989, "Unified Inch Screw Threads UN and UNR Thread Form)."
 2. B16.5-1988, "Steel Pipe Flanges and Flanged Fittings."
 3. B16.9-1993, "Factory-Made Wrought Steel Buttwelding Fittings."
 4. B16.11-1991, "Forged Steel Fittings, Socket-Welding and Threaded."
 5. B16.21-1992, "NonMetallic Gaskets and Pipe Flanges."
 6. B18.2.1-1981, "Square and Hex Bolts and Screws, Including Askew Head Bolts, Hex Cap Screws, and Lag Screws."
 7. B18.2.2-1987, "Square and Hex Nuts."

8. B36.10-1985, "Wrought Steel and Wrought Iron Pipe."
9. B36.19-1985, "Stainless Steel Pipe."
- b. American Society of Mechanical Engineers(ASME) Boiler and Pressure Vessel Code.
 1. Section II-1971 through 1993 "Material Specifications"
 2. Section III-1971, "Nuclear Power Plant Components," including Winter 1972 addenda.
 3. Section III-1989, "Nuclear Power Plant Components," including 1990 addenda.

6.2 Material Identification

Safety class 1, 2, and 3 piping and piping materials over 3/4-inch nominal pipe size shall be marked with the information required by the applicable material manufacturing specifications and paragraph NB-2151 of the ASME Code Section III. Material Manufacturer's Certificates of Compliance with material specifications for Safety Class 1, 2, and 3, 3/4-inch nominal pipe size, or less, shall be provided in lieu of heat number identification.

PARSONS POWER

PIPING LINE SPECIFICATION

DESIGN CODE ASME/SXN III
DATE/ADDENDA 1971/WIN.1972

SPEC.(S):SP-G536A W.O.: 536633-00027
PROJECT: KRSKO NUCLEAR POWER PLANT
WELD END DETAIL DWG. D-301-001

LINE NO. 90A2-1
MATERIAL Carbon Steel
ISSUED/REV 6-27-96/0

SERVICE

FEEDWATER, STEAM

MAX																	
Temp °F				-20	100	150	200	250	300	350	400	450	500	550	600	650	700
Press PSIG				1185	1185	1185	1185	1185	1185	1185	1185	1185	1185	1185	1185	1185	1130
After Bending				1185	1185	1185	1185	1185	1185	1185	1185	1185	1185	1185	1185	1185	1130

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/ CLASS	GRADE	SUPPL REQMTS			
PIPING	2& Smlr	80	SA-106	-	B	-	SW	ANSI B36.10	
	2 1/2-12	80	SA-106	-	B	-	BW	ANSI B36.10	
	14-24	80	SA-106	-	B	-	BW	ANSI B36.10	
	25.75 ID	Special Wall	SA-106	-	C	-	BW	ASME SXN III	SEE SPWL Sheet Attached
WELDING FITTINGS	2 & Smlr	3000 lb	SA-105	-	-	-	SW	ANSI B16.11	SCH. 80
	2-1/2 - 12	Equal to Pipe	SA-234	-	WPB	-	BW	ANSI B16.9	(4)
	14 - 24	Equal to Pipe	SA-234	-	WPC	-	BW	ANSI B16.9	(4)
	25.75	Equal to Pipe	SA-234	-	WPC	-	BW	ANSI B16.9	(4)
FLANGES	2 & Smlr	900 lb	SA-105	-	-	-	-	ANSI B16.5	Socket welding, Raised face
	2-1/2 - 24	900 lb	SA-105	-	-	-	-	ANSI B16.5	Welding neck, Raised face
BRANCH LINES	2 & Smlr	3000 lb	SA-105	-	-	-	SW		(2), (3)
	2-1/2 - 24	Equal to Pipe	SA-105	-	-	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	A-193	-	B7	-	-	ANSI B18.2.1	Heavy Hex Bolt, Class 2A Threads
NUTS	-	-	A-193	-	2H	ASTM A-194	-	ANSI B18.2.2	Heavy Hex, Class 2B Threads

MATERIAL		STRESS ALLOWABLE, psi X 10 ³																	
TEMP.,	F									100	200	300	400	500	600	650	700		
ASME	SA-106-C									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		
ASME	SA-234-WPB									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		
ASME	SA-106C									17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5		
	SA-234-WPB									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6		
	SA-105									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6		

NOTES

1. GASKETS - SPIRAL-WOUND SS TP304, FLEXITALLIC STYLE CC, ASBESTOS FILLER, 1/8 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE.
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f).
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS.
- 90) P-T RATINGS BASED ON KRSKO STEAM GENERATOR DESIGN OF 1185 PSIG AT 600 F (P/S = .06771 FOR SA-106-C; P/S = .079 FOR SA-106-B)
- 7) B-70, C-70, AND L70 ARE ACCEPTABLE GRADES FOR SA-672. SUPPLEMENTARY REQUIREMENTS S-8 FOR SA-20 APPLIES FOR ALL PLATE MATERIAL.

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: E. B. Toll 587	1											
CHKD: R. C. Penney RCP	2											
	3											

SPECIAL WALL PIPE

LINE NO. 90A2-1

ISSUED/REV 6-27-96/0

STRESS ALLOWABLE, psi X 10³

MAX.

TEMP.,	F									100	200	300	400	500	600	650	700
ASME	SA-106-C									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6
ASME	SA-515-70									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6
ASME	SA-672-21									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6

NOMINAL ID IN.	MIN. CALC. WALL IN.	NOMINAL WALL IN.	OD IN.	MANUF. TOLERANCE IN.	PIPE			PLATE			NOTES
					ASME	TYPE CLASS	GRADE	ASME	TYPE CLASS	GRADE	
25.75	0.995	-	-	-	SA-106	-	C	-	-	-	
-	2.4	-	16.00	-	SA-672	21	(7)	-	-	-	
-	3.0	-	28.87	-	SA-672	21	(7)	-	-	-	

FITTINGS

	PIPE BENDS	FORGING	CASTING
ASME	SA-515		
TYPE/CLASS	-		
GRADE	70		
I.D.	EQUAL TO ST PIPE		
MIN.CALC. WALL	EQUAL TO ST PIPE		
MIN. BEND DIAMETER	ANSI B16.9		
BENDING ALLOWANCE	ANSI B16.9		

APPROVAL MADE: E. B. Toll <i>EBT</i> CHKD: R. C. Penney <i>RP</i> _____	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
	1											
	2											
	3											

PIPING LINE SPECIFICATION

LINE NO. 90A2-2
MATERIAL Carbon Steel
ISSUED/REV 6-27-96/0

FEEDWATER, STEAM

										LINE NO.		90A2-2							
										ISSUED/REV		6/27/96/0							
MATERIAL										STRESS ALLOWABLE, psi X 10 ³									
TEMP.,	F									100	200	300	400	500	600	650	700		
ASME	SA-106-C									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6		
ASME	SA-234-WPC									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6		
ASME	SA-105									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6		

NOTES

2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE.
 - c. OTHERS - TEE FITTING
 3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f).
 4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS.
- 90) P-T RATINGS BASED ON KRSKO STEAM GENERATOR DESIGN OF 1185 PSIG AT 600 F FOR SA-106-B (P/S = .079)

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: <u>E. B. Toll</u> <i>EBT</i>	1											
CHKD: <u>R. C. Penney</u> <i>RP</i>	2											
	3											

SPECIAL WALL PIPE

LINE NO. 90A2-2ISSUED/REV 6-27-96/0STRESS ALLOWABLE, psi X 10³

MAX.

TEMP.,	F									100	200	300	400	500	600	650	700
ASME	SA-106-C									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6
ASME	SA-515-70									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6
ASME	SA-672-21									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6

NOMINAL ID IN.	MIN. CALC. WALL IN.	NOMINAL WALL IN.	OD IN.	MANUF. TOLERANCE IN.	PIPE			PLATE			NOTES
					ASME	TYPE CLASS	GRADE	ASME	TYPE CLASS	GRADE	
25.75	2.00	-	-	-	SA-106	-	C	-	-	-	

FITTINGS

	PIPE BENDS	FORGING	CASTING
ASME	SA-515		
TYPE/CLASS	-		
GRADE	70		
I.D.	EQUAL TO ST PIPE		
MIN.CALC. WALL	EQUAL TO ST PIPE		
MIN. BEND DIAMETER	ANSI B16.9		
BENDING ALLOWANCE	ANSI B16.9		

APPROVAL MADE: <u>E. B. Toll</u> <i>EBT</i> CHKD: <u>R. C. Penney</u> <i>RC</i> _____	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
	1											
	2											
	3											

PARSONS POWER

PIPING LINE SPECIFICATION

DESIGN CODE ASME/SXN III
DATE/ADDENDA 1971/WIN.1972

SPEC.(S):SP-G536A W.O.: 536633-00027
PROJECT: KRSKO NUCLEAR POWER PLANT
WELD END DETAIL DWG. D-301-001

LINE NO. 90A2-3
MATERIAL Carbon Steel
ISSUED/REV 6-27-96/0

SERVICE

FEEDWATER, STEAM

MAX																	
Temp °F					100	150	200	250	300	350	400	450	500	550	600	650	700
Press PSIG					1913	1913	1913	1913	1913	1913	1913	1913	1875	1775	1660	1550	1410
After Bending					1913	1913	1913	1913	1913	1913	1913	1913	1875	1775	1660	1550	1410

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/CLASS	GRADE	SUPPL REQMTS			
PIPING	2& Smlr	80	SA-106	-	B	-	SW	ANSI B36.10	
	2 1/2-12	80	SA-106	-	B	-	BW	ANSI B36.10	
	6-24	120	SA-106	-	B	-	BW	ANSI B36.10	
WELDING FITTINGS	2 & Smlr	3000 lb	SA-105	-	-	-	SW	ANSI B16.11	SCH. 80
	2-1/2 - 24	Equal to Pipe	SA-234	-	WPB	-	BW	ANSI B16.9	(4)
FLANGES	2 & Smlr	900 lb	SA-105	-	-	-	-	ANSI B16.5	Socket Welding, Raised Face
	2-1/2 - 24	900 lb	SA-105	-	-	-	-	ANSI B16.5	Welding Neck, Raised Face
BRANCH LINES	2 & Smlr	3000 lb	SA-105	-	-	-	SW		(2), (3)
	2-1/2 - 24	Equal to Pipe	SA-105	-	-	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	A-193	-	B7	-	-	ANSI B18.2.1	Heavy Hex Bolt, Class 2A Threads
NUTS	-	-	A-193	-	2H	ASTM A-194	-	ANSI B18.2.2	Heavy Hex, Class 2B Threads

										LINE NO.		90A2-3							
										ISSUED/REV		6-27-96/0							
MATERIAL										STRESS ALLOWABLE, psi X 10 ³									
TEMP.,	F									100	200	300	400	500	600	650	700		
ASME	SA-106-B									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		
ASME	SA-234-WPB									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		

NOTES

1. GASKETS - SPIRAL-WOUND SS TP304, FLEXITALLIC STYLE CC, ASBESTOS FILLER, 1/8 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE.
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f).
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS.

90) P-T RATINGS BASED ON P/S = 0.12754

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: E. B. Toll <i>EET</i>	1											
CHKD: R. C. Penney <i>RP</i>	2											
	3											

PARSONS POWER

PIPING LINE SPECIFICATION

DESIGN CODE ASME/SXN III
DATE/ADDENDA 1971/WIN.1972

SPEC.(S):SP-G536A W.O.: 536633-00027
PROJECT: KRSKO NUCLEAR POWER PLANT
WELD END DETAIL DWG. D-301-001

LINE NO. 90A3-1
MATERIAL Carbon Steel
ISSUED/REV 6-27-96/0

SERVICE

FEEDWATER, STEAM

MAX																	
Temp °F					100	150	200	250	300	350	400	450	500	550	600	650	700
Press PSIG					1913	1913	1913	1913	1913	1913	1913	1913	1875	1775	1660	1550	1440
After Bending					1913	1913	1913	1913	1913	1913	1913	1913	1875	1775	1660	1550	1440

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/CLASS	GRADE	SUPPL REQMTS			
PIPING	2 & Smlr	80	SA-106	-	B	-	SW	ANSI B36.10	
	2 1/2-12	80	SA-106	-	B	-	BW	ANSI B36.10	
	6-24	120	SA-106	-	B	-	BW	ANSI B36.10	
WELDING FITTINGS	2 & Smlr	3000 lb	SA-105	-	-	-	SW	ANSI B16.11	SCH. 80
	2-1/2 - 24	Equal to Pipe	SA-234	-	WPB	-	BW	ANSI B16.9	(4)
FLANGES	2 & Smlr	900 lb	SA-105	-	-	-	-	ANSI B16.5	Socket Welding, Raised Face
	2-1/2 - 24	900 lb	SA-105	-	-	-	-	ANSI B16.5	Welding Neck, Raised Face
BRANCH LINES	2 & Smlr	3000 lb	SA-105	-	-	-	SW		(2), (3)
	2-1/2 - 24	Equal to Pipe	SA-105	-	-	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	A-193	-	B7	-	-	ANSI B18.2.1	Heavy Hex Bolt, Class 2A Threads
NUTS	-	-	A-193	-	2H	ASTM A-194	-	ANSI B18.2.2	Heavy Hex, Class 2B Threads

MATERIAL		STRESS ALLOWABLE, psi X 10 ³															
TEMP.,	F									100	200	300	400	500	600	650	700
ASME	SA-106-B									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3
ASME	SA-234-WPB									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3

NOTES

1. GASKETS - SPIRAL-WOUND SS TP304, FLEXITALLIC STYLE CC, ASBESTOS FILLER, 1/8 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE.
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f).
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS.

90) P-T RATINGS BASED ON P/S = 0.12754

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: E. B. Toll <i>EOT</i>	1											
CHKD: R. C. Penney <i>RC</i>	2											
	3											

										LINE NO.		150TI-1									
										ISSUED/REV		6-27-96/0									
MATERIAL		STRESS ALLOWABLE, psi X 10 ³																			
TEMP.,	F								100	200	300	400	500	600	650	700	750	800			
ASME	SA-213-TP316								18.8	18.8	18.4	18.1	18.0	17.0	16.7	16.3	16.1	15.9			
ASME	SA-479-TP316								18.8	18.8	18.4	18.1	18.0	17.0	16.7	16.3	16.1	15.9			

NOTES

90) P-T RATINGS BASED ON WELDING END VALVES FOR CLASS 1500 VALVES OF ASME SECTION III, CLASS 1 (P/S = 0.16725)

APPROVAL MADE: E. B. Toll <i>EBT</i> CHKD: R. C. Penney <i>rcp</i> 	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
	1											
	2											
	3											

PIPING LINE SPECIFICATION

LINE NO. 150T2-1
MATERIAL SS Tubing
ISSUED/REV 6-27-96/0

SERVICE

INSTRUMENT TUBING

																	MAX
Temp °F		-20	100	150	200	250	300	350	400	450	500	550	600	650	700	750	800
Press PSIG		3490	3490	3240	3000	2860	2720	2600	2480	2400	2310	2250	2200	2140	2100	2070	2050
After Bending		3490	3490	3240	3000	2860	2720	2600	2480	2400	2310	2250	2200	2140	2100	2070	2050

[illegible]

										LINE NO.		150T2-1											
										ISSUED/REV		6-27-96/0											
MATERIAL										STRESS ALLOWABLE, psi X 10 ³													
TEMP.,	F									100	200	300	400	500	600	650	700	750	800				
ASME	SA-213-TP316									18.8	18.8	18.4	18.1	18.0	17.0	16.7	16.3	16.1	15.9				

NOTES

90) P-T RATINGS BASED ON P/S = 0.18624 (P/S ALLOWABLE FOR 3/4 IN. OD TUBING x .065 IN. WALL)

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: <u>E. B. Toll</u> <i>EBT</i>	1											
CHKD: <u>R. C. Penney</u> <i>RCP</i>	2											
	3											

PARSONS POWER PIPING LINE SPECIFICATION																
DESIGN CODE ASME/SXN III DATE/ADDENDA 1971/WIN.1972	SPEC.(S): SP-G536A W.O.: 536633-00027 PROJECT: KRSKO NUCLEAR POWER PLANT WELD END DETAIL DWG. D-301-001								LINE NO. 15A3-1 MATERIAL Carbon Steel ISSUED/REV 6-27-96/0							
SERVICE																
LOW PRESSURE SERVICE-WATER (ABOVE GROUND), ASME CLASS 3 ONLY																
MAX																
Temp °F														100	200	300
Press PSIG														275	240	210
After Bending														270	240	210

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/ CLASS	GRADE	SUPPL REQMTS			
PIPING	1/2 - 2	40	SA-106	S	B	-	SW	ANSI B36.10	Seamless
	3 - 10	40	SA-106	S	B	-	BW	ANSI B36.10	Seamless
	12 - 14	0.375	SA-106	E/S	B	-	BW	ANSI B36.10	Seamless
	16 - 14	0.375	SA-134	-	A283A	-	BW	ANSI B36.10	
WELDING FITTINGS	2 & Smir	3000 lb	SA-105	-	-	-	SW	ANSI B16.11	SCH. 80
	2-1/2 - 14	Equal to Pipe	SA-234	-	WPB	-	BW	ANSI B16.9	(4) Seamless or Weld.
	16 - 24	Equal to Pipe	SA-234	-	WPB	-	BW	ANSI B16-9	(4)
FLANGES	2 & Smir	150 lb	SA-105	-	-	-	-	ANSI B16.5	Socket welding, Raised face
	2-1/2 - 24	150 lb	SA-105	-	-	-	-	ANSI B16.5	Welding neck, Raised face
BRANCH LINES	2 & Smir	3000 lb	SA-105	-	-	-	SW		(2), (3)
	2-1/2 - 24	Equal to Pipe	SA-105	-	-	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-307	-	B	-	-	ANSI B18.2.1	Heavy Hex Bolt, Class 2A Threads
NUTS	-	-	SA-307	-	B	-	-	ANSI B18.2.2	Heavy Hex, Semi- Finished Class 2B Threads

LINE NO. 15A3-1														
ISSUED/REV 6-27-96/0														
MATERIAL														
STRESS ALLOWABLE, psi X 10 ³														
TEMP.,	F											100	200	300
ASME	SA-134-A283A											10.3	10.3	10.3
ASME	SA-105											17.5	17.5	17.5
ASME	SA-106-B											15.0	15.0	15.0
ASME	SA-234-WPB											15.0	15.0	15.0

NOTES

1. GASKETS - COMPRESSED ASBESTOS, RUBBER-BONDED FLAT RING, 1/16 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE.
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f).
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS.

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: E. B. Toll <i>EBT</i>	1											
CHKD: R. C. Penney <i>RP</i>	2											
	3											

PARSONS POWER

PIPING LINE SPECIFICATION

DESIGN CODE ASME/SXN III
DATE/ADDENDA 1971/WIN.1972

SPEC.(S):SP-G536A W.O.: 536633-00027
PROJECT: KRSKO NUCLEAR POWER PLANT
WELD END DETAIL DWG. D-301-001

LINE NO. 15A3-2
MATERIAL Carbon Steel
ISSUED/REV 6-27-96/0

SERVICE

LOW PRESSURE SERVICE-WATER (UNDERGROUND), ASME CLASS 3 ONLY

													MAX
Temp °F													100 200 300
Press PSIG													275 240 210
After Bending													270 240 210

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/ CLASS	GRADE	SUPL REQMTS			
PIPING	2 & Smr	40	SA-106	-	B	-	SW	ANSI B36.10	(11)
	2 1/2-10	40	SA-106	-	B	-	BW	ANSI B36.10	(11)
	12 - 14	0.375	SA-106	-	B	-	BW	ANSI B36.10	(11)
	16 - 14	0.375	SA-134	-	A283A	-	BW	ANSI B36.10	(11)
WELDING FITTINGS	2 & Smr	3000 lb	SA-105	-	-	-	SW	ANSI B16.11	SCH. 80 (11)
	2-1/2 - 24	Equal to Pipe	SA-234	-	WPB	-	BW	ANSI B16.9	(4), (11)
FLANGES	2 & Smr	150 lb	SA-105	-	-	-	-	ANSI B16.5	Socket Welding, Raised Face
	2-1/2 - 24	150 lb	SA-105	-	-	-	-	ANSI B16.5	Welding Neck, Raised Face
BRANCH LINES	2 & Smr	3000 lb	SA-105	-	-	-	SW		(2), (3)
	2-1/2 - 24	Equal to Pipe	SA-105	-	-	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-307	-	B	-	-	ANSI B18.2.1	Heavy Hex Bolt, Class 2A Threads
NUTS	-	-	SA-307	-	B	-	-	ANSI B18.2.2	Heavy Hex, Semi- Finished Class 2B Threads

LINE NO.												15A3-2					
ISSUED/REV												6-27-96/0					
MATERIAL		STRESS ALLOWABLE, psi X 10 ³															
TEMP.,	F														100	200	300
ASME	SA-134-A283A														10.3	10.3	10.3
ASME	SA-105														17.5	17.5	17.5
ASME	SA-234-WPB														15.0	15.0	15.0

NOTES

1. GASKETS - RED RUBBER, 1/16 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE.
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f).
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS.
- 11) COATING IN ACCORDANCE WITH AWWA C-203-1973 WITH FOLLOWING SUPPLEMENTARY REQUIREMENTS:
 - a) COATING SHALL BE COAL TAR ENAMEL WITH A TYPE B PRIMER AND TYPE I OR II FINISH
 - b) FELT SHALL BE NON-PERFORATED, WITH OR WITHOUT REINFORCEMENT
 - c) WELDING ENDS SHALL BE LEFT UNCOATED FOR 1 FOOT
 - d) COATING SHALL BE TESTED WITH A TINKER-RASOR HOLIDAY DETECTOR IN ACCORDANCE WITH THE TOTAL FILM THICKNESS APPLIED
- 90) P-T RATINGS
 - a) STRAIGHT PIPE BASED ON 150 LB ANSI B16.5-1968
 - b) BENT PIPE P/S = .02558 (P/S ALLOWABLE FOR 5 DIAM. BEND IN 24 IN. STANDARD WALL PIPE)

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: E. B. Toll <i>EBT</i>	1											
CHKD: R. C. Penney <i>RC</i>	2											
	3											

PARSONS POWER										Ref: W E-Spec G-678854									
PIPING LINE SPECIFICATION																			
DESIGN CODE ASME/SXN III					SPEC.(S):SP-G536AW.O.: 536633-00027					LINE NO. 151									
DATE/ADDENDA 1971/WIN.1972					PRDJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Stainless Steel									
WELD END DETAIL DWG. D-301-001										ISSUED/REV 6-27-96/0									
SERVICE																			
NUCLEAR CODE CLASS 2 OR 3																			
															MAX				
Temp °F															150	200	300	500	
Press PSIG															255	240	210	150	

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/ CLASS	GRADE	SUPPL REQMTS			
PIPING	2 & Smr	40S	SA-312	-	304	-	SW	ANSI B36.19	SEAMLESS
	3 - 12	40S	SA-312	-	304	-	BW	ANSI B36.19	SEAMLESS OR WELDED
	12 - 14	0.375	SA-358	1	TP304	-	BW		WELDED
WELDING FITTINGS	2 & Smr	3000 lb	SA-182	-	F304	-	SW	ANSI B16.11	SCH. 80
	3 - 24	Equal to Pipe	SA-403	-	WP304	-	BW	ANSI B16.9	3"-12" SEAMLESS OR WELDED 14"-24" WELDED
FLANGES	2 & Smr	150 lb	SA-182	-	F304	-	-	ANSI B16.5	Socket welding, Raised face
	3 - 24	150 lb	SA-182	-	F304	-	-	ANSI B16.5	Welding neck, Raised face
BRANCH CONN.	2 & Smr	3000 lb	SA-182	-	F304	-	SW		(2), (3)
	3 - 24	Equal to Pipe	SA-182	-	F304	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-453	-	660	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-193	-	B6	ASTM A-194	-	ANSI B18.2.2	HEAVY HEX BOLT, CLASS 2B THREADS

LINE NO. 151 ISSUED/REV 6-27-96/0																	
MATERIAL								STRESS ALLOWABLE, psi X 10 ³									
TEMP.,	F							100	200	300	400	500	600	650	700	750	800
ASME	SA-312-TP304							18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2
ASME	SA-358-TP304							18.8	17.8	18.8	16.2	15.9	15.9	15.9	15.9	15.6	15.2
ASME	SA-182-F304							18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2
ASME	SA-403-WP304							18.8	17.8	18.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2

NOTES

1. GASKETS - SPIRAL-WOUND SS TP304, FLEXITALLIC STYLE CG, ASBESTOS FILLER, 1/8 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS

APPROVAL MADE: <u>E. B. Toll</u> <i>EBT</i> CHKD: <u>R. C. Penney</u> <i>RCP</i> 	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
	1											
	2											
	3											

PARSONS POWER										Ref: W E-Spec G-678854									
PIPING LINE SPECIFICATION																			
DESIGN CODE ASME/SXN III					SPEC.(S):SP-G536A W.O.: 536633-00027					LINE NO. 152									
DATE/ADDENDA 1971/WIN.1972					PROJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Carbon Steel									
WELD END DETAIL DWG. D-301-001										ISSUED/REV 6-27-96/0									
SERVICE																			
NUCLEAR CODE CLASS 2 OR 3																			
																		MAX	
Temp °F																		500	
Press PSIG																		150	
After Bending																			

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/CLASS	GRADE	SUPPL REQMTS			
PIPING	1/2 - 2	40	SA-106	-	B	-	SW	ANSI B36.10	SEAMLESS
	3 - 10	40	SA-106	-	B	-	BW	ANSI B36.10	SEAMLESS
	12 - 14	0.375	SA-106	-	B	-	BW	ANSI B36.10	SEAMLESS OR WELDED
WELDING FITTINGS	2 & Smr	3000 lb	SA-105	-	-	-	SW	ANSI B16.11	SCH. 80
	3 - 24	Equal to Pipe	SA-234	-	WPB	-	BW	ANSI B16.9	(4) SEAMLESS OR WELDED
FLANGES	2 & Smr	150 lb	SA-105	-	-	-	-	ANSI B16.5	Socket welding, Raised face
	3 - 24	150 lb	SA-105	-	-	-	-	ANSI B16.5	Welding neck, Raised face
BRANCH CONN.	2 & Smr	3000 lb	SA-105	-	-	-	SW		(2), (3)
	3 - 24	Equal to Pipe	SA-105	-	-	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-193	-	B7	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-194	-	2H	-	-	ANSI B18.2.2	HEAVY HEX, SEMI-FINISHED CLASS 2B THREADS

										LINE NO.		152							
										ISSUED/REV		6-27-96/0							
MATERIAL										STRESS ALLOWABLE, psi X 10 ³									
TEMP.,	F										100	200	300	400	500	600	700		
ASME	SA-106B										15.0	15.0	15.0	15.0	15.0	15.0	14.3		
ASME	SA-105										17.5	17.5	17.5	17.5	17.5	17.5	16.6		
ASME	SA-234-WPB										15.0	15.0	15.0	15.0	15.0	15.0	14.3		

NOTES

1. GASKETS - COMPRESSED ASBESTOS, RUBBER-BONDED FLAT RING, 1/16 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE.
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f).
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS.

APPROVAL MADE: <u>E. B. Toll</u> <i>EBT</i> CHKD: <u>R. C. Penney</u> <i>RC</i> _____	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
	1											
	2											
	3											

PARSONS POWER										Ref: W E-Spec G-678854									
PIPING LINE SPECIFICATION																			
DESIGN CDDE ASME/SXN III					SPEC.(S):SP-G536A W.D.: 536633-00027					LINE ND. 301									
DATE/ADDENDA 1971/WIN.1972					PROJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Stainless Steel									
WELD END DETAIL DWG. D-301-001										ISSUED/REV 6-27-96/0									
SERVICE																			
NUCLEAR CODE CLASS 2 OR 3																			
MAX																			
Temp °F										200		30		650					
Press PSIG										550		495		370					
After Bending																			

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOIN T TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/ CLASS	GRADE	SUPPL REQMTS			
PIPING	1/2 - 2	40S	SA-312	-	TP304	-	SW	ANSI B36.19	SEAMLESS OR WELDED
	3 - 12	40S	SA-312	-	TP304	-	BW	ANSI B36.19	SEAMLESS OR WELDED
	14 - 18	40	SA-312	-	TP304	-	BW	ANSI B36.19	WELDED
WELDING FITTINGS	2 & Smr	3000 lb	SA-182	-	F304	-	SW	ANSI B16.11	SCH. 80
	3 - 18	Equal to Pipe	SA-403	-	WP304	-	BW	ANSI B16.5	(4) SEAMLESS OR WELDED
FLANGES	2 & Smr	300 lb	SA-182	-	F304	-	-	ANSI B16.5	Socket Welding, Raised Face
	3 - 18	300 lb	SA-182	-	F304	-	-	ANSI B16.5	Welding Neck, Raised Face
BRANCH CONN.	2 & Smr	3000 lb	SA-182	-	F304	-	SW		(2), (3)
	3 - 18	Equal to Pipe	SA-182	-	F304	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-453	-	660	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-193	-	B6	ASTM A-194	-	ANSI B18.2.2	HEAVY HEX, SEMI- FINISHED CLASS 2B THREADS

LINE NO.														301			
ISSUED/REV														6-27-96/0			
MATERIAL		STRESS ALLOWABLE, psi X 10 ³															
TEMP.,	F							100	200	300	400	500	600	650	700	750	800
ASME	SA-312-TP304							18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2
ASME	SA-182-TP304							18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2
ASME	SA-403-WP304							18.8	17.8	16.6	15.9	15.9	15.9	15.9	15.9	15.6	15.2

NOTES

1. GASKETS - SPIRAL-WOUND SS TP304, FLEXITALLIC STYLE CG, ASBESTOS FILLER, 1/8 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: E. B. Toll <i>EBT</i>	1											
CHKD: R. C. Penney <i>RP</i>	2											
	3											

PARSONS POWER										Ref: W E-Spec G-678854									
PIPING LINE SPECIFICATION																			
DESIGN CODE ASME/SXN III					SPEC.(S):SP-G536A W.O.: 536633-00027					LINE NO. 302									
DATE/ADDENDA 1971/WIN.1972					PROJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Carbon Steel									
WELD END DETAIL DWG. D-301-001										ISSUED/REV 6-27-96/0									
SERVICE																			
NUCLEAR CODE CLASS 2 OR 3																			
																		MAX	
Temp °F																			650
Press PSIG																			400
After Bending																			

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/CLASS	GRADE	SUPPL REQMTS			
PIPING	1/2 - 2	40	SA-106	-	B	-	SW	ANSI B36.10	SEAMLESS
	3 - 10	40	SA-106	-	B	-	BW	ANSI B36.10	SEAMLESS
	12 - 18	0.375	SA-106	-	B	-	BW	ANSI B36.10	SEAMLESS
WELDING FITTINGS	2 & Smlr	3000 lb	SA-105	-		-	SW	ANSI B16.11	SCH. 80 SEAMLESS OR WELDED
	3 - 18	Equal to Pipe	SA-234	-	WPB	-	BW	ANSI B16.9	(4) SEAMLESS OR WELDED
FLANGES	2 & Smlr	300 lb	SA-105	-	-	-	-	ANSI B16.5	Socket Welding, Raised Face
	3 - 18	300 lb	SA-105	-	-	-	-	ANSI B16.5	Welding Neck, Raised Face
BRANCH CONN.	2 & Smlr	3000 lb	SA-105	-	-	-	SW		(2), (3)
	3 - 18	Equal to Pipe	SA-105	-	-	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-193	-	B7	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-194	-	2H	-	-	ANSI B18.2.2	HEAVY HEX, SEMI-FINISHED CLASS 2B THREADS

										LINE NO.		302							
										ISSUED/REV		6-27-96/0							
MATERIAL										STRESS ALLOWABLE, psi X 10 ³									
TEMP.,	F									100	200	300	400	500	600	650	700		
ASME	SA-106-B									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		
ASME	SA-105									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6		
ASME	SA-234-WPB									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		

NOTES	
<ol style="list-style-type: none"> 1. GASKETS - COMPRESSED ASBESTOS, RUBBER-BONDED FLAT RING, 1/16 IN. THICK 2. BRANCH CONNECTIONS <ol style="list-style-type: none"> a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f) b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE c. OTHERS - TEE FITTING 3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f) 4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS 	

APPROVAL MADE: E. B. Toll <i>EBT</i> CHKD: R. C. Penney <i>Rel</i> _____	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
	1											
	2											
	3											

PARSONS POWER										Ref: W E-Spec G-678854									
PIPING LINE SPECIFICATION																			
DESIGN CODE ASME/SXN III					SPEC.(S):SP-G536A W.O.: 536633-00027					LINE NO. 601									
DATE/ADDENDA 1971/WIN.1972					PROJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Stainless Steel									
WELD END DETAIL DWG. D-301-001										ISSUED/REV 6-27-96/0									
SERVICE																			
NUCLEAR CODE CLASS 2 OR 3 (RESIDUAL HEAT REMOVAL LOOP 600 PSIG/400 F)																			
																		MAX	
Temp °F																		300	600
Press PSIG																		800	700
After Bending																			

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/ CLASS	GRADE	SUPPL REQMTS			
PIPING	3/4 - 2	40S	SA-312	-	TP304	-	SW	ANSI B36.19	SEAMLESS
	3 - 12	40S	SA-312	-	TP304	-	BW	ANSI B36.19	SEAMLESS
	14 - 18	40	SA-358	1	TP304	-	BW	ANSI B36.10	WELDED
WELDING FITTINGS	2 & Smir	3000 lb	SA-182	-	F304	-	SW	ANSI B16.11	SCH. 80
	3 - 18	Equal to Pipe	SA-403	-	WP304	-	BW	ANSI B16.9	3"-12" SEAMLESS OR WELDED (4) 14" - 18" WELDED
FLANGES	2 & Smir	600 lb	SA-182	-	F304	-	-	ANSI B16.5	SOCKET WELDING, RAISED FACE (5)
	3 - 18	600 lb	SA-182	-	F304	-	-	ANSI B16.5	WELDING NECK, RAISED FACE
BRANCH CONN.	2 & Smir	3000 lb	SA-182	-	F304	-	SW		(2), (3)
	3 - 18	Equal to Pipe	SA-182	-	F304	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-453	-	660	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-193	-	B6	ASTM A-194	-	ANSI B18.2.2	HEAVY HEX, SEMI- FINISHED CLASS 2B THREADS

										LINE NO.		601											
										ISSUED/REV		6-27-96/0											
MATERIAL										STRESS ALLOWABLE, psi X 10 ³													
TEMP.,	F									100	200	300	400	500	600	650	700	750	800				
ASME	SA-312-TP304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2				
ASME	SA-358-TP304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2				
ASME	SA-182-TP304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2				
	SA-403-WP304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2				

NOTES	
<p>1. GASKETS - SPIRAL-WOUND SS TP304, FLEXITALLIC STYLE CG, ASBESTOS FILLER, 1/8 IN. THICK</p> <p>2. BRANCH CONNECTIONS</p> <p style="margin-left: 20px;">a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)</p> <p style="margin-left: 20px;">b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE</p> <p style="margin-left: 20px;">c. OTHERS - TEE FITTING</p> <p>3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)</p> <p>4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS</p>	<p>5. 300# SA182, F316 FLANGES MAY BE SUBSTITUTED FOR THE 600# RF FLANGE OF GRADE F304 WHEN THE SYSTEM REQUIREMENTS FALL WITHIN THE ANSI 300# 316 TEMPERATURE AND PRESSURE REQUIREMENTS.</p>

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: <u>E. B. Toll</u> <i>EBT</i>	1											
CHKD: <u>R. C. Penney</u> <i>RCP</i>	2											
	3											

PARSONS POWER										Ref: <u>W E-Spec G-678854</u>									
PIPING LINE SPECIFICATION																			
DESIGN CODE ASME/SXN III					SPEC.(S):SP-G536A W.O.: 536633-00027					LINE NO. 602									
DATE/ADDENDA 1971/WIN.1972					PROJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Carbon Steel									
WELD END DETAIL DWG. D-301-001										ISSUED/REV 6-27-96/0									
SERVICE																			
NUCLEAR CODE CLASS 2 OR 3																			
																		MAX	
Temp °F																		300	650
Press PSIG																		700	600
After Bending																			

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/CLASS	GRADE	SUPPL REQMTS			
PIPING	1/2 - 2	40	SA-106	-	B	-	SW	ANSI B36.10	SEAMLESS
	2 1/2-10	40	SA-106	-	B	-	BW	ANSI B36.10	SEAMLESS
	12	.375	SA-106	-	B	-	BW	ANSI B36.10	SEAMLESS
WELDING FITTINGS	2 & Smlr	3000 lb	SA-105	-	-	-	SW	ANSI B16.11	SCH. 80
	2 1/2-12	Equal to Pipe	SA-234	-	WPB	-	BW	ANSI B16.9	(4) SEAMLESS OR WELDED
FLANGES	2 & Smlr	600 lb	SA-105	-	-	-	-	ANSI B16.5	Socket Welding, Raised Face
	2 1/2-12	600 lb	SA-105	-	-	-	-	ANSI B16.5	Welding Neck, Raised Face
BRANCH CONN.	2 & Smlr	3000 lb	SA-105	-	-	-	SW		(2), (3)
	2 1/2-12	Equal to Pipe	SA-105	-	-	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-193	-	B7	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-194	-	2H	-	-	ANSI B18.2.2	HEAVY HEX, SEMI-FINISHED CLASS 2B THREADS

										LINE NO.		602							
										ISSUED/REV		6-27-96/0							
MATERIAL										STRESS ALLOWABLE, psi X 10 ³									
TEMP.,	F									100	200	300	400	500	600	650	700		
ASME	SA-106-B									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		
ASME	SA-105									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6		
ASME	SA-234-WPB									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		

NOTES

1. GASKETS - COMPRESSED ASBESTOS, RUBBER-BONDED FLAT RING, 1/16 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS

APPROVAL MADE: <u>E. B. Toll</u> <i>EBT</i> CHKD: <u>R. C. Penney</u> <i>RCP</i> _____	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
	1											
	2											
	3											

PARSONS POWER										Ref: W E-Spec G-678854									
PIPING LINE SPECIFICATION																			
DESIGN CODE ASME/SXN III					SPEC.(S):SP-G536A W.O.: 536633-00027					LINE NO. 901									
DATE/ADDENDA 1971/WIN.1972					PROJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Stainless Steel									
WELD END DETAIL DWG. D-301-001										ISSUED/REV 6-27-96/0									
SERVICE																			
NUCLEAR CODE CLASS 2 OR 3																			
															MAX				
Temp °F															300	400	650		
Press PSIG															1300	1100	900		
After Bending																			

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/CLASS	GRADE	SUPPL REQMTS			
PIPING	1/2 - 2	80s	SA-312	-	TP304	-	SW	ANSI B36.19	SEAMLESS OR WELDED
	3-8	80s	SA-312	-	TP304	-	BW	ANSI B36.19	SEAMLESS OR WELDED
	10 - 12	120	SA-312	-	TP304	-	BW	ANSI B36.10	SEAMLESS OR WELDED
	14 - 16	120	SA-358	1	TP304		BW	ANSI B36.10	WELDED
WELDING FITTINGS	2 & Smr	3000 lb	SA-182	-	F304	-	SW	ANSI B16.11	
	3 - 16	Equal to Pipe	SA-403	-	WP304	-	BW	ANSI B16.9	(4) SEAMLESS OR WELDED
FLANGES	2 & Smr	1500 lb	SA-182	-	F304	-	-	ANSI B16.5	Socket Welding, Raised Face
	3 - 16	900 lb	SA-182	-	F304	-	-	ANSI B16.5	Welding Neck, Raised Face
BRANCH CONN.	2 & Smr	3000 lb	SA-182	-	F304	-	SW		(2), (3)
	3 - 16	Equal to Pipe	SA-182	-	F304	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-453	-	660	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-193	-	B6	ASTM A-194	-	ANSI B18.2.2	HEAVY HEX, SEMI-FINISHED CLASS 2B THREADS

										LINE NO.		901						
										ISSUED/REV		6-27-96/0						
MATERIAL										STRESS ALLOWABLE, psi X 10 ³								
TEMP.,	F									100	200	300	500	600	650	700	750	800
ASME	SA-312-TP304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.6	15.2
ASME	SA-358-TP304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.6	15.2
ASME	SA-403-WP304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.6	15.2
ASME	SA-182-F304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.6	15.2

NOTES

1. GASKETS - SPIRAL-WOUND SS TP304, FLEXITALLIC STYLE CG, ASBESTOS FILLER, 1/8 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS

<p style="text-align: center;">APPROVAL</p> <p>MADE: <u>E. B. Toll</u> <i>EBT</i></p> <p>CHKD: <u>R. C. Penney</u> <i>RCP</i></p> <p>_____</p>	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
	1											
	2											
	3											

PARSONS POWER										Ref: W E-Spec G-678854									
PIPING LINE SPECIFICATION																			
DESIGN CODE ASME/SXN III					SPEC.(S):SP-G536A W.O.: 536633-00027					LINE NO. 902									
DATE/ADDENDA 1971/WIN.1972					PROJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Carbon Steel									
WELD END DETAIL DWG. D-301-001										ISSUED/REV 6-27-96/0									
SERVICE																			
NUCLEAR CODE CLASS 2 OR 3																			
																		MAX	
Temp °F																		650	
Press PSIG																		900	
After Bending																			

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/CLASS	GRADE	SUPPL REQMTS			
PIPING	1/2 - 2	80	SA-106	-	B	-	SW	ANSI B36.10	SEAMLESS
	3 - 12	80	SA-106	-	B	-	BW	ANSI B36.10	SEAMLESS
WELDING FITTINGS	2 & Smlr	3000 lb	SA-105	-	-	-	SW	ANSI B16.11	
	3 - 12	Equal to Pipe	SA-105	-	-	-	BW	ANSI B16.9	SEAMLESS OR WELDED
FLANGES	2 & Smlr	600 lb	SA-105	-	-	-	-	ANSI B16.5	SOCKET WELDING, RAISED FACE
	3 - 12	600 lb	SA-105	-	-	-	-	ANSI B16.5	WELDING NECK, RAISED FACE
BRANCH CONN.	2 & Smlr	3000 lb	SA-105	-	-	-	SW		(2), (3)
	3 - 16	Equal to Pipe	SA-105	-	-	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-193	-	B7	-	-	ANSI B18.2.1	(1) STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-194	-	2H	-	-	ANSI B18.2.2	HEAVY HEX, SEMI-FINISHED CLASS 2B THREADS

										LINE NO.		902					
										ISSUED/REV		6-27-96/0					
MATERIAL										STRESS ALLOWABLE, psi X 10 ³							
TEMP.,	F									100	200	300	400	500	600	650	700
ASME	SA-106-B									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3
ASME	SA-105									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6
ASME	SA-234-WPB									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3

NOTES

1. GASKETS - COMPRESSED ASBESTOS, RUBBER-BONDED FLAT RING, 1/16 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: E. B. Toll <i>EBT</i>	1											
CHKD: R. C. Penney <i>Rel</i>	2											
_____	3											

PARSONS POWER										Ref: W E-Spec G-678854									
PIPING LINE SPECIFICATION																			
DESIGN CODE ASME/SXN III					SPEC.(S):SP-G536A W.O.: 536633-00027					LINE NO. 1501									
DATE/ADDENDA 1971/WIN.1972					PROJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Stainless Steel									
WELD END DETAIL DWG. D-301-001										ISSUED/REV 6-27-96/0									
SERVICE																			
NUCLEAR CODE CLASS 2 OR 3																			
															MAX				
Temp °F															200	350	650		
Press PSIG															1750	1500	1400		
After Bending																			

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/CLASS	GRADE	SUPPL REQMTS			
PIPING	1/2 - 2	80s	SA-312	-	TP304	-	SW	ANSI B36.19	SEAMLESS
	3-6	80s	SA-312	-	TP304	-	BW	ANSI B36.19	SEAMLESS
	8 - 16	120	SA-358	-	TP304	-	BW	ANSI B36.10	WELDED
WELDING FITTINGS	2 & Smir	3000 lb	SA-182	-	F304	-	SW	ANSI B16.11	
	3 - 16	Equal to Pipe	SA-403	-	WP304	-	BW	ANSI B16.9	(4) SEAMLESS OR WELDED
FLANGES	2 & Smir	1500 lb	SA-182	-	F304	-	-	ANSI B16.5	Socket Welding, Raised Face
	3 - 16	1500 lb	SA-182	-	F304	-	-	ANSI B16.5	Welding Neck, Raised Face
BRANCH CONN.	2 & Smir	3000 lb	SA-182	-	F304	-	SW		(2), (3)
	3 - 16	Equal to Pipe	SA-182	-	F304	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-453	-	660	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-193	-	B6	ASTM A-194	-	ANSI B18.2.2	HEAVY HEX, SEMI-FINISHED CLASS 2B THREADS

										LINE NO.		1501											
										ISSUED/REV		6-27-96/0											
MATERIAL										STRESS ALLOWABLE, psi X 10 ³													
TEMP.,	F									100	200	300	500	600	650	700	750	800					
ASME	SA-312-TP304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.6	15.2					
ASME	SA-358-TP304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.6	15.2					
ASME	SA-403-WP304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.6	15.2					
ASME	SA-182-F304									18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.6	15.2					

NOTES

1. GASKETS - SPIRAL-WOUND SS TP304, FLEXITALLIC STYLE CG, ASBESTOS FILLER, 1/8 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPolet, OR TEE
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: <u>E. B. Toll</u> <i>EBT</i>	1											
CHKD: <u>R. C. Penney</u> <i>RCP</i>	2											
_____	3											

										LINE NO.		1502							
										ISSUED/REV		6-27-96/0							
MATERIAL										STRESS ALLOWABLE, psi X 10 ³									
TEMP.,	F									100	200	300	400	500	600	650	700		
ASMEE	SA-106-B									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		
ASME	SA-105									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6		
ASME	SA-234-WPB									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		

NOTES

1. GASKETS - COMPRESSED ASBESTOS, RUBBER-BONDED FLAT RING, 1/16 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS

APPROVAL MADE: <u>E. B. Toll</u> <i>EBT</i> CHKD: <u>R. C. Penney</u> <i>RP</i> _____	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
	1											
	2											
	3											

PARSONS POWER

Ref: W E-Spec G-678854

PIPING LINE SPECIFICATION

DESIGN CODE ASME/SXN III

SPEC.(S):SP-G536A W.O.: 536633-00027

LINE NO. 2501

DATE/ADDENDA 1971/WIN.1972

PROJECT: KRSKO NUCLEAR POWER PLANT

MATERIAL Stainless Steel

WELD END DETAIL DWG. D-301-001

ISSUED/REV 12-07-00/1

SERVICE

NUCLEAR CODE CLASS 1 OR 2

															MAX	
Temp °F															200	650
Press PSIG															2800	2485
After Bending																

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOIN T TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/ CLASS	GRADE	SUPPL REOMTS			
PIPING	3/4 - 2	160	SA-376	-	TP304	-	SW	ANSI B36.10	SEAMLESS
	3-8	160	SA-376	-	TP304	S6	BW	ANSI B36.10	SEAMLESS
	10- 14	140	SA-376	-	TP316	S6	BW	ANSI B36.10	SEAMLESS
WELDING FITTINGS	2 & Smir	6000 lb	SA-182	-	F304	-	SW	ANSI B16.11	
	3 - 8	Equal to Pipe	SA-403	-	WP304	-	BW	ANSI B16.9	SEAMLESS
	10 - 14	Equal to Pipe	SA-403	-	WP316	-	BW	ANSI B16.9	SEAMLESS
FLANGES	2 & Smir	1500 lb	SA-182	-	F316	-	-	ANSI B16.5	Socket Welding, Raised Face
	3 - 14	1500 lb	SA-182	-	F316	-	-	ANSI B16.5	Welding Neck, Raised Face
BRANCH CONN.	2 & Smir	6000 lb	SA-182	-	F316	-	SW		(2), (3)
		Equal to Pipe	SA-182	-	F316	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-453	-	660	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-193	-	B6	ASTM A-194	-	ANSI B18.2.2	HEAVY HEX, SEMI-FINISHED CLASS 2B THREADS

LINE NO. 2501
ISSUED/REV 12-07-00/1

MATERIAL		STRESS ALLOWABLE, psi X 10 ³															
TEMP.,	F							100	200	300	400	500	600	650	700	750	800
ASME	SA-376-TP304							18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2
ASME	SA-403-WP304							18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2
ASME	SA-182-F316							18.8	18.8	18.4	18.1	18.0	17.0	16.7	16.3	16.1	15.9
ASME	SA-376-TP316							18.8	18.8	18.4	18.1	18.0	17.0	16.7	16.3	16.1	15.9
ASME	SA-403-WP316							18.8	18.8	18.4	18.1	18.0	17.0	16.7	16.3	16.1	15.9

NOTES

1. GASKETS - SPIRAL-WOUND SS TP304, FLEXITALLIC STYLE CG, ASBESTOS FILLER, 1/8 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: E. B. Toll <i>EBT</i>	1	R. C. Penney	NCK	JPC								
CHKD: R. C. Penney <i>RC</i>	2											
	3											

PARSONS POWER										Ref: <u>W</u> E-Spec G-678854									
PIPING LINE SPECIFICATION																			
DESIGN CODE ASME/SXN III					SPEC.(S):SP-G536A W.O.: 536935-00004					LINE NO. 2502									
DATE/ADDENDA 1989/1990 Addenda					PROJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Stainless Steel									
WELD END DETAIL DWG. D-301-001										ISSUED/REV 12-07-00/1									
SERVICE																			
NUCLEAR CODE CLASS 1 OR 2																			
																		MAX	
Temp °F																		200	650
Press PSIG																		2800	2485
After Bending																			

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASME SPECIFICATION				JOINT TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/ CLASS	GRADE	SUPPL REQMTS			
PIPING	3/4 - 2	160	SA-376	-	TP304	-	SW	ANSI B36.10	SEAMLESS
	3-8	160	SA-376	-	TP304	S6	BW	ANSI B36.10	SEAMLESS
	10- 14	140	SA-376	-	TP316	S6	BW	ANSI B36.10	SEAMLESS
WELDING FITTINGS	2 & Smr	6000 lb	SA-182	-	F304	-	SW	ANSI B16.11	
	3 - 8	Equal to Pipe	SA-403	-	WP304	-	BW	ANSI B16.9	SEAMLESS
	10 - 14	Equal to Pipe	SA-403	-	WP316	-	BW	ANSI B16.9	SEAMLESS
FLANGES	2 & Smr	2500 lb	SA-182	-	F316	-	-	ANSI B16.5	Socket Welding, Raised Face
	3 - 14	2500 lb	SA-182	-	F316	-	-	ANSI B16.5	Welding Neck, Raised Face
BRANCH CONN.	2 & Smr	6000 lb	SA-182	-	F316	-	SW		(2), (3)
		Equal to Pipe	SA-182	-	F316	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-453	-	660	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-193	-	B6	ASTM A-194	-	ANSI B18.2.2	HEAVY HEX, SEMI-FINISHED CLASS 2B THREADS

LINE NO. 2502																	
ISSUED/REV 12-07-00/1																	
MATERIAL		STRESS ALLOWABLE, psi X 10 ³															
TEMP.,	F							100	200	300	400	500	600	650	700	750	800
ASME	SA-376-TP304							18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2
ASME	SA-403-WP304							18.8	17.8	16.6	16.2	15.9	15.9	15.9	15.9	15.6	15.2
ASME	SA-182-F316							18.8	18.8	18.4	18.1	18.0	17.0	16.7	16.3	16.1	15.9
ASME	SA-376-TP316							18.8	18.8	18.4	18.1	18.0	17.0	16.7	16.3	16.1	15.9
ASME	SA-403-WP316							18.8	18.8	18.4	18.1	18.0	17.0	16.7	16.3	16.1	15.9

NOTES

1. GASKETS - FLEXITE SUPER, 1/8 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NB-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NB-3643.2(f)
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE ON DRAWINGS

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: <u>E. B. Toll</u>	1	<u>R.R. Green</u>	<u>HeK</u>	<u>JF-L</u>								
CHKD: <u>M. Capiotis</u>	2											
	3											

PARSONS POWER										Ref: W E-Spec G-678854									
PIPING LINE SPECIFICATION																			
DESIGN CODE ASME/SXN III					SPEC.(S):SP-G536A W.O.: 536633-00027					LINE NO. 2503									
DATE/AOENOA 1971/WIN.1972					PROJECT: KRSKO NUCLEAR POWER PLANT					MATERIAL Carbon Steel									
					WELD END DETAIL DWG. D-301-001					ISSUEO/REV 6-27-96/0									
SERVICE																			
NUCLEAR CODE CLASS 2 OR 3																			
																		MAX	
Temp °F																		650	
Press PSIG																		2500	
After Bending																			

MATERIAL DESCRIPTION

ITEM	SIZE(S)	SCH, NOM WALL, RATING	ASTM SPECIFICATION				JOIN T TYPE	DIM STDS	REMARKS (See Page 2)
			NO.	TYPE/ CLASS	GRADE	SUPPL REQMTS			
PIPING	1/2 - 2	160	SA-106	-	B	-	SW	ANSI B36.10	SEAMLESS
	2 1/2-12	160	SA-106	-	B	-	BW	ANSI B36.10	SEAMLESS
WELDING FITTINGS	2 & Smr	6000 lb	SA-105	-	-	-	SW	ANSI B16.11	
	2 1/2-12	Equal to Pipe	SA-234	-	WPB	-	BW	ANSI B16.9	(4) SEAMLESS OR WELDED
FLANGES	2 & Smr	1500 lb	SA-105	-	-	-	-	ANSI B16.5	SOCKET WELDING, RAISED FACE
	2 1/2-12	1500 lb	SA-105	-	-	-	-	ANSI B16.5	WELDING NECK, RAISED FACE
BRANCH CONN.	2 & Smr	6000 lb	SA-105	-	-	-	SW		(2), (3)
	2 1/2-12	Equal to Pipe	SA-105	-	-	-	BW	-	(2)
GASKETS	-	-	-	-	-	-	-	-	(1)
BOLTS & STUDS	-	-	SA-193	-	B7	-	-	ANSI B18.2.1	STUD BOLT, CONTINUOUSLY THREADED CLASS 2A THREADS
NUTS	-	-	SA-194	-	2H	-	-	ANSI B18.2.2	HEAVY HEX, SEMI-FINISHED CLASS 2B THREADS

										LINE NO.		2503							
										ISSUED/REV		6-27-96/0							
MATERIAL										STRESS ALLOWABLE, psi X 10 ³									
TEMP.,	F									100	200	300	400	500	600	650	700		
ASMEE	SA-106-B									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		
ASME	SA-105									17.5	17.5	17.5	17.5	17.5	17.5	17.5	16.6		
ASME	SA-234-WPB									15.0	15.0	15.0	15.0	15.0	15.0	15.0	14.3		

NOTES

1. GASKETS - COMPRESSED ASBESTOS, RUBBER-BONDED FLAT RING, 1/16 IN. THICK
2. BRANCH CONNECTIONS
 - a. 2 IN. AND SMALLER - SOCKOLET, NIPOLET OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
 - b. BRANCH DIAMETER LESS THAN MAIN RUN - WELDOLET, SWEEPOLET, OR TEE
 - c. OTHERS - TEE FITTING
3. INSTRUMENT CONNECTIONS - SOCKOLET, NIPOLET, OR EQUAL: OR HALF-COUPLING SHAPED AND WELDED TO OUTSIDE OF PIPE IN ACCORDANCE WITH ASME CODE SECTION III SUBSUBPARAGRAPH NC-3643.2(f)
4. ELBOWS SHALL BE LONG RADIUS UNLESS INDICATED OTHERWISE OR DRAWINGS

APPROVAL	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
MADE: <u>E. B. Toll</u> <i>EBT</i>	1											
CHKD: <u>R. C. Penney</u> <i>RCP</i>	2											
	3											

LINE NO. 2505 ISSUED/REV 6-27-96/0																	
MATERIAL								STRESS ALLOWABLE, psi X 10³									
TEMP.,	F							100	200	300	400	500	600	650	700	750	800
ASME	SA-213-TP316							18.8	18.8	18.4	18.1	18.0	17.0	16.7	16.3	16.1	15.9

NOTES

7. ASME SA-249 TP316 MAY BE SUBSTITUTED FOR SA-213 TP316 WITH WELD INTEGRITY OF LONGITUDINAL WELD VERIFIED FOR 100% JOINT EFFICIENCY BY RADIOGRAPHIC, ULTRASONIC OR EQUIVALENT VOLUMETRIC EXAMINATION.

13. MANUFACTURERS PRESSURE-TEMPERATURE RATING OF FITTINGS SHALL EQUAL OR EXCEED P-T RATING SPECIFIED FOR THIS LINE SPECIFICATION.

APPROVAL MADE: <u>E. B. Toll</u> <i>EBT</i> CHKD: <u>R. C. Penney</u> <i>rcp</i> _____	REVISIONS				REVISIONS				REVISIONS			
	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA	NO.	MADE	CHKD	QA
	1											
	2											
	3											