

# TECHNICAL SPECIFICATION

## CONVENTIONAL VALVES

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### KRŠKO NUCLEAR POWER PLANT

SP-G332 July, 2001

Revision 2

Originator/Date

Reviewer/Verifier/Date

Superintendent Engineering and Design Change/Date

RECORD OF CHANGE  
FOR Technical Specification SP-G332  
REVISION 2

Sheet 1 of 1  
July, 2001

REVISION 2 includes updated pages only. The latest change is referenced in the right-hand margin of the updated pages.

ATTACHMENTS

Revised Specification Data Sheet XG32-1.

RECORD OF CHANGE  
FOR  
CONVENTIONAL VALVES

REVISION 1

Sheet 1 of 3  
October 18, 1976

REVISION 1 includes updated pages only. Latest changes are referenced in the right-hand margin of the updated pages.

2.0      APPLICABLE DOCUMENTS

2.2      Applicable Codes and Standards

Subitem a.4A. added as follows:

"4A. B16.24-1971, "Bronze Flanges and Flanged Fittings."

2.3      Drawings

2.3.1    List of Bid Drawings

Paragraph: in first line changed "Drawing bearing W.O. 044687-001 sets forth" to "Drawings bearing W.O. 044687-000 set forth". In second line changed "and is" to "and are".

Added following drawing to drawing list:

<u>Drawing No.</u>	<u>Rev.</u>	<u>Date</u>	<u>Status</u>	<u>Title</u>
"SDPIP01	A	5-14-76	-	Butt Weld End Preparation for Power Plant Piping and Components."

2.3.2    Subitem i. added as follows:

"i. WESTINGHOUSE Valve Specification Sheet number to which the valve drawing is applicable."

3.0      DESIGN REQUIREMENTS

3.2      Working Fluids

Subitem h.7.: revised to read "Total suspended solids, ppm  
avg/max 179/800".

Subitem h.8.: changed "7.5" to "7.4 to 7.7".

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REVISION 1

Sheet 2 of 3  
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Subitem h.9. added as follows:

"9. Residual chlorine, ppm 0.5 to 3.0".

Subitems j.1. thru j.6. revised as follows:

"1. Oxygen, ppm	0.10
2. Chloride, ppm	0.15
3. Fluoride, ppm	0.15
4. Total solids, ppm	0.5
5. Carbon dioxide, ppm	2.0
6. Particulates, microns	2.5"

Added subitem j.6A. to read as follows:

"6A. Silica, ppm 0.2"

Added subitem k. as follows:

"k. Chilled water system - demineralized water (WF-11) with the following:

1. Corrosion inhibitor	Sodiumtetraborate/sodium nitrate (70/30 ratio, 1500 to 2500 mg/l)
2. pH range at 25 C	8.0 to 9.0
3. Chloride, ppm	0.15 max
4. Fluoride, ppm	0.15 max"

3.3 Detailed Design Requirements

3.3.1 All Valves

Subitem a.: revised to read "All weld end transformations shall be in accordance with Drawings D-301-001 and SDPIP01. Drawing D-301-001

RECORD OF CHANGE  
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is applicable to Schedule 30 lines, socket welds, and 27.75-inch i.d. main steam lines."

3.3.9 Valves Located Within Containment

Subitem c.1.: in first line changed "(48.9 C)" to (49 C)".

Subitem c.5.(a): in eighth line changed "(4.44 to 48.9 C)" to "(4.44 to 49 C)".

Subitem c.5.(b): in third line changed "51.5 psig (3.62 kg/cm<sup>2</sup>)" to "51.6 psig (3.63 kg/cm<sup>2</sup>)".

3.3.10 Valves Located Outside Containment

Subitem a.1.: revised to read "Normal 36 F (2 C) to 125 F (52 C)".

Subitem a.2.: revised to read "Upset, emergency, faulted 220 F (104 C) max".

8.0 PREPARATION FOR SHIPMENT

8.4 Tagging

8.4.1 Added subitem d. to read as follows:

"d. WESTINGHOUSE Valve Specification Sheet number."

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ATTACHMENTS

Valve Specification Sheets and Index\*

Valve List\*

Specification SP-S802-044687-001, "Non-Safety Related Electric Motor-Driven  
Valve Operators"

Equipment Specification Exceptions form (1 page)

Equipment Data forms (2 pages)

\*Valve Specification Sheets and Index and the Valve List are not furnished  
with this Specification. Copies may be obtained from the ENGINEER.

1.0      SCOPE

1.1      Scope of Work

1.1.1      This Specification establishes the criteria for design, fabrication, furnishing, testing, and inspection required for conventional valves which are non-safety class.

1.1.2      The SUPPLIER/SUBCONTRACTOR shall be responsible for compliance with all of the detailed requirements presented in this Specification. The SUPPLIER/SUBCONTRACTOR shall be responsible for performing, in addition to the requirements of this Specification, such analyses, tests, inspections, and other activities which the SUPPLIER/SUBCONTRACTOR considers necessary for the service intended, or as may be required by common usage or good practice.

1.2      Equipment, Material, and Services to be Furnished by the Supplier/Subcontractor

The equipment and services to be furnished, with the materials and accessories pertaining thereto, shall include, but not necessarily be limited to, the following:

- a.      Valves of the types and sizes to be furnished are designated in the Valve Specification Sheets.
- b.      Special tools necessary for the installation and maintenance of valves.
- c.      Documentation of material reports, testing, and qualifications specified herein.
- d.      The furnishing of drawings and information as specified herein.

1.3      Equipment, Material, and Services to be Furnished by Others

The following equipment and services will be furnished by Others:

- a.      Unloading, storage, erection, and installation of valve assemblies.
- b.      Supplying and connecting all external wiring to the valves and their accessories.
- c.      Connecting piping, supports, gaskets, and flange bolts.



#### 1.4 Information Required With the Proposal

The BIDDER shall submit with his Proposal complete data for the equipment being offered. The following information shall be included:

- a. Reproducible outline and sectional drawings shall cover each item giving overall dimensions, valve type, ANSI B16.5 pressure class, manufacturer's figure number, connection size, approximate weight, center of gravity, and material specification of main valve and actuator parts including location and description of hardfaced areas. One drawing illustrating features covering a size range is adequate. Accessories may be covered on separate drawings providing a convenient cross-reference is furnished.
- b. Standard catalog information covering valves and accessories offered.
- c. Information required under items 3.3.1 subitems h. and j., 3.3.4 subitem c., 3.3.5 subitem i., Item 7.1, and item 7.2.2 subitem b. herein.
- d. Information required in attached Specifications as listed on contents page to include specific information on each valve unit where applicable.
- e. Any supplemental information included with the Proposal which is not directly associated with the subject Specification is to be labeled SAMPLE.
- f. Completion of Equipment Data forms.
- g. All deviations or exceptions to this Specification listed on the Equipment Specification Exceptions form in accordance with WESTINGHOUSE KRSKO Standard Purchase/General Order Notes.

#### 2.0 APPLICABLE DOCUMENTS

Any conflicts between this Specification and the Applicable Documents or between the Applicable Documents shall be brought to the attention of WESTINGHOUSE prior to any action by the SUPPLIER/SUBCONTRACTOR.

##### 2.1 Supplemental Specifications and Information

- 2.1.1 The items attached, as listed on the contents page, are hereby made a part of this Specification.
- 2.1.2 The following WESTINGHOUSE Process Specifications are listed here for reference purposes:
  - a. Process Specification PS 85310 QA, Revision 3, "Packaging and Preparing Nuclear Components and Spare Parts for Shipment and Storage."

- b. Process Specification PS 292722 (83318NA), Revision 7, "Cleaning and Packaging Requirements of Equipment for Use in the Nuclear Steam Supply System."
- c. Process Specification PS 597755, Revision E, "Application of Protective Coatings to Reactor Containment and System Components in the Reactor Containmentment."

## 2.2 Applicable Codes and Standards

Design, materials, manufacture, examination, testing, inspection, and documentation shall conform to the applicable sections of the following codes and standards:

- a. American National Standards Institute (ANSI)
  - 1. B16.1-1967, "Cast Iron Pipe Flanges and Flanged Fittings."
  - 2. B16.5-1968, "Steel Pipe Flanges and Flanged Fittings."
  - 3. B16.10-1957, "Face-to-Face and End-to-End Dimensions of Ferrous Valves."
  - 4. B16.11-1966, "Forged Steel Fittings, Socket-Welding and Threaded."
  - 5. B16.25-1972, "Buttwelding Ends."
  - 6. B31.1.0-1967, "Power Piping."
- b. Manufacturers Standardization Society (MSS)
  - 1. SP-25-1964, "Standard Marking System for Valves, Fittings, Flanges and Unions."
  - 2. SP-45-1971, "Bypass and Drain Connection Standard."
  - 3. SP-55-1971, "Quality Standard for Steel Castings - Visual Method."
  - 4. SP-61-1961, "Hydrostatic Testing of Steel Valves."
- c. American Society for Testing and Materials (ASTM) Material Specifications.
- d. American Water Works Association, Standard C504-70, "Rubber Seated Butterfly Valves."

2.3 Drawings

2.3.1 List of Bid Drawings

The following Drawings bearing W.O. 044687-000 set forth the location and the extent of WORK to be performed under the Contract and are hereby made a part of this Specification:

<u>Drawing No.</u>	<u>Rev.</u>	<u>Date</u>	<u>Status</u>	<u>Title</u>
D-301-001	1	3-21-75	Approved	Welding Details for Connections to Non Safety and Safety Class, Valves, Equipment & Piping.
SDPIP01	A	5-14-76	-	Butt Weld End Preparation for Power Plant Piping and Components.

2.3.2 The SUPPLIER/SUBCONTRACTOR'S reproducible drawings of each type valve assembly shall include the following information:

- a. Valve assembly outline and section view showing internal construction, valve and contours, and weld ends with principal dimensions. The actuator, accessories, or both may be shown on separate drawings if a specific cross reference is established on the drawings.
- b. ASTM designation or identification of all materials shown, including location and description of hard surfacing areas.
- c. Overall dimensions including maintenance clearance and operator open dimensions. The drawings shall be dimensioned in such a way that the overall dimensions of a valve with any actuator and any combination of accessories can be determined.
- d. Weight of valve with manual operator, weight of valve with accessories and operators, weights of accessories and operators, and center of gravity of each of the above.
- e. Pressure, class, size, type, and SUPPLIER/SUBCONTRACTOR Figure number. If included in ANSI B16.5, the pressure class shall be in accordance with ANSI B16.5.
- f. Valve  $C_v$  in the wide open position.
- g. Any limitations regarding installation of the valve. If there is no indication on the drawing, it shall be assumed that the valve can be installed in any position and function properly.

- h. WESTINGHOUSE Purchase Order Number and Valve Identification Number as defined by the Valve Specification Sheets.
- i. WESTINGHOUSE Valve Specification Sheet number to which the valve drawing is applicable.

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### 3.0 DESIGN REQUIREMENTS

#### 3.1 General Design Requirements

The valves specified herein will be part of a nuclear power plant, utilizing a WESTINGHOUSE nuclear steam supply system and a WESTINGHOUSE turbine generator. The equipment furnished shall be suitable for specific conditions stated herein and for conditions normally encountered in the conventional piping of a nuclear power plant. Valves and accessories shall be capable of continuous satisfactory operation under their respective design operating conditions, with a reasonable operating margin without undue strain, corrosion, deterioration, leakage, vibration, or other operation deficiencies.

#### 3.2 Working Fluids

The applicable working fluid (WF) for each valve is identified on the Valve Specification Sheets and defined as follows:

##### a. Reactor coolant water chemistry, WF-1

1. pH	4.2 to 10.5
2. Hydrogen	25-35 cc (STP) kg H <sub>2</sub> O
3. Chlorides	<0.15 ppm
4. Fluorides	<0.15 ppm
5. Boric acid	0-4,000 ppm boron as H <sub>3</sub> BO <sub>3</sub>
6. Suspended solids	1.0 ppm max
7. Dissolved oxygen	0.1 ppm max

##### b. Component cooling water chemistry, WF-2

1. pH	8.0 to 9.0
2. Chloride	<0.15 ppm
3. Fluoride	<0.15 ppm
4. Corrosion inhibitor	Chromate CrO <sub>4</sub> 1000 ppm for 1 week 175 to 225 ppm thereafter

c.	Boric acid solution, WF-3	12% by weight
d.	Saturated steam, WF-4	
e.	Demineralized and makeup water, WF-5	
1.	Oxygen, ppm	0.10
2.	Chloride, ppm	0.15
3.	Fluoride, ppm	0.15
4.	Total solids, ppm	0.5
5.	Carbon dioxide, ppm	2.0
6.	Particulates, microns	2.5
7.	Silica, ppm	0.2
8.	pH	6.0 to 8.0
f.	No. 2 fuel oil, WF-6	
g.	Lube oil, WF-7	
h.	River water chemistry, WF-8	
1.	Total hardness, ppm $\text{CaCO}_3$	250
2.	Total alkalinity, ppm $\text{CaCO}_3$	195
3.	Chlorides, ppm	11.7
4.	Sulphates, ppm $\text{SO}_4$	48
5.	Nitrates, ppm $\text{NO}_3$	21.7
6.	Total dissolved solids, ppm	425
7.	Total suspended solids, ppm avg/max	179/800
8.	pH	7.4 to 7.7
9.	Residual chlorine, ppm	0.5 to 3.0
i.	Filtered and potable water chemistry, WF-9	
1.	Total hardness, ppm $\text{CaCO}_3$	146
2.	Total alkalinity, ppm $\text{CaCO}_3$	32
3.	Chlorides, ppm	14.9

4.	Sulphates, ppm $\text{SO}_4$	95.3	
5.	Nitrates, ppm $\text{NO}_3$	22.3	
6.	Total dissolved solids, ppm	200	
7.	pH	10.2	
8.	Residual chlorine (potable water only)	0.2 - 0.5	
j.	Condensate and feedwater, WF-10		
1.	Oxygen, ppm	0.10	
2.	Chloride, ppm	0.15	
3.	Fluoride, ppm	0.15	
4.	Total solids, ppm	0.5	1
5.	Carbon dioxide, ppm	2.0	
6.	Particulates, microns	2.5	
6A.	Silica, ppm	0.2	
7.	pH	8.8 - 9.2	
8.	Residual chlorine (potable water only)	0.2 - 0.5	
9.	$\text{O}_2$ , ppb	<5	
10.	$\text{H}_2$	5 ppb > $\text{O}_2$	
k.	Chilled water system - demineralized water (WF-11) with the following:		
1.	Corrosion inhibitor	Sodiumtetraborate/sodium nitrate (70/30 ratio, 1500 to 2500 mg/l)	
2.	pH range at 25 C	8.0 to 9.0	1
3.	Chloride, ppm	0.15 max	
4.	Fluoride, ppm	0.15 max	

### 3.3 Detailed Design Requirements

Valves shall conform to the requirements of the Valve Specification Sheets and as set forth herein.

3.3.1 All Valves

- a. All weld end transformations shall be in accordance with Drawings D-301-001 and SDPIP01. Drawing D-301-001 is applicable to Schedule 30 lines, socket welds, and 27.75-inch i.d. main steam lines.
- b. End-to-end dimensions shall conform to ANSI B16.10.
- c. Valve designs shall minimize disc vibration, spin, and chatter under all conditions.
- d. Valve parts shall be replaceable with the valve installed.
- e. Corrosion-resisting materials with anti-wear and anti-galling characteristics shall be used in the fabrication of sliding and mating parts such as the stem-to-disc interface and disc-to-guide interface.



- f. All valves shall be full ported unless otherwise specified.
- g. The minimum wall thickness of pressure-retaining parts shall be in accordance with ANSI B16.5.
- h. Valves shall be provided with a means to relieve confined fluid. An example of a confined space for which relief would be required is the chamber formed above or below the disc of a closed gate valve. The BIDDER shall describe his method of relieving trapped fluid for each of the types of valves he is bidding.
- i. Unless otherwise stated in the Valve Specification Sheets, valves of 900-pound, or higher ANSI rating shall be pressure seal bonnet type.
- j. Packing shall be of high quality, selected to minimize friction, the necessity for gland leakage, and to provide maximum protection against leakage and corrosion to valve parts. The packing selected shall be suitable respectively for any condition of steam, air, acidic or alkaline water, oil, or gas specified herein. The packing(s) selected shall be certified to contain less than 200 ppm leachable chlorides. The BIDDER shall list on the Equipment Data form a schedule of the packing he will use in each valve.
- k. Stuffing boxes shall be arranged so that the packing can be replaced or adjusted without disturbing any part of the valve or operator assembly, except the packing gland follower.

### 3.3.2 Gate and Globe Type Valves

- a. Positive backseating stem and bonnet construction shall be furnished.
- b. Globe valve seats and discs shall be designed to be relapped in place for sizes 4 inches and larger.
- c. Handwheel actuators shall be capable of adjusting the valve as a block valve in the hydrostatic testing of pipe lines. The actuator shall be capable of seating the valve against the respective ANSI B16.5 hydrostatic shell test pressure taken as differential across-the-seat.
- d. Manual valve actuators shall be sized for opening and closing with a force not exceeding 80 pounds (36.3 kg) applied at the rim of the handwheel against the pressure corresponding to a 100 F as listed in ANSI B16.5 Pressure-Temperature Rating Tables 2 through 8 for the respective valve pressure class.

Valve actuators shall be equipped with any combination of geared actuator, ball and roller bearing yokes and impactor handwheels to meet requirements. Geared actuators shall be furnished on valves 8 inches and larger.

- e. A gland follower with bolting for compression adjustment and fastening shall be furnished. The design shall prevent binding between stem and follower during adjustment and shall, when slipped up the stem, provide adequate space for replacing the packing without removing the actuator.

### 3.3.3 Check Valves

- a. Valves 4 inches and smaller shall be the lift check or swing check type for installation in horizontal runs of pipe. Spring loaded lift type check valves shall be suitable for installation in vertical runs. Valves larger than 4 inches (10.16 cm) shall be the swing check type; above 8 inches (20.32 cm), tilting disc type shall be used.
- b. Tilt disc check valves may be of the split body or bonnet entrance type, and hinge covers may be used on the valve exterior.
- c. The swing check type valve shall be the type which allows servicing through the bonnet opening; the type with internal hinge, or the type with hinge pin penetrating the body and capped, is acceptable.
- d. Valve bearings installed in the hubs of the body shall be of the self-lubricated sleeve type. Any bearings outboard of the stuffing box gland may be either sleeve or antifriction type.

### 3.3.4 Safety and Relief Valves

- a. Valves shall be adjusted for set and blowdown pressures at the SUPPLIER/SUBCONTRACTOR'S shop.
- b. The BIDDER shall determine the required orifice size for each valve in conformance with the requirements defined on the Valve Specification Sheets. The SUPPLIER/SUBCONTRACTOR shall provide sizing calculations prior to submitting drawings for approval.
- c. All safety and relief valves shall be provided with gags suitable to keep the valve closed during field hydrostatic testing. The gags shall be capable of keeping the valve closed and leaktight at a pressure of 1.5 times the valve set pressure. The BIDDER shall provide a drawing of the

gags and recommended gagging procedure in the Proposal. The BIDDER shall state the maximum hydrostatic pressure that the valve may safely be subjected to with the gag attached.

- d. The BIDDER may propose a safety-relief type valve of proven suitability for liquid relief service.
- e. Inlet and outlet connections to match up with the OWNER'S piping are listed in the Valve Specification Sheets. The BIDDER may deviate from these desired inlet connections for purposes of strength, safety, or required relieving capacity.
- f. The BIDDER shall state the maximum loadings allowable on valve outlets. The BIDDER shall include (but not be limited to) in his determination of allowable loadings, loadings due to thermal expansion of the discharge piping and loadings due to relieving at full capacity.
- g. Valves shall be provided with suitable lifting levers when specified on the Valve Specification Sheets or required by applicable codes and standards.
- h. Valves shall be provided with bonnets as specified on the Valve Specification Sheets.
- i. Valves over 1-inch nominal inlet size shall be provided with bolted caps. Valves 1 inch and under nominal inlet size shall be provided with screwed caps. Caps shall be provided so that it shall not be necessary to remove the cap to gag the valve.
- j. Zero leakage across the seat of all valves when installed in the field and under operating conditions is desired. The BIDDER shall state the guaranteed maximum leakage of newly installed valves.
- k. The backpressure of the backbalancing bellows shall be 1.5 times the specified static back pressure. Design of the bellows containment shall avoid direct impingement of the escaping fluid upon the bellows during valve discharge.

### 3.3.5 Butterfly Valves

- a. Valve shafts shall conform to the following:
  - 1. The valve disc shaft may be of one-piece construction, or may comprise two separate pieces inserted into the valve disc hubs. The BIDDER shall indicate which type is offered.
  - 2. The valve shaft shall be designed for either horizontal or vertical installation.

3. In addition to the shaft materials specified in AWWA C504, Type 17-4 stainless steel is also acceptable.
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- b. The valve disc shall be either cast or fabricated type construction, with no external ribs transverse to the flow. In designs having the rubber seat in the body, the disc shall have stainless steel or monel covering the full width of the disc sealing edge. In designs having the rubber seat on the disc, a retaining ring of stainless steel shall be supplied to clamp the seat to the disc, and a stainless steel or monel seat ring shall be supplied in the body. All seat ring screws shall be stainless steel. Discs shall not be plated or coated.
  - c. Adjustable mechanical stops shall be provided to prevent overtravel of the valve disc in the open or closed positions. Stops shall be designed to absorb the full operator torque with a minimum design safety factor of five.
  - d. Valve bearings installed in the hubs of the body shall be of the self-lubricated sleeve type. Any bearings outboard of the stuffing box gland may be either sleeve or anti-friction type.
  - e. Stuffing boxes shall conform to the following:
    1. Stuffing boxes shall be arranged so that the packing can be replaced or adjusted without disturbing any part of the valve or operator assembly, except the packing gland follower. Packing shall be teflon impregnated asbestos, or EQUAL.
    2. Whenever vacuum packing is specified on the valve design sheets, dry type packing or O-ring seals suitable for 30-inch Hg vacuum, shall be provided.
  - f. Valves shall be suitable for installation in horizontal lines with the shafts vertical or horizontal and for installation in vertical lines.
  - g. Flanged valves shall be "short body" design. Flange drilling shall be in accordance with ANSI B16.1, Class 125-pound cast iron flanges or ANSI B16.5, Class 150-pound steel flanges. Wafer valves shall be suitable for mounting inside the bolt circle of the appropriate size flange. The body shall have integral hubs for the shaft bearing housing.
  - h. Valve seats may be of the spool or insert type. Elastomer valve seats shall be of a material suitable for the service and may be reinforced. Where spool type seats are furnished, the soft elastomer shall be bonded to and reinforced with a stiff backing such as phenolic, hard rubber, or the valve body.

1. Zero leakage across the seat under fully closed operating conditions is desired. The BIDDER shall state the maximum leakage of newly installed valves under maximum pressure condition.

#### 3.3.6 Three Way Valves

- a. Valves shall have one inlet and two outlets to permit selection of two different flow patterns from the same valve. The valve shall be designed to prevent blocking of both outlets when changing from one seat to the other.
- b. The valve shall be designed to withstand maximum shutoff pressure when seated in either position.
- c. The valve shall be provided with an indicator to identify which outlet is open.
- d. The valve body shall be marked to identify inlet and outlet connections.
- e. Valves shall have externally adjustable packing.

#### 3.3.7 Ball Valves

- a. Valves shall be capable of sealing in either flow direction.
- b. Valves shall be operated from the fully closed to fully opened position by 90° rotation of the ball.
- c. Valves shall be nonlubricated.
- d. Stem packing shall be manually adjustable without removal of the actuator.

#### 3.3.8 Diaphragm Valves

- a. The stem and bonnet O-ring seals shall be fully entrapped in the base metal. The seals shall permit the bonnet to be a pressure boundary should the diaphragm rupture.
- b. The bonnet shall have a vent plug for detecting diaphragm rupture. The plug shall meet the applicable design requirements of ANSI B16.11.

#### 3.3.9 Valves Located Within Containment

- a. The use of aluminum on any valves located within containment is unacceptable.

- b. Valves located within containment shall have provisions for seal welding at the body to bonnet joint. The design of the joint shall permit the bonnet to be removed and be rewelded at least three times before body or bonnet replacement becomes necessary. Mechanical fasteners shall provide the structural strength of the joint.
- c. Valve assemblies shall suffer no adverse effects from the following environmental conditions:
  - 1. Ambient temperature - 120 F (49 C) maximum 50 F (10.0 C) minimum.
  - 2. Ambient pressure - 8 psia to 15 psia (0.56 kg/cm<sup>2</sup> to 1.06 kg/cm<sup>2</sup>).
  - 3. Relative humidity - 100%
  - 4. Cumulative radiation levels -  $5 \times 10^7$  rads
  - 5. Special conditions

(a) Design basis accident (DBA) condition

Environmental conditions will change to 290 F (143.3 C), 60 psig (4.213 kg/cm<sup>2</sup>), and 100% saturated steam conditions within 10 seconds, remain for 30 minutes, then slowly return to ambient after a DBA. Also following the DBA, equipment will be subjected to a maximum of  $5 \times 10^7$  rads radiation and a sodium hydroxide spray for 65 minutes, consisting of 40 to 120 F (4.44 to 49 C) demineralized water containing 1950 to 4000 ppm boron in the form of boric acid, sodium hydroxide 0.6% by weight, at a pH of 9.5, then for 6 hours at 240 F (115.6 C), and 24 hours at 190 F (87.8 C) demineralized water containing 1720 to 3500 ppm boron in the form of boric acid, sodium hydroxide 0.23% by weight, at a pH of 8.7.

(b) Leakage test condition

Environmental conditions, except for pressure, will be as indicated herein during a periodic leakage test. The pressure will slowly increase to 51.6 psig (3.63 kg/cm<sup>2</sup>) and return to normal atmospheric.

3.3.10 Valves Located Outside Containment

a. Ambient temperature

- 1. Normal 36 F (2 C) to 125 F (52 C)

2. Upset, emergency, faulted 220 F (104 C) max

- b. Ambient Pressure - Atmospheric
- c. Relative humidity - 100% maximum
- d. Cumulative radiation level -  $3 \times 10^6$  rads

3.3.11 Valves Located Outdoors

Ambient temperature:

- a. Maximum 93 F (34)
- b. Minimum 0 F (-18)

3.3.12 Options

When the following items appear on the Valve Specification Sheets they shall comply with the respective listed descriptions:

a. Bypasses

Bypasses shall be installed in conformance with MSS-SP-45 for either series A or series B bypasses as indicated in the Valve Specification Sheets. The bypass shall include a repackable globe valve with backseating, hardfaced disc, hardfaced seat rings, and with valve body and pipe material compatible with the main valve body. Piping and valve connections shall be made with welded joints.

b. Flanged ends

Raised face flanged ends in accordance with ANSI B16.5 shall be furnished in lieu of butt welding ends.

c. Threaded ends

End connections shall be threaded in accordance with ANSI B16.11.

d. Lantern ring leakoff

The valve shall be provided with a stuffing box suitable for vacuum service. A deep cavity stuffing box containing a full set of packing below and a half set above the lantern ring shall be furnished as a minimum. A full set of packing shall be defined as a depth of packing equal to at least 1-1/2 times stem diameter. The leakoff connection shall be drilled, tapped, and plugged with a 1/2-inch National Pipe Thread (NPT) pipe plug, of material comparable to bonnet material as required to permit optional seal welding in the field.

## e. Limit switches (plunger or cam types)

1. Limit switches, when supplied, shall provide remote indication of valve plug position (fully open, midposition, fully closed). The limit switches shall be snap acting as manufactured by National ACME, Snap Lock series SL, or EQUAL. Switches shall be mounted from the valve yoke and shall be cam operated. Enclosures shall be Type NEMA 12. A minimum of two (two normally open) and two (two normally closed) electrically separate contacts shall be provided in each limit switch assembly.
2. Rotary cam type adjustable electrical position switches shall be supplied where specified. Switch actuation dead band shall not exceed 0.025 inches per inch (0.025 mm per mm) of stem travel and shall have electrical characteristics as specified in subitem 1. above. Cam design shall be such that any electrical switch within the assembly may be tripped at any valve position. Switches shall be single pole, double throw (SPDT) with electrical terminals wired to barrier type terminal strips which shall be located within the assembly enclosure. Switch enclosure shall be NEMA 12 construction with a suitable size conduit connection to assure easy passage of the required wiring.
3. Electrical contacts shall be clearly identified on each switch to facilitate connection of external wiring. Contact rating shall be as follows (in amperes):

	<u>Make</u>	<u>Break</u>	<u>Carry</u>
(a) 118 volts ac	10	6	10
(b) 125 volts dc	6	1	6

## f. Motor actuators

Motor actuators shall be in accordance with the following:

1. Specification SP-S802-044687-000.
2. Unless otherwise specified, valve stem speeds shall be 3 to 6 inches per minute for globe valves and 12 to 14 inches per minute for gate valves.
3. Motor actuators shall be sized to be closed manually against the respective ANSI B16.5 hydrostatic shell test pressures across-the-seat. The actuator shall be capable of transmitting the required thrust to the seat from a force supplied manually at the handwheel.



g. Stem position element for power actuated valves

A stem position element consisting of a 1000-ohm slidewire and any necessary gearing or components for use with a remote position indicator shall be furnished and installed on the valve assembly. The remote position indicator will be furnished by Others.

h. Solenoid valves

Solenoid valves, where required, shall be indicated on the Valves Specification Sheets. Solenoid valves shall meet the following requirements:

1. Solenoid valves shall be mounted, piped, or tubed on their respective valve assembly. Where the likelihood of damage to the tubing or pipe will result because of its installation, such valves shall be prefitted and shipped securely fastened to the valve assembly.
2. Solenoid valve coils shall have a Class H, 180 C temperature class insulation suitable for continuous operation in an ambient temperature of 130 F (54 C).
3. Solenoid valves mounted on valves shall be:
  - (a) ASCO Figure No. 8320 or EQUAL for normal exhaust and loading speed, 125 volts dc, (105 minutes - 140 maximum).
  - (b) ASCO Figure No. 8316 or EQUAL for quick exhaust and loading speed, 125 volts dc, (105 minutes - 140 maximum).

i. Pneumatic actuators

1. Pneumatic actuators include diaphragm, piston and cylinders type devices with accessories required for proper operation.
2. Valve actuators shall be capable of handling the unbalanced forces occurring under the specified flow conditions as well as the maximum differential pressure specified. Unless otherwise specified, the design will account for a minimum seating force of 50 lb/lineal inch (0.9 kg/lineal mm) of plug seating circumference to assure tight seating. The actuator shall be designed to produce the required stem force with not more than 80% of available air supply pressure or at least 5 psi (0.35 kg/cm<sup>2</sup>) less than design supply pressure, whichever pressure is less. Diaphragm cases shall have a minimum design rating of 30 psig (2.12 kg/cm<sup>2</sup>) regardless of the application.

3. The valve actuator shall be designed for a 40-year plant life under ambient conditions of 40 F to 120 F (4.4 C to 49 C).
4. Actuators shall be, preferably, of the diaphragm type. However, piston actuators may be specified where any of the following four conditions exists:
  - (a) The power required to operate the valve is beyond the size limits of the spring and diaphragm actuator.
  - (b) Valve size precludes a large size spring and diaphragm actuator.
  - (c) Fast action is required.
  - (d) Reliable working life of the diaphragm material is not considered to be a satisfactory length to meet the specified application.
5. Diaphragm actuators
  - (a) Actuators shall be of the yoke mounted design capable of 360° mounting without restriction of operation, undue wear, or difficulty in changing the diaphragm or other parts. The actuator housing shall be made from cast steel or pressed steel, and shall completely enclose the spring and diaphragm operating parts, and seal them from dirt or other foreign materials. The steam seals shall be "O" ring type, split "V" type, or pulldown packing type, allowing replacement of seals without disturbing any part of the valve or actuator assemblies.
  - (b) Springless diaphragm actuators shall not be supplied.
  - (c) Butterfly valve actuators shall have a shaft arm and the connecting link assembly shall be of a design for easy and accurate shaft alignment. For small and medium size valves the linkage shall be adjustable for either 60° or 90° operation and for rotation in either direction with the design to prevent shift in linkage adjustment over the entire range of angular operation. The valve shaft and actuator shall be connected with a shear key designed to protect the shaft and vane in the event that foreign matter impedes the motion of the vane. The shear key shall be replaceable without removing the valve or actuator from the pipeline.

- (d) Actuators shall be supplied with stainless steel metal nameplates inscribed with the full open and closed air pressure requirements,  $C_v$ , tag number, and manufacturer's serial numbers. Stem travel indicators shall be clearly visible with stem travel and direction of movement to open. The nameplates shall be mounted on the same side of the valve upon which the positioner is mounted. Where a positioner is not used, the nameplate shall be mounted on the same side of the valve which shows the flow direction arrow. These nameplates shall be secured with self-tapping screws or their equivalent.
- (e) Provisions shall be made for the attachment of positioner, air filter regulator, and limit switches to the valve assembly.

6. Piston actuators

- (a) Piston actuators shall be supplied where high unbalanced forces mandate high motivating air pressure.
- (b) Piston actuators shall be supplied with a volume tank and all necessary hardware to assure valve failure to a position (open or closed) as specified on the Valves Specification Sheets when required.
- (c) Piston actuators shall be capable of withstanding 125 psig (8.8 kg/cm<sup>2</sup>) air pressure without impairment of performance capability.
- (d) Piston actuators shall be constructed of the following materials:
  - (1) Casing - aluminum or carbon steel.
  - (2) Piston - aluminum.
  - (3) Stem - chromeplated stainless steel.
- (e) The piston chamber which is normally pressurized to cause piston motion shall not contain any mechanical devices such as rack and gear mechanisms.
- (f) "O" rings shall not be used to seal moving parts unless the piston is limited to vertical mounting.
- (g) Pistons shall be lubricated with silicone during assembly.

7. Cylinder actuators

- (a) Applicable items in item 3.3.9 subitem i.6., shall apply to cylinder actuators.
- (b) Cylinder actuators shall be supplied for on-off service only.
- (c) Cylinders shall be self-lubricating types.

j. Air locks

A trip valve with volume tank shall be provided when it is necessary to move the valve to its open or closed position upon an air supply failure. The tripping pressure shall be adjustable at 75% of the maximum supply pressure. After the unit has tripped, normal operation shall resume automatically upon restoration of the supply pressure. Volume tanks shall be capable of withstanding 150 psi (10.55 kg/cm<sup>2</sup>) internal pressure. Volume tanks size shall be determined so that the valve will be fully stroked against all unbalance and seating forces plus a 25% safety margin.

k. Filter and regulator

Airsets shall consist of a filter regulator with an integral relief valve, drip well with drain cock, outlet-mounted pressure gage, and the following additional requirements, features, or both:

- 1. Connections shall be 1/4-inch NPT.
- 2. The reduced pressure range shall be adjustable and as required for the application.
- 3. A pressure gage of suitable range shall be located on the reduced pressure outlet at a right angle to the straight through flow line. The scale on the pressure gage shall be in kg/cm<sup>2</sup>.

l. Motion transmitters

Motion transmitters, where required, shall be provided to transmit the valve position (motion) for remote indication, recording, or control devices. Transmitters shall be pneumatic or electrical transmission type devices and shall be weatherproof construction. Transmitter accuracy shall be within  $\pm 5\%$  for all applications.

m. Travel stops for actuated valves

Valve travel stops which limit travel in either direction when supplied shall be incorporated in the actuator mechanism as opposed to the driven mechanism.

n. Handwheels

The Valve Specification Sheets will indicate the requirements for handwheels and, unless otherwise indicated, they shall conform to the following requirements:

1. When specified, valve actuators shall be equipped with handwheels for emergency or startup operation. In general, a top-mounted handwheel shall be furnished for diaphragm actuators; however, side-mounted handwheels may be required in the following instances:
  - (a) The actuator is too large to conveniently apply a top-mounted handwheel.
  - (b) Pneumatic piston operator is utilized.
  - (c) Anticipated demand for future diaphragm replacement while valve is in service.
2. The SUPPLIER/SUBCONTRACTOR shall state the force necessary to operate the handwheel offered to the particular actuator.
3. Engagement of the handwheel shall disengage the automatic actuator function.

4.0

PERFORMANCE REQUIREMENTS

Power Actuated Valves

The actuator shall be assembled to the valve. The torque and limit switch settings shall be made and the valve actuators shall perform opening, closing, and any other cycle required three times to demonstrate satisfactory operation.

5.0

MATERIALS OF CONSTRUCTION

- 5.1 The general material requirements are designated in the Valve Specification Sheets.
- 5.2 The BIDDER shall submit as part of the Proposal a cross section drawing of the valve being offered which shall fully identify and cross reference all the valve parts with the ASTM materials specification and grade.
- 5.3 Plating on any surface exposed to the working fluid is prohibited.
- 5.4 Valves shall have stellite faced seats and discs and stainless steel trim unless specified otherwise. Seat rings may be of the same material as the valve body.

- 5.5 Parts or surfaces requiring hard facing shall be hard faced with Stellite 6, or EQUAL.
- 5.6 Where materials are not specified herein, materials of construction shall be of the SUPPLIER/SUBCONTRACTOR'S standard and be of proven suitability for the design conditions.
- 5.7 Materials in contact with the working fluid shall have as a maximum only trace contaminants and no additives of lead, mercury, sulfur, arsenic, or gallium.
- 5.8 The chloride and fluoride surface contamination of stainless steel materials shall be no greater than the following limits (expressed in milligrams per square decimeter):

	<u>Insulated Surfaces</u>	<u>Uninsulated</u>
a. Chloride	0.0015	0.015
b. Fluoride	0.0015	0.0015

#### 6.0 FABRICATION PROCEDURES

Fabrication procedures and qualifications shall conform to applicable codes, standards, and requirements stated herein. When not specified herein, the fabrication procedures and qualifications shall be the BIDDER'S standard and of proven suitability for the requirements. All fabrication procedures shall be submitted to WESTINGHOUSE for review and approval.

#### 7.0 TESTING, INSPECTION, AND ACCEPTANCE CRITERIA

##### 7.1 General

Testing, inspection, and acceptance criteria shall conform to the applicable codes, standards, and requirements as specified in Item 2.2. When no code, standard, or requirement is stated, the testing, inspection and acceptance criteria shall be the BIDDER'S standard and of proven suitability for the service. The BIDDER shall submit a list and brief description of all tests, codes, and acceptance criteria as part of the Proposal. If a valve or valve part fails to pass any test, any modifications to the valve, test equipment, or procedures shall be recorded before retesting and a description of the change shall be submitted with the test reports to WESTINGHOUSE for review and approval. All detailed testing, inspection procedures, and acceptance criteria shall be submitted to WESTINGHOUSE for review and approval.

### 7.2.1 General

### 7.2.2 Relief and Safety Valves

- a. Valves shall be gagged and the hydrostatic test performed with gag in place.
- b. Set pressure test

The SUPPLIER/SUBCONTRACTOR shall conduct shop pressure tests on each safety and relief valve to demonstrate the accuracy of the set pressure. Failure of a valve to perform within the allowed tolerances of the specified settings shall be cause for rejection. The BIDDER shall submit a description of his test as part of the Proposal.

- c. Seat-tightness test

The SUPPLIER/SUBCONTRACTOR shall verify seat-tightness by conducting a leakage test on each valve at the factory. The valve shall be closed with the normal force of the spring. Leakage shall not be observed in the normal flow direction with a differential pressure across the seat of 10% below the valve set pressure. The pressure shall be applied for a minimum of 5 minutes.

- d. Diaphragm valves

Valve body shall be hydrostatically tested; the stuffing box and bonnet test may be waived.

7.3 Valves supplied for steam service shall be tested with steam. Valves supplied for gas or vapor service shall be tested with air. Valves supplied for liquid service shall be tested with air or water. Water chemistry requirements shall comply with WESTINGHOUSE Process Specification PS 242722.

8.0 PREPARATION FOR SHIPMENT

8.1 Cleaning

Cleaning shall be performed in accordance with WESTINGHOUSE Process Specification PS 292722.

8.2 Painting

External nonmachined carbon steel surfaces shall be painted in accordance with WESTINGHOUSE Process Specification PS 597755. Stainless steel surfaces shall not be painted.

8.3 Packaging and Storage

8.3.1 Packaging shall be performed in accordance with WESTINGHOUSE Process Specification PS 85310 QA.

8.3.2 Desiccant shall be employed for all carbon steel valves. Tags shall be provided on all valves containing desiccant defining the type and amount used.

8.4 Tagging

8.4.1 A stainless steel nameplate shall be affixed to each valve in an accessible area and shall include the following information:

- a. WESTINGHOUSE identification number (See Valve Specification Sheets).
- b. WESTINGHOUSE unique number (See WESTINGHOUSE KRSKO Purchase/General Order Notes).
- c. WESTINGHOUSE Purchase Order number.
- d. WESTINGHOUSE Valve Specification Sheet number.

8.4.2 The shipping container shall be clearly tagged with the WESTINGHOUSE identification number and the WESTINGHOUSE unique number(s).



## VALVE SPECIFICATION SHEET INDEX

WESTINGHOUSE POWER SYSTEMS PROJECTS DIVISION  
KRSKO NUCLEAR POWER PLANT  
SP-G332-044687-000

## NON SAFETY CLASS VALVES

<u>VALVE SPECIFICATION SHEET NO.</u>	<u>VALVE IDENTIFICATION NO.</u>		
T 12-1	1/2-T 12	3/4-T 12	1-1/2-T 12
T 12-2	6-T 12		
T 12-3	4-T 12	6-T 12	
T 22-1	1/4-T 22	1/2-T 22	
T 22-2	3/4-T 22	1-T 22	2-T 22
T 32-1	6-T 32		
T 34-1	3-T 34		
T 36-1	3/4-T 36	1-1/2-T 36	
T 36-2 (R)	2-T 36		
T 36-3	2-T 36		
T 36-4	3/4-T 36		
T 36-5	2-T 36		
T 36-6	3/4-T 36		
T 36-7	3/4-T 36		
T 36-8	1/2-T 36	3/4-T 36	1-T 36
T 36-9	3/4-T 36	1-T 36	
T 36-10	2-T 36		
T 37-1	3/4-T 37		
T 37-2	1-T 37	2-T 37	
T 37-3	3-T 37		
T 38-1 (R)	3/4-T 38	1-T 38	

Date: September 29, 1975

## VALVE SPECIFICATION SHEET INDEX

WESTINGHOUSE POWER SYSTEMS PROJECTS DIVISION  
KRSKO NUCLEAR POWER PLANT  
SP-G332-044687-000

## NON SAFETY CLASS VALVES

VALVE SPECIFICATION  
SHEET NO.

VALVE IDENTIFICATION NO.

T 38-1	3/4-T 38			
T 38-2	3/4-T 38P			
T 38-3	1-1/2-T 38P			
T 38-4	1-1/2-T 38			
T 42-1	3/4-T 42B	1-T 42B		
T-42-1 (R)	3-T 42			
T 42-2	3/8-T 42			
T 42-3	1-T 42			
T 52-1	1/2-T 52			
T 58-1	3/8-T 58			
T 58-1 (R)	3/4-T 58	1-T 58	2-T 58	
T 58-2 (R)	1-T 58P			
G 12-1	2-1/2-G 12			
G 12-2	6-G 12B			
G 12-3	6-G 12P	8-G 12P	10-G 12P	12-G 12P
G 12-4	2-1/2-G 12			
G 12-5	4-G 12	8-G 12	10-G 12	12-G 12
G 12-6	3/4-G 12	2-G 12		
G 12-7	3-G 12			
G 12-8	6-G 12			
G 22-1	1-1/2-G 22			
G 22-2	1-1/2-G 22	2-G 22		

## VALVE SPECIFICATION SHEET INDEX

WESTINGHOUSE POWER SYSTEMS PROJECTS DIVISION  
 KRSKO NUCLEAR POWER PLANT  
 SP-G332-044687-000

## NON SAFETY CLASS VALVES

<u>VALVE SPECIFICATION SHEET NO.</u>	<u>VALVE IDENTIFICATION NO.</u>			
G 32-1	2-1/2-G 32	3-G 32	4-G 32	6-G 32
G 32-2	3-G 32			
G 32-3	2-1/2-G 32	3-G 32	6-G 32	
G-34-1	3-G 34			
G 36-1	1-1/2-G 36			
G 36-2	2-G 36			
G 36-3	2-G 36			
G 36-4	3/4-G 36	1-G 36		
G 36-5	2-G 36			
G 36-6	1-G 36	1-1/4-G 36	1-1/2-G 36	
G 36-7	1/2-G 36			
G 37-1	3-G 37	6-G 37		
G-37-2	2-G 37			
G-37-3	4-G 37			
G-37-4	3-G 37			
S 36-1	1-1/2-S 36			
S 36-2	2-S 36			
X 12B-1	6-X 12B			
X 32B-1	2-X 32BP			
X 58N-1 (R)	3/8-X 58N	3/4-X 58N		

## VALVE SPECIFICATION SHEET INDEX

WESTINGHOUSE POWER SYSTEMS PROJECTS DIVISION  
KRSKO NUCLEAR POWER PLANT  
SP-G332-044687-000

## NON SAFETY CLASS VALVES

<u>VALVE SPECIFICATION SHEET NO.</u>	<u>VALVE IDENTIFICATION NO.</u>			
GG 12-1	8-GG 12			
GG 12-2	10-GG 12			
GG 32-1	8-GG 32	10-GG 32	12-GG 32	14-GG 32
GG 32-2	18-GG 32			
GG 34-1	8-GG 34	10-GG 34	12-GG 34	14-GG 34
GG 36-1	16-GG 36			
GG 37-1	8-GG 37	10-GG 37	16-GG 37	
TG 37-1	10-TG 37			
X 12Z-1	5-1/4-X 12Z			
X 36Z-1	2-X 36Z 0			
A 22-1	1-1/2-A 22	2-A 22		
BG 12-1	18-BG 12	24-BG 12	48-BG 12	54-BG 12
BM 12-1	8-BM 12FA	10-BM 12FA		
BM 12-2	72-BM 12SA			
X 32D-1 (R)	3/4-X 32D	1-X 32D		
X 32D-2 (R)	2-X 32D			
X 42D-1 (R)	3/4-X 42D	1-X 42D		
X 42D-2 (R)	2-X 42D			
X 42D-3 (R)	3/4-X 42D			
X 42D-4 (CR)	2-X 42D			
X 42D-5 (R)	3-X 42D	4-X 42D		
C 12-1	2-1/2-C 12			

VALVE SPECIFICATION SHEET INDEX

WESTINGHOUSE POWER SYSTEMS PROJECTS DIVISION  
KRSKO NUCLEAR POWER PLANT  
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NON SAFETY CLASS VALVES

VALVE SPECIFICATION  
SHEET NO.

VALVE IDENTIFICATION NO.

C 12-2	2-1/2-C 12Y	4-C 12Y	12-C 12Y
C 12-3	8-C 12Y		
C 32-1	6-C 32		
C 32-2	4-C 32		
C 32-3	12-C 32		
C 34-1	8-C 34	10-C 34	
C 34-2	8-C 34YP	10-C 34YP	
C 36-1 (R)	1-C 36S		
C 36-1	1/2-C 36	2-C 36	
C 36-2	3-C 36		
C 37-1	4-C 37	8-C 37	
C 37-2	16-C 37		
C 37-3	4-C 37Y		
C 37-4	16-C 37YM		
C 37-5	2-C 37		
C 37-6	3-C 37		
C 37-6	8-C 37YP		
C 38-1 (R)	1-C 38		
C 42-1	3/8-C 42		
C 42-1 (R)	3-C 42	4-C 42	
C 58-1	3/8-C 58Y		

VALVE SPECIFICATION SHEET INDEX

WESTINGHOUSE POWER SYSTEMS PROJECTS DIVISION  
KRSKO NUCLEAR POWER PLANT  
SP-G332-044687-000

NON SAFETY CLASS VALVES

VALVE SPECIFICATION  
SHEET NO.

VALVE IDENTIFICATION NO.

C 58-1 (R)	3/8-C 58	3/4-C 58	1-C 58	2-C 58
C 58-1 (R)	3/4-C 58S	1-C 58S		

EQUIPMENT DATA  
WESTINGHOUSE POWER SYSTEMS PROJECTS DIVISION  
KRSKO NUCLEAR POWER PLANT  
SP-G332-044687-000

GILBERT ASSOCIATES, INC.

NON-SAFETY CLASS VALVES

Each BIDDER shall return one copy  
of this form with all blanks filled in.

\_\_\_\_\_  
(BIDDER'S NAME)

\_\_\_\_\_  
(MANUFACTURER'S NAME)

\_\_\_\_\_  
(QUOTATION NUMBER)

\_\_\_\_\_  
(VALVE SPECIFICATION SHEET NO.)

1. Valve description

- a. Model number(s)/size range
- b. Bidder's data required to complete  
Valve Specification Sheets.

2. Packing descriptions

- a. Manufacturer and model No.
- b. Temperature limitations
- c. Material
- d. Other

EQUIPMENT SPECIFICATION  
EXCEPTIONS

WESTINGHOUSE POWER SYSTEMS PROJECTS DIVISION  
KRSKO NUCLEAR POWER PLANT  
SP-G332-044687-000

The BIDDER certifies that the Proposal is in complete and absolute agreement with this Specification, except as specifically outlined below. (Use additional sheets as required.)

\_\_\_\_\_  
(BIDDER'S NAME)

\_\_\_\_\_  
(MANUFACTURER'S NAME)

\_\_\_\_\_  
(QUOTATION NUMBER)

Attest:

\_\_\_\_\_  
(SIGNATURE)

\_\_\_\_\_  
(TITLE)



EQUIPMENT DATA  
WESTINGHOUSE POWER SYSTEMS PROJECTS DIVISION  
KRSKO NUCLEAR POWER PLANT  
SP-G332-044687-000

GILBERT ASSOCIATES, INC.

NON-SAFETY CLASS VALVES

(BIDDER'S NAME)

3. Paint

- a. Manufacturer and description
- b. Temperature rating
- c. Chemical description
- d. Parts coated

\_\_\_\_\_/\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Hard facing

- a. Trade name/number
- b. Hardness at 600 F

\_\_\_\_\_/\_\_\_\_\_  
\_\_\_\_\_

Rev. 0

**SPECIFICATION SHEET**  
**GLOBE VALVES**

(SEE BELOW) - T 58

KRSKO 04-4687-000

NON-SAFETY CLASS

G332

SHT. NO. T58-1

SIZE	<u>3/8</u>	<u>1/2</u>	_____	_____
<u>BODY</u>				
NOMINAL SIZE	<u>3/8</u>	<u>1/2</u>		
FORM	<u>GLOBE</u>	<u>GLOBE</u>	<u>GLOBE</u>	<u>GLOBE</u>
END CONN. SCH.	<u>NOTE 3.</u>	<u>NOTE 4.</u>		
BONNET SEAL TYPE	<u>*</u>	<u>*</u>		
STEM PACKING MATERIAL	<u>**</u>	<u>GRAFOIL GTN</u>		
BODY / BONNET MATERIAL	<u>316 S/S</u>	<u>316 S/S</u>		
CODE CLASS	<u>(NS)</u>	<u>(NS)</u>		
<u>TRIM</u>				
PLUG FORM	<u>**</u>	<u>**</u>		
PLUG MATERIAL	<u>**</u>	<u>**</u>		
SEAT MATERIAL	<u>**</u>	<u>**</u>		
<u>ACCESSORIES</u>				
LEAKOFF	<u>NO</u>	<u>NO</u>		
BACKSEAT	<u>YES</u>	<u>YES</u>		
<u>SERVICE CONDITIONS</u>				
FLUID   RADIOACTIVITY	<u>NOTE 1   NO</u>	<u>WF-1   NO</u>	<u> </u>	<u> </u>
TEMP. MAX.	<u>650</u>	<u>650</u>		
PRESSURE MAX.	<u>2580</u>	<u>2580</u>		
L/D FULL OPEN @ MAX FLOW	<u>340 MAX</u>	<u>340 MAX</u>		
RATING	<u>1500</u>	<u>1500</u>		
MAX. ΔP PSI	<u>_____</u>	<u>_____</u>		
MANUFACTURER				
MFG. FIGURE NO.				
SPECIAL REQUIREMENTS	<u>NOTE 2.</u>	<u>NOTE 2.</u>		
NOTES: 1. Ammonia/ Hydrazine <small>Feed Chem. Add. Misc. Chem. Add.</small> Valve Stem Leaking <small>ENG. _____</small> 2. Non-radioactive valve 3. To be socket welded to <u>3/8</u> O.D. tubing 4. To be screwed to <u>1/2</u> O.D. tubing having Swagelock fittings. * PER SPEC NO. G332 ** DATA FURNISHED WITH QUOTATION				

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