

NUKLEARNA ELEKTARANA KRŠKO			
- v ustanavljanju -			
DOKUMENTACIJA			
DO	PREJETO	FILE	KOPJA
	03-08	1978	

19360

037717

TECHNICAL SPECIFICATION
PRESSURE DOORS

KRSKO NUCLEAR POWER PLANT
KRSKO, YUGOSLAVIA

SP-A326-044687-000

JULY 7, 1978

RECEIVED JUL 28 1978

PREPARED FOR

WESTINGHOUSE POWER SYSTEMS PROJECTS DIVISION

Prepared by Paul L. Greibel Date 7-20-78

Reviewed by John Brown Date 7-20-78

Approved by Frank P. Borden Date 7-20-78

Gilbert Associates, Inc.
P.O. Box 1498
Reading, Pennsylvania

P.L.G.-J.R.E.
W.O. 044687-000
REVISION 1
July 20, 1978

RECORD OF CHANGE
FOR
PRESSURE DOORS

REVISION 1

Sheet 1 of 1
July 20, 1978

Revision 1 includes an updated page only. Latest changes are referenced in the right-hand margin of the updated page.

3.0 GENERAL REQUIREMENTS

3.2 Performance Requirements

Subitems b.1. and b.2. revised as shown.

CONTENTS

<u>Section</u>	<u>Item</u>	<u>Title</u>	<u>Page</u>
<u>1.0</u>		<u>SCOPE</u>	1
	1.1	Scope of Work	1
	1.2	Work Included	1
	1.3	Work Not Included	1
	1.4	Information Required with the Proposal	1
<u>2.0</u>		<u>APPLICABLE DOCUMENTS</u>	1
	2.1	Supplemental Specifications and Information	1
	2.2	Applicable Codes and Standards	2
	2.3	Drawings	2
	2.4	Shop Drawings, Calculations, Certificates, and Guarantee	3
<u>3.0</u>		<u>GENERAL REQUIREMENTS</u>	3
	3.1	Door and Frame Assembly	3
	3.2	Performance Requirements	3
	3.3	Materials and Details of Construction	4
	3.4	Installation	5

ATTACHMENTS

Specification

SP-A501-044687-000, "Painting of Equipment in Containment and Auxiliary
Buildings" (Revision 4 dated 2-27-78)

Drawings as listed in Item 2.3

1.0 SCOPE

1.1 Scope of Work

This Specification covers the furnishing and installing of the two pressure doors and frames in the annulus wall of the containment building for the KRSKO Nuclear Power Plant, of the Electric Utilities of Croatia and Slovenia.

1.2 Work Included

The WORK shall include the following:

- a. Design of the pressure door and frame assemblies.
- b. Fabrication of the door and frame assemblies.
- c. Packaging, shipping, unloading, and storage of the door and frame assemblies.
- d. Installation of the door and frame assemblies.

1.3 Work Not Included

The following item is not included under this Contract and will be furnished by Others:

- a. Embedded steel to which the pressure door frames shall be welded.
- b. Finish painting of the pressure doors and frame.

1.4 Information Required with the Proposal

Information to be supplied with the Proposal shall include the following:

- a. Statement of guarantee.
- b. Deviations or exceptions to this Specification, listed on the Specification Exceptions form, shall be in accordance with WESTINGHOUSE KRSKO Standard Purchase/General Order Notes.

2.0 APPLICABLE DOCUMENTS

2.1 Supplemental Specifications and Information

The items listed on the contents page as Attachments are hereby made a part of this Technical Specification.

2.2 Applicable Codes and Standards

The referenced portions of the following codes and standards, in effect on October 1, 1973, provide information regarding the requirements of this Specification:

- a. American Institute of Steel Construction (AISC) standards.
- b. American Society for Testing and Materials (ASTM) standards.
- c. American Welding Society (AWS) standards.
- d. Underwriters Laboratories, Inc. (UL) standards.
- e. Yugoslavia Standards - All Yugoslavian standards and codes pertaining to this WORK shall be considered as part of this Specification even though not listed herein.

2.3 Drawings

The following Gilbert Associates, Inc. reference Drawings bearing W.O. 044687-000 set forth the extent and location of the WORK 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>
E-004-232	12	5-9-78	Approved	Final Plant Layout - Intermediate, Control, & Diesel - Generator Bldgs. Fl. El. 100.30M.
E-004-235	10	5-1-78	Approved	Final Plant Layout - Intermediate, Control, & Diesel - Generator Buildings Floor El. 107.62M.
E-411-072	8	6-26-78	Approved	Electrical - Shield Building Wall Elevation 100.30 thru 121.30 - Interior Stretch-out 0° to 180°
E-411-073	11	6-26-78	Approved	Reactor Building - Shield Building Wall Elevation 100.30 thru 121.30 - Interior Stretch-out 180° to 360°

2.4 Shop Drawings, Calculations, Certificates, and Guarantee

- a. The SUPPLIER/SUBCONTRACTOR shall submit for approval complete shop drawings showing product location, fabrication details, unit identification marks, hardware reinforcement, frame anchors, dimensions, and relationship to adjacent materials in sufficient detail to cover manufacture and handling.
- b. WESTINGHOUSE and/or the OWNER shall be responsible for the project schedule and coordination with all other construction phases. The SUPPLIER/SUBCONTRACTOR shall not proceed with fabrication of any products prior to receiving approval of the shop drawings by both the ENGINEER and WESTINGHOUSE and/or the OWNER.
- c. The SUPPLIER/SUBCONTRACTOR shall submit pressure analysis calculations covering doors of identical type, size, and construction, including dynamic load factor determination.
- d. The SUPPLIER/SUBCONTRACTOR shall submit a "Letter of Certification," confirming that the door and frame assembly will meet all functional and performance requirements.
- e. The SUPPLIER/SUBCONTRACTOR shall submit a written guarantee that the door and frame assembly is free from defects in materials and workmanship for a period of 1 year.

3.0 GENERAL REQUIREMENTS

3.1 Door and Frame Assembly

- a. All components shall be designed and furnished by one manufacturer and shall be factory assembled, completely operable, and shipped as a unit.
- b. The SUPPLIER/SUBCONTRACTOR shall furnish calculations prepared by a registered engineer to certify conformance with pressure design requirements, together with shop drawings.
- c. The opening size for each of the complete door and frame assemblies is 3 ft 2-7/8 in wide by 6 ft 5-3/16 in high (0.987 m wide by 1.987 m high).

3.2 Performance Requirements

- a. Pressure
 - 1. Normal - positive 0.3 in H_2O (8mm Aq) maximum and a minimum ambient pressure of -2 in H_2O (50 mm Aq).

2. Post-LOCA - positive pressure of $0.75 \text{ lb/in}^2 \text{g}$ (0.053 kg/cm^2) opposite the hinge side of the door existing for a minimum of 20 minutes following the accident.

b. Temperature

1. Normal - 120° F (50° C) operating temperature.
2. Post-LOCA - 186° F (86° C) maximum temperature following the accident.

c. Leakage

The door assemblies, including hardware, shall be capable of sustaining the design loads with a maximum leak rate of $5 \text{ ft}^3/\text{min}$ ($0.142 \text{ m}^3/\text{min}$) at $0.75 \text{ lb/in}^2 \text{g}$ (0.053 kg/cm^2) per lineal foot (per lineal 0.305 m), not to exceed $7.5 \text{ ft}^3/\text{min}$ ($0.212 \text{ m}^3/\text{min}$) at any pressure from 0 to $0.75 \text{ lb/in}^2 \text{g}$ (0 to 0.053 kg/cm^2).

d. Gaskets

The SUPPLIER/SUBCONTRACTOR shall furnish and install perimeter gaskets capable of withstanding the design loads.

e. Safety factor

The door and frame shall be designed with a safety factor of 4.

3.3

Materials and Details of Construction

a. Door and frame construction

1. The door shall be fabricated from ASTM A 36 hot-rolled steel plate. The edges shall be stiffened with flats serving as a mounting surface for the seal.
2. The frame shall consist of ASTM A 36 steel structural angles, fabricated with welded mitered corners. The frame shall be factory template drilled and tapped for surface hardware and sealing devices. Steel materials shall conform to AISC standards. Welding of the door and frame components shall be in accordance with AWS standards. Welds shall be a size and type required by the dynamic analysis criteria. The frame shall be welded to existing embedments.
3. Doors and frames shall be of the construction and design according to current procedures for 3-hour, "A" Label fire rating.

b. Operation

The door shall be hinged and manually operated from either side by means of a single operator. This single operator may, if required, operate multiple engaging devices or latches.

c. Hardware

1. The door shall be mounted to the frame by heavy-duty hinges equipped with lubricated radial and thrust bearings.
2. Latching devices shall be corrosion-resistant, slam-action blast latches, adjustable, and self-cleaning to provide for full bolt penetration to develop maximum pressure resistance, regardless of door and frame misalignment and threshold debris. Each door shall be furnished with a closer and cylinder lock. Cylinder locks shall be keyed and master keyed as directed by the OWNER. The latching device and cylinder shall have a satin stainless-steel finish.
3. The door shall seal by means of a continuous compression seal attached to the perimeter of the door, and shall be of medium density, closed-cell elastomeric (neoprene, EPDM, or other suitable material) sponge seal.

d. Painting

After fabrication, all steel work shall be prepared and painted for raw steel located inside the containment building, as specified in attached Specification SP-A501-044687-000.

3.4 Installation

Installation of frame, door, hardware, and final adjustment for door operation shall be performed by skilled mechanics familiar with this type of work.