

KRŠKO NUCLEAR POWER PLANT (NEK)
Mechanical Maintenance Department

TECHNICAL SPECIFICATION
FOR SUPERVISION AND MACHINING SERVICES OF
GATE VALVES DURING NPP KRSKO 2027 OUTAGE

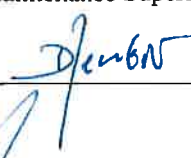
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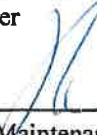
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Classification: Nuclear Safety Related

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1. ACTIVITY

The Specification defines the scope of supervision and machining services for valves CS-8135 and SI-8810A, as well as additional valves should the need arise during the execution of works. The purpose is to ensure expert oversight and precise machining of valve internal components to maintain design specifications and operational reliability.

All administrative and technical requirements for both contracting parties are included. The service shall be provided during the NPP Krško Outage 2027 (scheduled to start on April 1st, 2027). The execution of services is anticipated to take place mid-outage, depending on the actual progress of activities and valve availability. The exact start date shall be coordinated with and confirmed by NEK personnel.

2. SCOPE

The scope of services shall be performed by at least a two-member team, consisting of:

1. **Qualified Service Engineer (Supervisor):** Proven experience in supervising valve maintenance, performing seat and disk measurements, and overseeing the wedge fitting process in a nuclear environment.
2. **Qualified Machining Specialist:** Experienced in the execution of precise seat and disc machining, operating under the Supervisor's instructions.

The Contractor shall provide a team with demonstrated competence and technical proficiency in precision machining and valve repair. Personnel must be cross-functionally trained in disciplines such as advanced valve seat lapping, gate valve wedge fit-up, and precision measuring.

The primary objective is to achieve correct wedge fit up through the execution of all necessary measurements and machining. These activities must be verified via a "blue check" of the contact surfaces to ensure reduced closing forces (total thrust) and a successful Local Leak Rate Test (LLRT) performed by NEK.

2.1 Pre-outage Activities

One month prior to the start of outage activities on-site, the Contractor shall submit all necessary procedures and technical documentation related to the work performance. This documentation package, which must include a detailed time schedule, is subject to review and approval by NEK. The preparation phase may include a specialized hands-on training session at the Contractor's facility to ensure the team is fully familiarized with the specific technical challenges of the project (e.g., geometry optimization and measurement techniques). The Bidder should indicate the availability of such training and the possibility of integrating it into the overall service performance.

The Contractor shall submit to NEK all necessary certificates and permits for the personnel, authorizing them to work within the Radiologically Controlled Area (RCA). Prior to the start of service, the personnel shall familiarize themselves with the specific details concerning the performance of services at NEK.

2.2 Outage Services

The scope of outage services on the above mentioned valves and potentially others during the NPP Krško 2027 Outage shall be supervised and advised by the qualified Service Engineer and includes at least the following:

- Inspection of removed parts: taking all necessary measurements and defining the rectification methods in coordination with NEK personnel.
- Supervision and advisory for the machining of valve internals (seat and disc).

Services shall be performed according to the NPP Krško 2027 Outage Time Schedule, which means that the work shall be carried out every day and also overtime if needed. The Service Engineer shall perform services as a member of NEK's team led by the NEK Maintenance Work Leader. The team shall perform all necessary services in accordance with relevant procedures approved by NEK and the Contractor.

The Service Engineer must specify in detail the "as-found" condition and write down a Non-Conformance Report (NCR) if needed.

During the performance of services, conditions such as strict adherence to FME (Foreign Material Exclusion) protocols, maintenance of a safe workplace, and the correct use of protective equipment shall be satisfied.

2.3 Preliminary Report

A Preliminary Report shall be submitted by the Contractor during the exit meeting at the latest. It has to include, but is not necessarily limited to, the following:

- a. List of applied documents;
- b. Description of performed work with as-found and as-left status;
- c. Completed Work Sequence and Quality Control Plan with references to applicable procedures, acceptance criteria, Inspection & Test Records/Reports, and part or subassembly identification (part number, serial number);
- d. Inspection and Test Records/Reports;
- e. List of Non-conformance Reports (NCR), including methods of resolution and NCRs issued with corrective action verification;
- f. List of parts status with identification (repaired, modified, replaced), processing method, and a brief description of works completed;
- g. List of Personnel involved in service with qualification records;
- h. Recommendations.

2.4 Final Outage Report

The Final Outage Report shall be prepared in accordance with Section 2.3 above for the performance of services during the NPP Krško Outage.

The Final Report shall be submitted to NEK within thirty (30) days of the submittal of the Preliminary Report. Prior to delivery to NEK, it shall be reviewed and approved by the Contractor's responsible Engineering and Quality Assurance (QA) personnel.

3. SAFETY CLASSICATION

3.1. SR - "Safety Related"

The valves are classified as "Nuclear Safety Related" in accordance with ASME and ANSI standards. Consequently, all services defined in this Specification are also classified as Nuclear Safety Related.

For the performance of work on such components, the Contractor shall be thoroughly familiar with the original technical regulations and design specifications. All services shall be executed in strict accordance with the Contractor's Quality Assurance (QA) Program and specific procedures approved by NEK.

4. TYPE OF SERVICE

The implemented work of the Contractor will be paid based on a time and material basis. All performed activities and hours must be confirmed in Time Sheets and the Preliminary Work Report, which shall be signed during the Exit Meeting.

All activities performed by the personnel shall be in accordance with the Contractor's QA/QC program and with the Contractor's technological documentation, procedures, and specifications, which shall be approved by NEK one month prior to the work start.

5. CODES, STANDARDS AND PROCEDURES

The Contractor shall perform the services in accordance with NEK internal procedures governing site activities including the Work Order Process.

The Contractor shall perform services in accordance with his own work procedures. He shall also possess other technical documentation if required by technological process offered in Bidder's proposal.

6. IDENTIFICATION OF EQUIPMENT AND COMPONENTS

Equipment No:	8135	8810A
System:	CVCS	SI
Funct. Desc.:	CHARGING CONTAINMENT ISOLATION VALVE	CONTAINMENT SUMP TO RHR 1 SUCTION ISOL VALVE
Valve ID	3-GM78FPJ	12-GM74FEJ
Operator	Limiterorque SBD-00	Limiterorque SB-2
Building:	AB	AB
Bldg. Elev.:	100.3	91.62
Equip. Elev.:	100.7	92.45
Room:	55	19
ASME:	1	1
ANSI:	2	2
SR:	Y	Y
Manufacturer:	WESTINGHOUSE	WESTINGHOUSE
Valve Drawing	NEK-8375D35	NEK-1168E18

The drawings of the valves are attached in Appendix 1 and 2.

7. TECHNICAL REQUIREMENTS

7.1. Status of Services

The services shall be performed daily, according to the requirements and dynamics of the NPP Krško 2027 Outage Time Schedule. This includes flexibility regarding working hours and potential overtime to ensure the schedule is met. Expert knowledge, professional qualifications, and strict familiarity with the site-specific work procedures are absolute prerequisites for the performance of services.

7.2. Scope of Services

The Contractor's personnel shall perform services on valves that have been previously disassembled by NEK. The scope is focused on the inspection of components, defining rectification methods, and the precise machining of internals. All work shall be performed on-site using the equipment provided by NEK. However, if any specialized tools or specific equipment required for the successful completion of the work are not available at NEK, the Contractor shall be responsible for providing them.

Special attention shall be paid to the following:

- **As-found Condition:** Upon arrival at the disassembled valve, the Service Engineer shall perform a detailed inspection and measurements to establish the "as-found" status.
- **Rectification Proposal:** Based on the inspection, the Engineer shall propose the necessary machining solutions to improve the valve condition (specifically for the seat and disc). This may include, if necessary, geometry optimization and seat narrowing in accordance with EPRI PPM (Performance Prediction Methodology).
- **Machining Precision:** Seat and disc machining must be performed to ensure that the valve is prepared for a successful Local Leak Rate Test (LLRT) and to ensure reduced closing forces.
- **Cleanliness:** Ensuring that all machined contact surfaces are faultless and clean prior to handing over the components to NEK for reassembly.
- **Tolerances:** All setups and measured values must remain within the prescribed design limits.

7.3. Logistics and Support Provided by NEK

To facilitate the performance of services, NEK shall provide the following:

- **Access and Preparation:** Valve disassembly, provision of scaffolding (work platforms), and decontamination of components.
- **Machining Equipment:** NEK shall provide the necessary machining equipment, including LARS LAP, EFCO SL-15, and horizontal mill. Any additional specialized tools identified by the Contractor which are not listed here, shall be provided by the Contractor.
- **Radiation Protection:** All necessary radiological equipment (e.g., Tyvek suits, masks, etc.) and monitoring for work within the RCA.
- **Reassembly and Testing:** Valve reassembly and final testing (including LLRT) will be performed by NEK personnel after the Contractor completes the machining and "blue check" verification.

8. QUALIFICATION REQUIREMENTS

The Contractor's personnel shall

- be qualified for the services specified in this Specification.
- have proven experience in supervising valve maintenance and wedge fitting within a nuclear environment.

The Contractor should have the capability to demonstrate at least 15 years of experience in providing on-site machining and specialty valve services to the nuclear power industry. This includes extensive experience with Westinghouse and Velan gate valve designs, specifically regarding seat refurbishment and wedge refitting. The Contractor shall provide evidence (references) of performing similar maintenance and machining work on equipment identified under Item 6, or similar valves, within the last 5 years. These references must include successful LLRT (Local Leak Rate Test) failure repairs on safety-related valves, successful MOV test and a specific record of performing final surface finishing ("blue check" verification) after machining to ensure correct contact patterns

To be able to enter the NEK area and the Radiologically Controlled Area (RCA), all Contractor representatives must fulfill the following:

- Possess a valid security vetting/clearance as per NEK requirements.
- Successfully pass the General Employee Training (GET) and Health Physics (HP) training prior to the start of services.
- Familiarize themselves with NEK's internal regulations concerning movement on-site, safety at work, fire protection, and treatment of equipment.

9. DETAILED SCHEDULE

The NPP Krško 2027 Outage is scheduled to start on April 1st, 2027. The specific services defined in this Specification are anticipated to take place mid-outage.

The exact start date and the detailed timeline for the work on valves CS-8135 and SI-8810A will be defined in the NPP Krško 2027 Outage Time Schedule. A more precise schedule will be provided to the Contractor at least 30 days prior to the outage start.

The Contractor shall comply with the following scheduling requirements:

- The Contractor's personnel shall arrive at the NEK site at least one day prior to the scheduled start of work to complete General Employee Training (GET), HP training, and other site formalities.
- The Contractor shall follow NEK's daily plan, which will be harmonized with other outage activities. Services shall be coordinated between the Contractor's Service Engineer and the designated NEK Coordinator.
- Since valve maintenance can impact the outage critical path, special attention shall be paid to the exact sequence of performance and adherence to the schedule.
- The presence of the Contractor's team is required from the start of the designated valve activities until the successful completion of the services and the signing of the Preliminary Report.

10. SUPPLIER'S RESPONSIBILITIES

The Contractor shall fully meet the defined scope of services and all requirements necessary for the successful completion of works. The Contractor is therefore responsible to:

- Follow all NEK internal rules, safety-at-work regulations, and fire protection procedures.
- Support the NEK maintenance team with expert advice to ensure successful service performance.
- Perform all services in accordance with NEK's Radiological Protection Requirements and minimize the production of radioactive waste.
- Provide a detailed list of all tools and equipment (specialized and standard) required for the successful execution of the work. This list must clearly distinguish between the tools requested from NEK and those the Contractor will bring on-site.
- Ensure that personnel are qualified for work in the Radiologically Controlled Area (RCA), fit for duty, and have passed all required security checks.
- Ensure that the on-site team is supported by the Contractor's technical advisory/engineering center if complex issues arise.
- Properly and safely operate the special machining tools provided by NEK (LARS LAP, EFCO, etc.).
- Perform the work based on the Contractor's own approved procedures. Provide a list of any additional materials or consumables required from NEK at least 30 days prior to the start.
- Provide a Preliminary Work Report for the Exit Meeting, and a Final Outage Report within 30 days after the exit meeting.
- Provide evidence of references for similar services in nuclear power plants within the bid.

11. NEK'S RESPONSIBILITIES

To ensure the successful performance of the services, NEK shall fulfill the following obligations:

- Issue all necessary Work Orders and prepare complete work packages.
- Submit the NPP Krško 2027 Outage Time Schedule to the Contractor at least 30 days prior to the outage start and harmonize daily activities with the control room.
- Remove and reinstall valve insulation, provide scaffolding (work platforms), sufficient lighting, and all necessary electricity and compressed air connections.
- Perform the complete disassembly and reassembly of the valves. NEK shall also provide a maintenance team led by a Maintenance Work Leader to perform the physical work.
- Provide the machining equipment specified in Section 7.3 (LARS LAP, EFCO, horizontal mill), along with all necessary metric and inch tools and calibrated measuring instruments with relevant certificates.
- Enable the repair of components in NEK's workshop if necessary and provide proper lifting devices.
- Carry out all radiation surveys and provide personal protective equipment (PPE), Tyvek suits, masks, and other consumables.
- Provide all necessary spare parts required for the valve maintenance.

12. SPECIAL REQUIREMENTS

N/A

13. QA REQUIREMENTS

The Contractor shall submit a full description of its QA program, proposed for the scope of work to be performed, as controlled copy document, for the Purchaser's review and acceptance/approval.

The Contractor's QA program shall ensure compliance with the requirements of Title 10, Code of Federal Regulations, Part 50, Appendix B (10CFR50, Appendix B), "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants", as stated in the NEK specification QS 610, rev.2 - Generic quality assurance program requirements, Appendix 1.

If the Purchaser has already approved the Contractor's QA program, it does not have to be submitted for acceptance/approval. However, if the Purchaser's copy of the QA program is not current, all portions of the program that have been revised since the Purchaser's previous approval shall be submitted for review and acceptance/ approval.

The reporting and posting requirements of Title 10, Code of Federal Regulations, Part 21 (10CFR21), "Reporting of Defects and Noncompliance", shall apply for this services.

14. APPENDICES

Appendix 1: Valve Drawing No.: NEK-1168E18

Appendix 2: Valve Drawing No.: NEK-8375d35