


KRŠKO NUCLEAR POWER PLANT (NEK)
TO.VZST
Mechanical Maintenance Department


TECHNICAL SPECIFICATION
FOR SUPERVISION OF STEAM GENERATOR
FEEDWATER PUMP (FW) OVERHAUL
DURING 2019 OUTAGE



(IN 8182006)


Revision: 0

Classification: Augmented Quality Related

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1. ACTIVITY

The Specification gives a scope of maintenance services on Steam Generator Feedwater Pumps, Model HVCN-16X, manufactured by Pacific-Dresser, during NPP Krško 2019 outage (October 2019). The purpose is to perform a complete overhaul of two pumps (FW PMP 1&2) as part of NEK preventive maintenance plan. All administrative and technical requirements for both contracting parties are indicated, too.

2. SCOPE

Scope of service has to be performed by one qualified service engineer. He shall supervise and advise the Feed Pump's activities defined per items 2.1 Preoutage activities and 2.2 Outage Services. The services will be performed by NEK maintenance team and equipment. The tools and parts will be provided by NEK.

2.1 Pre-outage Activities

One month before the start of outage activities on site the Contractor shall submit all necessary procedures and documentation related to the work performance. It shall be reviewed and approved by NEK. The documentation package shall be made in accordance with Instruction Book – Steam Generator Feedwater Pump – Type/Size: HVCN/16X. The documentation package shall comprise also the related time schedule.

The Contractor shall submit to NEK all necessary certificates for the service engineer which enable him to work in technological area. Prior to the start of services he shall also get familiar with specific details concerning the performance of services at NEK.

2.2 Outage Services

The scope of outage services on the Steam Generator Feedwater Pumps during NPP Krško 2019 outage shall be supervised and advised by the qualified service engineer and includes the following:

- Supervision and advisory of pump and motor coupling, shaft seals, pump casing head, shaft, impeller, wear rings removal.
- Inspection of removed parts and parts before installation.
- Supervision and advisory of wear rings, impeller, shaft, pump head, shaft seals, pump and motor coupling installation.
- Supervision and advisory of pump testing.

Services shall be performed according to NPP Krško 2019 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 NEK's Maintenance Work Leader. The team shall perform all necessary services in accordance with relevant procedures approved by NEK and the Contractor.

Contractor's scope of services comprises the supervision of the serviceman who shall control all services performed. Service engineer has to specify in detail the conditions found and write down a Non Conformance Report if needed.

During the performance of services some conditions shall be satisfied such as constant tidiness of work environment, safe workplace and the use of protective equipment following the instructions of Safety at work.

2.3 Preliminary Report

Preliminary Report shall be submitted by the Contractor during the exit meeting at the latest. It has to include, but not be necessarily limited to 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 (NCR) reports as well as methods of their resolving and NCR issued with corrective action verification;
- f. List of parts status with identification, repaired, modified, replaced, method of processing, short description of works completed;
- g. List of Personnel involved in service with qualification Records;
- h. Recommendations.

2.4 Outage Report

It shall be made in accordance with item 2.3 above for the performance of services during NPP Krško Outage.

Final Report shall be submitted to NEK in four copies thirty (30) days upon submittal of Preliminary Report. Prior to delivery of the final report to NEK it shall be reviewed and approved by Contractor's responsible Engineering and QA personnel.

3. SAFETY CLASSICATION

3.1. AQ - "Augmented Quality Related"

Steam Generator Feedwater Pumps are classified as "Augmented Quality Related". The service is classified as Non-Nuclear Safety Related. For the work on such components the Contractor shall be familiar with original technical requirements for the design. The service shall be performed in accordance with Contractor QA Program and the procedures approved by NEK.

4. TYPE OF SERVICE

The implemented work of the Contractor will be paid based on time and material basis. Inspection of Service engineer shall be performed in accordance with the Contractor QA/QC program and with the Contractor 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:

- Instruction Book; Pacific Instruction Book; Steam Generator Feedwater Pump Operation and Maintenance Manual; Type/Size: HVCN/16X
- ISO 9001 Quality management systems - Requirements
- QS 610, rev. 1 Generic Quality Assurance Program Specification
- SNT-TC-1A Recommended Practice for Nondestructive Testing Personnel Qualification and Certification,
- ADP-1.101 Preprečitev vnosa tujkov (Foreign material exclusion – FME)

The Contractor shall perform services in accordance with his own procedures for work and control of the performance of services harmonized with QA Program of his own. He shall also possess other procedures if required by technological process offered in Bidder's proposal.

6. IDENTIFICATION OF EQUIPMENT AND COMPONENTS

Steam Generator Feedwater Pump:

| | |
|--------------------|--|
| System: | FW |
| Funct. Desc.: | STEAM GENERATOR FEEDWATER PUMP |
| Equipment No: | FW105PMP-001 and FW105PMP-002 |
| Building: | TB |
| Bldg. Elev.: | 100,30 |
| Equip. Elev.: | 100,30 |
| Room: | 005 |
| ASME: | / |
| ANSI: | NNS (NON-NUCLEAR SAFETY) |
| SR: | N |
| Manufacturer: | PACIFIC PUMPS-DRESSER PUMP DIVISION |
| Manuf.Part No.: | SPF 8X22 1 STAGE |
| Manuf. Serial No.: | 51935, 51936 |
| Drawing: | 500-D49875 |
| Manual: | Pacific Instruction Book; Steam Generator Feedwater Pump Operation and Maintenance Manual; Type/Size: HVCN/16X |

7. TECHNICAL REQUIREMENTS

The services shall be performed according to related procedures and instructions for work. Special attention shall be paid to the following:

- Assurance of all preconditions for the performance of services,
- Tolerances, setups and measured values shall not exceed the prescribed values,
- Only proper and faultless spare parts provided by NEK shall be installed,
- Make sure before installation that all flange junctions and tightening surfaces are faultless and clean,
- Successful testing after maintenance intervention,
- Assurance of the tightness and successful operation at rated parameters after intervention.

8. LABOR QUALIFICATION REQUIREMENTS

The service engineer shall have references that he has successfully performed the services as defined in item 2 on the Pacific Steam Generator Feed pump type HVCN size 16X or similar. He shall be qualified for work on NEK's type Steam Generator Feed pumps. Appropriate knowledge and qualification shall be proved with certificates of attending relevant trainings and with references of works performed on the said equipment. The qualification record of the service engineer shall be submitted to NEK with delivery of the proposal.

Prior to the start of services in the plant the service engineer shall get familiar with the house rules concerning NEK's basic regulations on the movement on site, treatment of equipment, the requirements of safety at work, as well as with the requirements of radiological and fire protection.

The service engineer shall perform services in accordance with relevant procedures, prescriptions and regulations as stated in item 5. He shall be familiar with NEK's method of work and shall follow NEK's procedures.

9. DETAILED SCHEDULE

The beginning of 2019 year outage is scheduled for October 1st. Start of Feed Pump activities is scheduled for October 3rd. The service engineer shall arrive at NEK site at least one day earlier to pass NEK General Employee Training and other Site formalities. Duration of Feed Pump maintenance works on the field is approximately 16 days. After that the service engineer supervision and advisory will be required again for pump testing, which is scheduled for October 23rd. Because schedule is not finished yet a detailed schedule of work on the Feed Pumps will be given at least 15 days prior to outage start. As to NPP Krško 2019 Outage Time Schedule, the Contractor shall follow NEK's plan which will be harmonized every day with schedules for the performance of other NEK's outage activities. Coordination of the performance of services shall be made between Contractor's Service Engineer and NEK's coordinator competent for the said scope of services.

For service engineer to be mobilized during NPP Krško 2019 Outage the Contractor shall submit the documentation to NEK one month before start of the outage at the latest or until September 1st, 2019.

10. SUPPLIER'S LIABILITIES

The Contractor shall fully meet the said scope of services but he shall first of all:

- Follow NEK's rules and procedures,
- If a special tool (to be provided by NEK) is used, the Contractor shall use it in a proper way, get appropriate qualification for related work and successful performance of services,
- The Service Engineer shall support NEK team for successful performances of the services,
- The service Engineer shall be supported by technical advisory service center of his company.
- The Service Engineer shall be qualified for work in technological area and fit for duty.
- The Supplier shall have his own procedures for the performance of the whole scope of services based on which the work will be done,
- The Contractor shall give references in his bid.

11. NEK'S LIABILITIES

The Purchaser shall meet his obligations as specified in relevant Appendices. As to the performance itself, he shall also:

- Issue all work orders,
- Submit to the Contractor NPP Krško 2019 Outage Time Schedule,
- Perform all contracted services with NEK's personnel and maintenance work leader,
- Dismantle electrical and other equipment from the components,
- Harmonize the performance of particular activities with NPP Krško 2019 Time Schedule and communicate with the control room,
- Provide all spare parts,
- Provide metric & inch tools and devices for maintenance of the said pump,
- Provide measuring and other tools and instruments with relevant Calibration Certificates,
- Provide personal protective equipment, consumables and other.

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 shall ensure compliance with the requirements of ISO 9001 or similar, and with applicable requirements as stated in the NEK specification QS 610, rev.1 - 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.

14. APPENDICES

Appendix 1: QS 610, rev. 1 - Generic Quality Assurance Program Specification