

SAMPLE BIDDING DOCUMENTS

**Procurement of
Non-Consultant
Services**

**Repair and modernization of the
electric locomotives series 1141
ICB No: HZC - ICB - 07/15**

Purchaser: HŽ Cargo d.o.o.

Country: Croatia

Issued on: 23.09.2016.

Revisions

April 2007:

The features of May 2004, revised October 2006, Procurement Guidelines have been incorporated.

Table of Contents

Part I – Bidding Procedures	1
Section I. Instructions to Bidders.....	3
Section II. Bidding Data Sheet.....	25
Section III. Bidding Forms	29
Section IV. Eligible Countries	40
Part II – Activity Schedule	41
Section V. Activity Schedule	43
Part III – Conditions of Contract and Contract Forms	49
Section VI. General Conditions of Contract	51
Section VII. Special Conditions of Contract.....	67
Appendix A: Description of the Services	71
Section IX. Contract Forms	133

Introduction

Procurement under projects financed by the International Bank for Reconstruction and Development (IBRD) and its affiliate, the International Development Association (IDA),¹ is carried out in accordance with policies and procedures laid down in the *Guidelines: Procurement under IBRD Loans and IDA Credits* (hereinafter called *Procurement Guidelines*). To help Borrowers to contract the performance of Non-Consultant Services (services that are not classified as Consultant Services) the Bank has designed these sample bidding documents to be used voluntarily on a trial basis. Non-Consultant Services will hereinafter be referred to simply as “Services”.

The Sample Bidding Documents in this publication have been prepared for use by Borrowers in the procurement of Services by International Competitive Bidding (ICB). These documents may also be adapted to National Competitive Bidding (NCB) with some changes generally necessary in the Instructions to Bidders and the Conditions of Contract.

These Sample Bidding Documents are intended as model lump sum types of Contract, which are the most common in Services contracting. Lump sum contracts are used in particular for Services which are well defined and are unlikely to change in quantity or specification, and where encountering difficult or unforeseen site conditions are unlikely.²

Care should be taken to check the relevance of the provisions of the standard documents against the requirements of the specific Services to be procured. The following directions should be observed when using the documents:

- (a) All the documents listed in the Table of Contents are normally required for the procurement of Services; however, they should be adapted as necessary to the circumstances of the particular Project.
- (b) Details to be provided by the Employer prior to release of the bidding documents are limited to the Invitation for Bids (User’s Guide), Instructions to Bidders (Section I), Bidding Data Sheet (Section II), and Special Conditions of Contract (Section VII), in addition to Sections V and VIII, which deal with Activity Schedule, Performance Specifications and Drawings, respectively. **Specific details** should be furnished in the spaces indicated by italicized notes inside brackets. Those details not filled in by the Employer are the responsibility of the Bidder.

¹ IBRD and IDA are generally referred to as the World Bank. Since the procurement requirements for IBRD and IDA are identical, “World Bank” in this handbook refers to both **IBRD** and **IDA**, and “**loan**” refers to either an **IBRD loan** or an **IDA credit**. However, for the Invitation for Bids, the distinctions are retained.

² Lump sum contracts should be used for Services that can be defined in their full physical and qualitative characteristics before bids are called, or where the risks of substantial design or performance variations are minimal. In lump sum contracts, the concept of priced “activity schedules” has been introduced, to enable payments to be made as “activities” are completed. Payments can also be made on the basis of percentage completion of each activity.

- (c) These Sample Bidding Documents are intended to serve on a repetitive basis in a Borrower's country, once agreement between the Borrower and the World Bank has been reached. Modifications to address specific Project or Contract needs should be provided only in the Special Conditions of Contract as amendments to the Conditions of Contract. If modifications must be made to the bidding procedures, they can be presented in the Bidding Data Sheet.
- (d) The foot-notes and the notes inside boxes with single borders are not part of the text, but rather contain instructions for the user, as do the Preface and this Introduction section. **They should not be incorporated in the bidding documents.** The cover should be modified as required to identify the bidding documents as to the names of the Project, Contract, and Employer, in addition to the date of issue.
- (e) The notes inside boxes with double borders should be retained in the issued bidding documents, since these notes provide important guidance to bidders.
- (f) The standard documents have been prepared for bidding where postqualification applies; adaptations are necessary to ITB Clause 5 and corresponding Bidding Data Sheet, and Forms when prequalification has taken place. The process of prequalification of bidders is not covered in these standard documents.

Summary Description

These Standard Bidding Documents for Procurement of Works and its User's Guide apply either when a prequalification process has taken place before bidding or when a prequalification process has not taken place before bidding (provided alternative documents should be selected as applicable). A brief description of these documents is given below.

SBD for Procurement of Works

Summary

PART 1 – BIDDING PROCEDURES

Section I: Instructions to Bidders (ITB)

This Section provides relevant information to help Bidders prepare their bids. Information is also provided on the submission, opening, and evaluation of bids and on the award of Contracts. **Section I contains provisions that are to be used without modification.**

Section II. Bidding Data Sheet (BDS)

This Section consists of provisions that are specific to each procurement and that supplement the information or requirements included in Section I, Instructions to Bidders.

Section III: Bidding Forms

This Section contains the forms which are to be completed by the Bidder and submitted as part of his Bid.

Section IV. Eligible Countries

This Section contains information regarding eligible countries.

PART 2 – ACTIVITY SCHEDULE

Section V. Activity Schedule

This Section contains the activity schedule.

PART 3 – CONDITIONS OF CONTRACT AND CONTRACT FORMS

Section VI. General Conditions of Contract (GCC)

This Section contains the general clauses to be applied in all contracts. **The text of the clauses in this Section shall not be modified.**

Section VII. Special Conditions of Contract (PCC)

The contents of this Section supplement the General Conditions of Contract and shall be prepared by the Employer.

Section VIII. Performance Specifications and Drawings

This section contains Specifications that are intended only as information for the Employer or the person drafting the bidding documents. **They should not be included in the final documents.**

Section IX: Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for **Performance Security** and **Advance Payment Security**, when required, shall only be completed by the successful Bidder after contract award.

Part I – Bidding Procedures

Section I. Instructions to Bidders

Table of Contents

A. General.....	5
1. Scope of Bid.....	5
2. Source of Funds	5
3. Corrupt or Fraudulent Practices	5
4. Eligible Bidders	7
5. Qualification of the Bidder	8
6. One Bid per Bidder	10
7. Cost of Bidding	10
8. Site Visit.....	10
B. Bidding Documents	11
9. Content of Bidding Documents	11
10. Clarification of Bidding Documents	11
11. Amendment of Bidding Documents	11
C. Preparation of Bids	12
12. Language of Bid.....	12
13. Documents Comprising the Bid.....	12
14. Bid Prices	12
15. Currencies of Bid and Payment	13
16. Bid Validity.....	13
17. Bid Security	14
18. Alternative Proposals by Bidders.....	15
19. Format and Signing of Bid.....	16
D. Submission of Bids	16
20. Sealing and Marking of Bids	16
21. Deadline for Submission of Bids	17
22. Late Bids	17
23. Modification and Withdrawal of Bids	17
E. Bid Opening and Evaluation	18
24. Bid Opening	18
25. Process to Be Confidential.....	18
26. Clarification of Bids.....	18
27. Examination of Bids and Determination of Responsiveness.....	19
28. Correction of Errors	19
29. Currency for Bid Evaluation.....	20
30. Evaluation and Comparison of Bids	20
31. Preference for Domestic Bidders	21
F. Award of Contract.....	21
32. Award Criteria	21

33.	Employer’s Right to Accept any Bid and to Reject any or all Bids	21
34.	Notification of Award and Signing of Agreement.....	21
35.	Performance Security.....	22
36.	Advance Payment and Security	23
37.	Adjudicator	23

Instructions to Bidders

A. General

- 1. Scope of Bid**
- 1.1 The Employer, as defined in the **Bidding Data Sheet (BDS)**, invites bids for the Services, as described in the Appendix A to the Contract. The name and identification number of the Contract is **provided in the BDS**.
- 1.2 The successful Bidder will be expected to complete the performance of the Services by the Intended Completion Date **provided in the BDS**.
- 2. Source of Funds**
- 2.1 The Borrower, as **defined in the BDS**, intends to apply part of the funds of a loan from the World Bank, **as defined in the BDS**, towards the cost of the Project, **as defined in the BDS**, to cover eligible payments under the Contract for the Services. Payments by the World Bank will be made only at the request of the Borrower and upon approval by the World Bank in accordance with the Loan Agreement, and will be subject in all respects to the terms and conditions of that Agreement. Except as the World Bank may specifically otherwise agree, no party other than the Borrower shall derive any rights from the Loan Agreement or have any rights to the loan proceeds.
- 3. Corrupt or Fraudulent Practices**
- 3.1 It is the Bank's policy to require that Borrowers (including beneficiaries of Bank loans), as well as bidders, suppliers, and contractors and their subcontractors under Bank-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. ³ In pursuance of this policy, the Bank:
- (a) defines, for the purposes of this provision, the terms set forth below as follows:
- (i) "corrupt practice"⁴ is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
- (ii) "fraudulent practice"⁵ is any act or omission, including a misrepresentation, that knowingly or

³ In this context, any action taken by a bidder, supplier, contractor, or a sub-contractor to influence the procurement process or contract execution for undue advantage is improper.

⁴ For the purpose of these SBDs, "another party" refers to a public official acting in relation to the procurement process or contract execution]. In this context, "public official" includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

- (iii) “collusive practice”⁶ is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
- (iv) “coercive practice”⁷ is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (v) “obstructive practice” is
 - (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or
 - (bb) acts intended to materially impede the exercise of the Bank’s inspection and audit rights provided for under para. 1.14 (e) of the Bank’s Procurement Guidelines.
- (b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question;
- (c) will cancel the portion of the loan allocated to a contract if it determines at any time that representatives of the Borrower or of a beneficiary of the loan engaged in corrupt, fraudulent, collusive, coercive or obstructive practices

⁵ For the purpose of these SBDs, “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

⁶ For the purpose of these SBDs, “parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

⁷ For the purpose of these SBDs, “party” refers to a participant in the procurement process or contract execution.

during the procurement or the execution of that contract, without the Borrower having taken timely and appropriate action satisfactory to the Bank to remedy the situation;

- (d) will sanction a firm or individual, including declaring them ineligible, either indefinitely or for a stated period of time, to be awarded a Bank-financed contract if it at any time determines that they have, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for, or in executing, a Bank-financed contract; and
 - (e) will have the right to require that a provision be included in bidding documents and in contracts financed by a Bank Loan, requiring bidders, suppliers, contractors and consultants to permit the Bank to inspect their accounts and records and other documents relating to the Bid submission and contract performance and to have them audited by auditors appointed by the Bank.
- 3.2 Furthermore, Bidders shall be aware of the provision stated in Sub-Clauses 1.7 and 2.6.1 of the General Conditions of Contract.

4. Eligible Bidders

- 4.1 This Invitation for Bids is open to all bidders from eligible countries as defined in the Procurement Guidelines. Any materials, equipment, and Services to be used in the performance of the Contract shall have their origin in eligible source countries.
- 4.2 All bidders shall provide in Section III, Bidding Forms, a statement that the Bidder (including all members of a joint venture and subcontractors) is not associated, nor has been associated in the past, directly or indirectly, with the consultant or any other entity that has prepared the design, specifications, and other documents for the Project or being proposed as Project Manager for the Contract. A firm that has been engaged by the Borrower to provide Consultant Services for the preparation or supervision of the Services, and any of its affiliates, shall not be eligible to bid.
- 4.3 Government-owned enterprises in the Employer's country may only participate if they are legally and financially autonomous, operate under commercial law, and are not a dependent agency of the Employer.
- 4.4 The loan agreement prohibits a withdrawal from the loan account for the purpose of any payment to persons or entities, or

for any import of goods, if such payment or import, to the knowledge of the Bank, is prohibited by a decision of the United Nations Security Council, taken under Chapter VII of the Charter of the United Nations.

4.5 Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Bank in accordance with ITB Sub-Clause 3.1.

5. Qualification of the Bidder

5.1 All bidders shall provide in Section III, Bidding Forms, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary.

5.2 In the event that prequalification of potential bidders has been undertaken **as stated in the BDS**, only bids from prequalified bidders shall be considered for award of Contract, in which case the provisions of sub-clauses 5.3 to 5.6 hereafter shall not apply. These qualified bidders should submit with their bids any information updating their original prequalification applications or, alternatively, confirm in their bids that the originally submitted prequalification information remains essentially correct as of the date of bid submission. The update or confirmation should be provided in Section IV.

5.3 If the Employer has not undertaken prequalification of potential bidders, all bidders shall include the following information and documents with their bids in Section IV, unless otherwise **stated in the BDS**:

- (a) copies of original documents defining the constitution or legal status, place of registration, and principal place of business; written power of attorney of the signatory of the Bid to commit the Bidder;
- (b) total monetary value of Services performed for each of the last five years;
- (c) experience in Services of a similar nature and size for each of the last five years, and details of Services under way or contractually committed; and names and address of clients who may be contacted for further information on those contracts;
- (d) list of major items of equipment proposed to carry out the Contract;
- (e) qualifications and experience of key site management and technical personnel proposed for the Contract;
- (f) reports on the financial standing of the Bidder, such as

profit and loss statements and auditor's reports for the past five years;

- (g) evidence of adequacy of working capital for this Contract (access to line(s) of credit and availability of other financial resources);
- (h) authority to the Employer to seek references from the Bidder's bankers;
- (i) information regarding any litigation, current or during the last five years, in which the Bidder is involved, the parties concerned, and disputed amount; and
- (j) proposals for subcontracting components of the Services amounting to more than 10 percent of the Contract Price.

5.4 Bids submitted by a joint venture of two or more firms as partners shall comply with the following requirements, unless otherwise stated in the **BDS**:

- (a) the Bid shall include all the information listed in ITB Sub-Clause 5.3 above for each joint venture partner;
- (b) the Bid shall be signed so as to be legally binding on all partners;
- (c) the Bid shall include a copy of the agreement entered into by the joint venture partners defining the division of assignments to each partner and establishing that all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms; alternatively, a Letter of Intent to execute a joint venture agreement in the event of a successful bid shall be signed by all partners and submitted with the bid, together with a copy of the proposed agreement;
- (d) one of the partners shall be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture; and
- (e) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.

5.5 To qualify for award of the Contract, bidders shall meet the following minimum qualifying criteria:

- (a) annual volume of Services of at least the amount **specified**

in the BDS;

- (b) experience as prime contractor in the provision of at least two service contracts of a nature and complexity equivalent to the Services over the last 5 years (to comply with this requirement, Services contracts cited should be at least 70 percent complete) **as specified in the BDS;**
- (c) proposals for the timely acquisition (own, lease, hire, etc.) of the essential equipment **listed in the BDS;**
- (d) a Contract Manager with five years' experience in Services of an equivalent nature and volume, including no less than three years as Manager; and
- (e) liquid assets and/or credit facilities, net of other contractual commitments and exclusive of any advance payments which may be made under the Contract, of no less than the amount specified in the **BDS.**

A consistent history of litigation or arbitration awards against the Applicant or any partner of a Joint Venture may result in disqualification.

- 5.6 The figures for each of the partners of a joint venture shall be added together to determine the Bidder's compliance with the minimum qualifying criteria of ITB Sub-Clause 4.4(a), (b) and (e); however, for a joint venture to qualify the partner in charge must meet at least 40 percent of those minimum criteria for an individual Bidder and other partners at least 25% of the criteria. Failure to comply with this requirement will result in rejection of the joint venture's Bid. Subcontractors' experience and resources will not be taken into account in determining the Bidder's compliance with the qualifying criteria, unless otherwise **stated in the BDS.**

6. One Bid per Bidder

- 6.1 Each Bidder shall submit only one Bid, either individually or as a partner in a joint venture. A Bidder who submits or participates in more than one Bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.

7. Cost of Bidding

- 7.1 The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible or liable for those costs.

8. Site Visit

- 8.1 The Bidder, at the Bidder's own responsibility and risk, is encouraged to visit and examine the Site of required Services

and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for the Services. The costs of visiting the Site shall be at the Bidder's own expense.

B. Bidding Documents

- 9. Content of Bidding Documents**
- 9.1 The set of bidding documents comprises the documents listed in the table below and addenda issued in accordance with ITB Clause 11:
- | | |
|--------------|---|
| Section I | Instructions to Bidders |
| Section II | Bidding Data Sheet |
| Section III | Bidding Forms |
| Section IV | Eligible Countries |
| Section V | Activity Schedule |
| Section VI | General Conditions of Contract |
| Section VII | Special Conditions of Contract |
| Section VIII | Performance Specifications and Drawings (if Applicable) |
| Section IX | Contract Forms |
- 9.2 The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding documents. Failure to furnish all information required by the bidding documents or to submit a bid not substantially responsive to the bidding documents in every respect will be at the Bidder's risk and may result in the rejection of its bid. Sections III, V, and IX should be completed and returned with the Bid in the number of copies specified in the **BDS**.
- 10. Clarification of Bidding Documents**
- 10.1 A prospective Bidder requiring any clarification of the bidding documents may notify the Employer in writing or by cable ("cable" includes telex and facsimile) at the Employer's address indicated in the invitation to bid. The Employer will respond to any request for clarification received earlier than 14 days prior to the deadline for submission of bids. Copies of the Employer's response will be forwarded to all purchasers of the bidding documents, including a description of the inquiry, but without identifying its source.
- 11. Amendment of Bidding Documents**
- 11.1 Before the deadline for submission of bids, the Employer may modify the bidding documents by issuing addenda.
- 11.2 Any addendum thus issued shall be part of the bidding

documents and shall be communicated in writing or by cable to all purchasers of the bidding documents. Prospective bidders shall acknowledge receipt of each addendum by cable to the Employer.

- 11.3 To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer shall extend, as necessary, the deadline for submission of bids, in accordance with ITB Sub-Clause 21.2 below.

C. Preparation of Bids

12. Language of Bid

- 12.1 The bid prepared by the Bidder, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer shall be written in the language **specified in the BDS**. Supporting documents and printed literature furnished by the Bidder may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the Bidding Data Sheet, in which case, for purposes of interpretation of the Bid, the translation shall govern.

13. Documents Comprising the Bid

- 13.1 The Bid submitted by the Bidder shall comprise the following:
- (a) The Form of Bid (in the format indicated in Section III);
 - (b) Bid Security;
 - (c) Priced Activity Schedule;
 - (d) Qualification Information Form and Documents;
 - (e) Alternative offers where invited;

and any other materials required to be completed and submitted by bidders, as **specified in the BDS**.

- 13.2 Bidders bidding for this contract together with other contracts stated in the IFB to form a package will so indicate in the bid together with any discounts offered for the award of more than one contract

14. Bid Prices

- 14.1 The Contract shall be for the Services, as described in Appendix A to the contract and in the Specifications, Section VIII, based on the priced Activity Schedule, Section V, submitted by the Bidder.
- 14.2 The Bidder shall fill in rates and prices for all items of the Services described in the in Specifications (or Terms of

Reference), Section VIII and listed in the Activity Schedule, Section V. Items for which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the other rates and prices in the Activity Schedule.

- 14.3 All duties, taxes, and other levies payable by the Service Provider under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the total Bid price submitted by the Bidder.
- 14.4 If **provided for in the BDS**, the rates and prices quoted by the Bidder shall be subject to adjustment during the performance of the Contract in accordance with and the provisions of Clause 6.6 of the General Conditions of Contract and/or Special Conditions of Contract. The Bidder shall submit with the Bid all the information required under the Special Conditions of Contract and of the General Conditions of Contract.
- 14.5 For the purpose of determining the remuneration due for additional Services, a breakdown of the lump-sum price shall be provided by the Bidder in the form of Appendices D and E to the Contract

15. Currencies of Bid and Payment

- 15.1 The lump sum price shall be quoted by the Bidder separately in the following currencies:
- (a) for those inputs to the Services which the Bidder expects to provide from within the Employer's country, the prices shall be quoted in the currency of the Employer's country, unless otherwise **specified in the BDS**; and
 - (b) for those inputs to the Services which the Bidder expects to provide from outside the Employer's country, the prices shall be quoted in up to any three currencies of any member country of the Bank.
- 15.2 Bidders shall indicate details of their expected foreign currency requirements in the Bid.
- 15.3 Bidders may be required by the Employer to justify their foreign currency requirements and to substantiate that the amounts included in the Lump Sum are reasonable and responsive to ITB Sub-Clause 15.1.

16. Bid Validity

- 16.1 Bids shall remain valid for the period **specified in the BDS**.
- 16.2 In exceptional circumstances, the Employer may request that the bidders extend the period of validity for a specified additional

period. The request and the bidders' responses shall be made in writing or by cable. A Bidder may refuse the request without forfeiting the Bid Security. A Bidder agreeing to the request will not be required or permitted to otherwise modify the Bid, but will be required to extend the validity of Bid Security for the period of the extension, and in compliance with ITB Clause 17 in all respects.

16.3 In the case of contracts in which the Contract Price is fixed (not subject to price adjustment), if the period of bid validity is extended by more than 60 days, the amounts payable in local and foreign currency to the Bidder selected for award, shall be increased by applying to both the local and the foreign currency component of the payments, respectively, the factors specified in the request for extension, for the period of delay beyond 60 days after the expiry of the initial bid validity, up to the notification of award. Bid evaluation will be based on the Bid prices without taking the above correction into consideration.

17. Bid Security

17.1 The Bidder shall furnish, as part of the Bid, a Bid Security or a Bid-Securing Declaration, if required, as **specified in the BDS**.

17.2 The Bid Security shall be in the amount **specified in the BDS** and denominated in the currency of the Employer's Country or a freely convertible currency, and shall:

- (a) at the bidder's option, be in the form of either a letter of credit, or a bank guarantee from a banking institution, or a bond issued by a surety;
- (b) be issued by a reputable institution selected by the bidder and located in any eligible country. If the institution issuing the bond is located outside the Employer's Country, it shall have a correspondent financial institution located in the Employer's Country to make it enforceable.
- (c) be substantially in accordance with one of the forms of Bid Security included in Section IX, Contract Forms, or other form approved by the Employer prior to bid submission;
- (d) be payable promptly upon written demand by the Employer in case the conditions listed in ITB Sub-Clause 17.5 are invoked;
- (e) be submitted in its original form; copies will not be accepted;
- (f) remain valid for a period of 28 days beyond the validity

period of the bids, as extended, if applicable, in accordance with ITB Sub-Clause 16.2;

- 17.3 If a Bid Security or a Bid- Securing Declaration is required in accordance with ITB Sub-Clause 17.1, any bid not accompanied by a substantially responsive Bid Security or Bid Securing Declaration in accordance with ITB Sub-Clause 17.1, shall be rejected by the Employer as non-responsive.
- 17.4 The Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's furnishing of the Performance Security pursuant to ITB Clause 35.
- 17.5 The Bid Security may be forfeited or the Bid Securing Declaration executed:
- (a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Bid Submission Form, except as provided in ITB Sub-Clause 16.2; or
 - (b) if the successful Bidder fails to:
 - (i) sign the Contract in accordance with ITB Clause 34;
 - (ii) furnish a Performance Security in accordance with ITB Clause 35.
- 17.6 The Bid Security or Bid- Securing Declaration of a JV must be in the name of the JV that submits the bid. If the JV has not been legally constituted at the time of bidding, the Bid Security or Bid-Securing Declaration shall be in the names of all future partners as named in the letter of intent to constitute the JV.

18. Alternative Proposals by Bidders

- 18.1 **Unless otherwise indicated in the BDS**, alternative bids shall not be considered.
- 18.2 When alternative times for completion are explicitly invited, a statement to that effect will be **included in the BDS**, as will the method of evaluating different times for completion.
- 18.3 Except as provided under ITB Sub-Clause 18.4 below, bidders wishing to offer technical alternatives to the requirements of the bidding documents must first submit a Bid that complies with the requirements of the bidding documents, including the scope, basic technical data, graphical documents and specifications. In addition to submitting the basic Bid, the Bidder shall provide all information necessary for a complete evaluation of the alternative by the Employer, including calculations, technical

specifications, breakdown of prices, proposed work methods and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer. Alternatives to the specified performance levels shall not be accepted.

18.4 When bidders are **permitted in the BDS** to submit alternative technical solutions for specified parts of the Services, such parts shall be described in the Specifications (or Terms of Reference) and Drawings, Section VIII. In such case, the method for evaluating such alternatives will be as **indicated in the BDS**.

19. Format and Signing of Bid

19.1 The Bidder shall prepare one original of the documents comprising the Bid as described in ITB Clause 11 of these Instructions to Bidders, bound with the volume containing the Form of Bid, and clearly marked "ORIGINAL." In addition, the Bidder shall submit copies of the Bid, in the number **specified in the BDS**, and clearly marked as "COPIES." In the event of discrepancy between them, the original shall prevail.

19.2 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder, pursuant to Sub-Clauses 5.3(a) or 5.4(b), as the case may be. All pages of the Bid where entries or amendments have been made shall be initialed by the person or persons signing the Bid.

19.3 The Bid shall contain no alterations or additions, except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Bidder, in which case such corrections shall be initialed by the person or persons signing the Bid.

D. Submission of Bids

20. Sealing and Marking of Bids

20.1 The Bidder shall seal the original and all copies of the Bid in two inner envelopes and one outer envelope, duly marking the inner envelopes as "ORIGINAL" and "COPIES".

20.2 The inner and outer envelopes shall

- (a) be addressed to the Employer at the address **provided in the BDS**;
- (b) bear the name and identification number of the Contract as **defined in the BDS** and Special Conditions of Contract;

and

- (c) provide a warning not to open before the specified time and date for Bid opening as **defined in the BDS.**

20.3 In addition to the identification required in ITB Sub-Clause 20.2, the inner envelopes shall indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared late, pursuant to ITB Clause 22.

20.4 If the outer envelope is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.

21. Deadline for Submission of Bids

21.1 Bids shall be delivered to the Employer at the address specified above no later than the time and date **specified in the BDS.**

21.2 The Employer may extend the deadline for submission of bids by issuing an amendment in accordance with ITB Clause 11, in which case all rights and obligations of the Employer and the bidders previously subject to the original deadline will then be subject to the new deadline.

22. Late Bids

22.1 Any Bid received by the Employer after the deadline prescribed in ITB Clause 21 will be returned unopened to the Bidder.

23. Modification and Withdrawal of Bids

23.1 Bidders may modify or withdraw their bids by giving notice in writing before the deadline prescribed in ITB Clause 21.

23.2 Each Bidder's modification or withdrawal notice shall be prepared, sealed, marked, and delivered in accordance with ITB Clauses 19 and 20, with the outer and inner envelopes additionally marked "MODIFICATION" or "WITHDRAWAL," as appropriate.

23.3 No Bid may be modified after the deadline for submission of Bids.

23.4 Withdrawal of a Bid between the deadline for submission of bids and the expiration of the period of Bid validity specified in the BDS or as extended pursuant to ITB Sub-Clause 16.2 may result in the forfeiture of the Bid Security pursuant to ITB Clause 17.

23.5 Bidders may only offer discounts to, or otherwise modify the prices of their bids by submitting Bid modifications in accordance with this clause, or included in the original Bid submission.

E. Bid Opening and Evaluation

- 24. Bid Opening**
- 24.1 The Employer will open the bids, including modifications made pursuant to ITB Clause 23, in the presence of the bidders' representatives who choose to attend at the time and in the place **specified in the BDS.**
- 24.2 Envelopes marked "WITHDRAWAL" shall be opened and read out first. Bids for which an acceptable notice of withdrawal has been submitted pursuant to ITB Clause 23 shall not be opened.
- 24.3 The bidders' names, the Bid prices, the total amount of each Bid and of any alternative Bid (if alternatives have been requested or permitted), any discounts, Bid modifications and withdrawals, the presence or absence of Bid Security, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening. No bid shall be rejected at bid opening except for the late bids pursuant to ITB Clause 22; Bids, and modifications, sent pursuant to ITB Clause 23 that are not opened and read out at bid opening will not be considered for further evaluation regardless of the circumstances. Late and withdrawn bids will be returned unopened to the bidders.
- 24.4 The Employer will prepare minutes of the Bid opening, including the information disclosed to those present in accordance with ITB Sub-Clause 24.3.
- 25. Process to Be Confidential**
- 25.1 Information relating to the examination, clarification, evaluation, and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful Bidder is notified of the award. Any effort by a Bidder to influence the Employer's processing of bids or award decisions may result in the rejection of his Bid.
- 25.2 If, after notification of award, a bidder wishes to ascertain the grounds on which its bid was not selected, it should address its request to the Employer, who will provide written explanation. Any request for explanation from one bidder should relate only to its own bid; information about the bid of competitors will not be addressed.
- 26. Clarification of Bids**
- 26.1 To assist in the examination, evaluation, and comparison of bids, the Employer may, at the Employer's discretion, ask any Bidder for clarification of the Bidder's Bid, including breakdowns of the prices in the Activity Schedule, and other information that the Employer may require. The request for clarification and the response shall be in writing or by cable, telex, or facsimile, but no

change in the price or substance of the Bid shall be sought, offered, or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the bids in accordance with ITB Clause 28.

26.2 Subject to ITB Sub-Clause 26.1, no Bidder shall contact the Employer on any matter relating to its bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Employer, he should do so in writing.

26.3 Any effort by the Bidder to influence the Employer in the Employer's bid evaluation or contract award decisions may result in the rejection of the Bidder's bid.

27. Examination of Bids and Determination of Responsiveness

27.1 Prior to the detailed evaluation of bids, the Employer will determine whether each Bid (a) meets the eligibility criteria defined in ITB Clause 4; (b) has been properly signed; (c) is accompanied by the required securities; and (d) is substantially responsive to the requirements of the bidding documents.

27.2 A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation. A material deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Services; (b) which limits in any substantial way, inconsistent with the bidding documents, the Employer's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

27.3 If a Bid is not substantially responsive, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

28. Correction of Errors

28.1 Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Arithmetical errors will be rectified by the Employer on the following basis: if there is a discrepancy between unit prices and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the total price shall be corrected; if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; if there is a discrepancy between the amounts in figures and in words, the amount in words will prevail.

28.2 The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the Bidder, shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, the Bid will be rejected, and the Bid Security may be forfeited in accordance with ITB Sub-Clause 17.5(b).

29. Currency for Bid Evaluation

29.1 The Employer will convert the amounts in various currencies in which the Bid Price, corrected pursuant to ITB Clause 28, is payable (excluding Provisional Sums but including Daywork where priced competitively) to either:

(a) the currency of the Employer's country at the selling rates established for similar transactions by the authority **specified in the BDS** on the date **stipulated in the BDS**;

or

(b) a currency widely used in international trade, such as the U.S. dollar, **stipulated in the BDS**, at the selling rate of exchange published in the international press as **stipulated in the BDS** on the date **stipulated in the BDS**, for the amounts payable in foreign currency; and, at the selling exchange rate established for similar transactions by the same authority specified in ITB Sub-Clause 29.1 (a) above on the date **specified in the BDS** for the amount payable in the currency of the Employer's country.

30. Evaluation and Comparison of Bids

30.1 The Employer will evaluate and compare only the bids determined to be substantially responsive in accordance with ITB Clause 27.

30.2 In evaluating the bids, the Employer will determine for each Bid the evaluated Bid price by adjusting the Bid price as follows:

(a) making any correction for errors pursuant to ITB Clause 28;

(b) excluding provisional sums and the provision, if any, for contingencies in the Activity Schedule, Section V, but including Day work, when requested in the Specifications (or Terms of Reference) Section VIII;

(c) making an appropriate adjustment for any other acceptable variations, deviations, or alternative offers submitted in accordance with ITB Clause 18; and

(d) making appropriate adjustments to reflect discounts or

other price modifications offered in accordance with ITB Sub-Clause 23.5.

- 30.3 The Employer reserves the right to accept or reject any variation, deviation, or alternative offer. Variations, deviations, and alternative offers and other factors, which are in excess of the requirements of the bidding documents or otherwise result in unsolicited benefits for the Employer will not be taken into account in Bid evaluation.
- 30.4 The estimated effect of any price adjustment conditions under Sub-Clause 7.6 of the General Conditions of Contract, during the period of implementation of the Contract, will not be taken into account in Bid evaluation.
- 31. Preference for Domestic Bidders** 31.1 Domestic bidders shall not be eligible for any margin of preference in Bid evaluation.

F. Award of Contract

- 32. Award Criteria** 32.1 Subject to ITB Clause 33, the Employer will award the Contract to the Bidder whose Bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest evaluated Bid price, provided that such Bidder has been determined to be (a) eligible in accordance with the provisions of ITB Clause 4, and (b) qualified in accordance with the provisions of ITB Clause 5.
- 32.2 If, pursuant to ITB Sub-Clause 13.2 this contract is being let on a “slice and package” basis, the lowest evaluated Bid Price will be determined when evaluating this contract in conjunction with other contracts to be awarded concurrently. Taking into account any discounts offered by the bidders for the award of more than one contract.
- 33. Employer’s Right to Accept any Bid and to Reject any or all Bids** 33.1 Notwithstanding ITB Clause 32, the Employer reserves the right to accept or reject any Bid, and to cancel the bidding process and reject all bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Employer’s action.
- 34. Notification of Award and Signing of Agreement** 34.1 The Bidder whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by cable, telex, or facsimile confirmed by registered letter from the Employer. This letter (hereinafter and in the Conditions of Contract called the “Letter of Acceptance”) will state the sum that

the Employer will pay the Service provider in consideration of the execution, completion, and maintenance of the Services by the Service provider as prescribed by the Contract (hereinafter and in the Contract called the “Contract Price”).

- 34.2 The notification of award will constitute the formation of the Contract.
- 34.3 The Contract, in the form provided in the bidding documents, will incorporate all agreements between the Employer and the successful Bidder. It will be signed by the Employer and sent to the successful Bidder along with the Letter of Acceptance. Within 21 days of receipt of the Contract, the successful bidder shall sign the Contract and return it to the Employer, together with the required performance security pursuant to Clause 35.
- 34.4 Upon fulfillment of ITB Sub-Clause 34.3, the Employer will promptly notify the unsuccessful Bidders the name of the winning Bidder and that their bid security will be returned as promptly as possible.
- 34.5 If, after notification of award, a bidder wishes to ascertain the grounds on which its bid was not selected, it should address its request to the Employer. The Employer will promptly respond in writing to the unsuccessful Bidder.

35. Performance Security

- 35.1 Within 21 days after receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Employer a Performance Security in the amount and in the form (Bank Guarantee and/or Performance Bond) **stipulated in the BDS**, denominated in the type and proportions of currencies in the Letter of Acceptance and in accordance with the General Conditions of Contract.
- 35.2 If the Performance Security is provided by the successful Bidder in the form of a Bank Guarantee, it shall be issued either (a) at the Bidder’s option, by a bank located in the country of the Employer or a foreign bank through a correspondent bank located in the country of the Employer, or (b) with the agreement of the Employer directly by a foreign bank acceptable to the Employer.
- 35.3 If the Performance Security is to be provided by the successful Bidder in the form of a Bond, it shall be issued by a surety which the Bidder has determined to be acceptable to the Employer.
- 35.4 Failure of the successful Bidder to comply with the requirements of ITB Sub-Clause 35.1 shall constitute sufficient grounds for cancellation of the award and forfeiture of the Bid

Security.

**36. Advance
Payment and
Security**

36.1 The Employer will provide an Advance Payment on the Contract Price as stipulated in the Conditions of Contract, subject to the amount **stated in the BDS**.

37. Adjudicator

37.1 The Employer proposes the person **named in the BDS** to be appointed as Adjudicator under the Contract, at an hourly fee **specified in the BDS**, plus reimbursable expenses. If the Bidder disagrees with this proposal, the Bidder should so state in the Bid. If, in the Letter of Acceptance, the Employer has not agreed on the appointment of the Adjudicator, the Adjudicator shall be appointed by the Appointing Authority designated in the Special Conditions of Contract at the request of either party.

Section II. Bidding Data Sheet

Instructions to Bidders Clause Reference

A. General	
1.1	The Employer is HŽ Cargo d.o.o., Heinzelova 51, 10 000 Zagreb. The name and identification number of the Contract is: Repair and modernization of the electric locomotives series 1141, HZC-ICB 07/15
1.2	The Intended Completion Date is 1.6.2017
2.1	The Borrower is HŽ Cargo d.o.o., Heinzelova 51, 10 000 Zagreb The Project is Sustainable Croatian Railways in Europe Project The loan/credit number is 8502-HR
5.2	Prequalification has not been undertaken.
5.3	The Qualification Information and Bidding forms to be submitted are as follows: None
5.4	The information needed for Bids submitted by joint ventures is as follows: None
5.5	The qualification criteria in Sub-Clause 4.4 are modified as follows: None
5.5(a)	The minimum required annual volume of Services for the successful Bidder in any of the last two years shall be <i>25% of contract value or 1.070.000,00 €.</i>
5.5(b)	The experience required to be demonstrated by the Bidder should include as a minimum that he has executed during the last 5 years the following: <i>Medium and large repair of locomotives series 1141.</i>
5.5(c)	The essential equipment to be made available for the Contract by the successful Bidder shall be <i>NOT APPLICABLE</i>
5.5(e)	The minimum amount of liquid assets and/or credit facilities net of other contractual commitments of the successful Bidder shall be <i>14.0 % of contract value or 610.000,00 €.</i>
5.6	Subcontractors' experience will not be taken into account.
B. Bidding Data	
9.2 and	The number of copies of the Bid to be completed and returned shall be <i>two.</i>

19.1	
C. Preparation of Bids	
12.1	Language of the bid: English
13.1	The additional materials required to be completed and submitted are: <i>None</i>
14.4	The Contract <i>is not</i> subject to price adjustment in accordance with Clause 6.6 of the Conditions of Contract.
15.1	Local inputs shall be quoted in HRK.
16.1	The period of Bid validity shall be 90 days after the deadline for Bid submission specified in the BDS.
17.1	The Bidder shall provide: Bid shall include a Bid Security (issued by bank) using the form included in Section III, Biddings Forms
17.2	The amount of Bid Security shall be 90.000,00 HRK or an equivalent amount in a freely-convertible currency.
18.1	Alternative bids are not permitted.
18.2	Alternative times for completion are not permitted. If permitted, the range of acceptable completion time is: _____. If alternative times for completion are permitted, the evaluation method will be as follows: _____.
18.4	Alternative technical solutions shall be permitted for the following parts of the Services: None If alternative technical solutions are permitted, the evaluation method will be as follows: _____.
D. Submission of Bids	
20.2	The Employer's address for the purpose of Bid submission is Heinzlova 51 Floor/ Room number: 0/13 City: Zagreb ZIP/Postal Code: 10 000 Country: Croatia For identification of the bid the envelopes should indicate:

	Contract: Repair and modernization of the electric locomotives series 1141 Bid / Contract Number: <i>HZC-ICB 07/15</i>
21.1	The deadline for submission of bids shall be: 25th November 2016; 13:00h
E. Bid Opening and Evaluation	
24.1	Bids will be opened at 13:30h of the day 25th November 2016 at the following address: HŽ Cargo d.o.o., Heinzelova 51, Zagreb, Floor/ Room number: 0/14.
29.1	Currency chosen for the purpose of converting to a common currency: HRK. Source of exchange rate: shall be selling exchange rate of Croatian National Bank Exchange rate date. The date for the exchange rate shall be: Exchange rate on the opening day of Bids.
F. Award of Contract	
35.0	The Performance Security acceptable to the Employer shall be the in the Standard Form of Bank Guarantee in amount of 700.000,00 HRK.
36.1	The Advance Payment shall be of 30% percent of the Contract Price.
37.1	The Adjudicator proposed by the Employer is: The Permanent Arbitration Court at the Croatian Chamber of Economy, Rooseveltov trg 2, p.p. 630, HR-10000, Zagreb, Hrvatska, telefon (+385 1) 4848-622, 4848-623, telefaks: (+385 1) 4848-625, e-mail: sudiste@hgk.hr The hourly fee for this proposed Adjudicator shall be 700,00 HRK. The biographical data of the proposed Adjudicator is as follows: _____ - _____.

Section III. Bidding Forms

Table of Forms

Service Provider's Bid	30
Qualification Information	32
Letter of Acceptance	35
Form of Contract	36
Bid Security (Bank Guarantee)	39

Service Provider's Bid

[date]

To: *[name and address of Employer]*

Having examined the bidding documents including addenda No, we offer to execute the *[name and identification number of Contract]* in accordance with the Conditions of Contract, specifications, drawings and activity schedule accompanying this Bid for the Contract Price of *[amount in numbers]*, *[amount in words]* *[names of currencies]*.

The Contract shall be paid in the following currencies:

Currency	Amount payable in currency	Inputs for which foreign currency is required
(a)		
(b)		

We accept the appointment of *[name proposed in the Bidding Data Sheet]* as the Adjudicator.

[or]

We do not accept the appointment of *[name proposed in the Bidding Data Sheet]* as the Adjudicator, and propose instead that *[name]* be appointed as Adjudicator, whose daily fees and biographical data are attached.

This Bid and your written acceptance of it shall constitute a binding Contract between us. We understand that you are not bound to accept the lowest or any Bid you receive.

We hereby confirm that this Bid complies with the Bid validity and Bid Security required by the bidding documents and specified in the Bidding Data Sheet.

Commissions or gratuities, if any, paid or to be paid by us to agents relating to this Bid, and to contract execution if we are awarded the contract, are listed below:

Name and address of agent	Amount and Currency	Purpose of Commission or gratuity
_____	_____	_____
_____	_____	_____
_____	_____	_____

(if none, state "none")

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Bidder: _____

Address: _____

Qualification Information

- 1. Individual Bidders or Individual Members of Joint Ventures**
- 1.1 Constitution or legal status of Bidder: *[attach copy]*
 Place of registration: *[insert]*
 Principal place of business: *[insert]*
 Power of attorney of signatory of Bid: *[attach]*
- 1.2 Total annual volume of Services performed in five years, in the internationally traded currency specified in the BDS: *[insert]*
- 1.3 Services performed as prime Service Provider on the provision of Services of a similar nature and volume over the last five years. The values should be indicated in the same currency used for Item 1.2 above. Also list details of work under way or committed, including expected completion date.

Project name and country	Name of employer and contact person	Type of Services provided and year of completion	Value of contract
(a)			
(b)			

- 1.4 Major items of Service Provider's Equipment proposed for carrying out the Services. List all information requested below. Refer also to ITB Sub-Clause 5.4(c).

Item of equipment	Description, make, and age (years)	Condition (new, good, poor) and number available	Owned, leased (from whom?), or to be purchased (from whom?)
(a)			
(b)			

- 1.5 Qualifications and experience of key personnel proposed for administration and execution of the Contract. Attach biographical data. Refer also to ITB Sub-Clause 5.4(e) and GCC Clause 9.1.

Position	Name	Years of experience (general)	Years of experience in proposed

	position
(a)	
(b)	

1.6 Proposed subcontracts and firms involved. Refer to GCC Clause 7.

Sections of the Services	Value of subcontract	Subcontractor (name and address)	Experience in providing similar Services
(a)			
(b)			

1.7 Financial reports for the last five years: balance sheets, profit and loss statements, auditors' reports, etc. List below and attach copies.

1.8 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List below and attach copies of support documents. We certify/confirm that we comply with eligibility requirements as per ITB Clause 4.

1.9 Name, address, and telephone, telex, and facsimile numbers of banks that may provide references if contacted by the Employer.

1.10 Information regarding any litigation, current or within the last five years, in which the Bidder is or has been involved.

Other party(ies)	Cause of dispute	Details of litigation award	Amount involved
(a)			
(b)			

1.11 Statement of compliance with the requirements of ITB Sub-Clause 4.2.

1.12 Proposed Program (service work method and schedule). Descriptions, drawings, and charts, as necessary, to comply with

the requirements of the bidding documents.

- 2. Joint Ventures**
- 2.1 The information listed in 1.1 - 1.11 above shall be provided for each partner of the joint venture.
 - 2.2 The information in 1.12 above shall be provided for the joint venture.
 - 2.3 Attach the power of attorney of the signatory(ies) of the Bid authorizing signature of the Bid on behalf of the joint venture.
 - 2.4 Attach the Agreement among all partners of the joint venture (and which is legally binding on all partners), which shows that
 - (a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;
 - (b) one of the partners will be nominated as being in charge, authorized to incur liabilities, and receive instructions for and on behalf of any and all partners of the joint venture; and
 - (c) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge.
- 3. Additional Requirements**
- 3.1 Bidders should provide any additional information required in the BDS and to fulfill the requirements of ITB Sub-Clause 5.1, if applicable.

Letter of Acceptance

[letterhead paper of the Employer]

[date]

To: *[name and address of the Service provider]*

This is to notify you that your Bid dated *[date]* for execution of the *[name of the Contract and identification number, as given in the Special Conditions of Contract]* for the Contract Price of the equivalent of *[amount in numbers and words]* *[name of currency]*, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

Note: Insert one of the 3 options for the second paragraph. The first option should be used if the Bidder has not objected the name proposed for Adjudicator. The second option if the Bidder has objected the proposed Adjudicator and proposed a name for a substitute, who was accepted by the Employer. And the third option if the Bidder has objected the proposed Adjudicator and proposed a name for a substitute, who was not accepted by the Employer.

We confirm that *[insert name proposed by Employer in the Bidding Data]*,

or

We accept that *[name proposed by bidder]* be appointed as the Adjudicator

or

We do not accept that *[name proposed by bidder]* be appointed as Adjudicator, and by sending a copy of this letter of acceptance to *[insert the name of the Appointing Authority]*, we are hereby requesting *[name]*, the Appointing Authority, to appoint the Adjudicator in accordance with Clause 37.1 of the Instructions to Bidders

You are hereby instructed to proceed with the execution of the said contract for the provision of Services in accordance with the Contract documents.

Please return the attached Contract duly signed

Authorized Signature: _____

Name and Title of Signatory: _____

Name of Agency: _____

Attachment: Contract

Form of Contract

[letterhead paper of the Employer]

LUMP-SUM REMUNERATION

This CONTRACT (hereinafter called the “Contract”) is made the *[day]* day of the month of *[month]*, *[year]*, between, on the one hand, *[name of Employer]* (hereinafter called the “Employer”) and, on the other hand, *[name of Service Provider]* (hereinafter called the “Service Provider”).

[Note: In the text below text in brackets is optional; all notes should be deleted in final text. If the Service Provider consist of more than one entity, the above should be partially amended to read as follows: “...(hereinafter called the “Employer”) and, on the other hand, a joint venture consisting of the following entities, each of which will be jointly and severally liable to the Employer for all the Service Provider’s obligations under this Contract, namely, [name of Service Provider] and [name of Service Provider] (hereinafter called the “Service Provider”).]

WHEREAS

- (a) the Employer has requested the Service Provider to provide certain Services as defined in the General Conditions of Contract attached to this Contract (hereinafter called the “Services”);
- (b) the Service Provider, having represented to the Employer that they have the required professional skills, and personnel and technical resources, have agreed to provide the Services on the terms and conditions set forth in this Contract at a contract price of.....;
- (c) the Employer has received *[or has applied for]* a loan from the International Bank for Reconstruction and Development (hereinafter called the “Bank”) *[or a credit from the International Development Association (hereinafter called the “Association”)]* towards the cost of the Services and intends to apply a portion of the proceeds of this loan *[or credit]* to eligible payments under this Contract, it being understood (i) that payments by the Bank *[or Association]* will be made only at the request of the Employer and upon approval by the Bank *[or Association]*, (ii) that such payments will be subject, in all respects, to the terms and conditions of the agreement providing for the loan *[or credit]*, and (iii) that no party other than the Employer shall derive any rights from the agreement providing for the loan *[or credit]* or have any claim to the loan *[or credit]* proceeds;

NOW THEREFORE the parties hereto hereby agree as follows:

1. The following documents shall be deemed to form and be read and construed as part of this Agreement, and the priority of the documents shall be as follows:

- (a) the Letter of Acceptance;
- (b) the Service Provider’s Bid

- (c) the Special Conditions of Contract;
- (d) the General Conditions of Contract;
- (e) the Specifications;
- (f) the Priced Activity Schedule; and
- (g) The following Appendices: [**Note:** *If any of these Appendices are not used, the words “Not Used” should be inserted below next to the title of the Appendix and on the sheet attached hereto carrying the title of that Appendix.*]

Appendix A: Description of the Services

Appendix B: Schedule of Payments

Appendix C: Key Personnel and Subcontractors

Appendix D: Breakdown of Contract Price in Foreign Currency

Appendix E: Breakdown of Contract Price in Local Currency

Appendix F: Services and Facilities Provided by the Employer

Appendix G: Performance Incentive Compensation

2. The mutual rights and obligations of the Employer and the Service Provider shall be as set forth in the Contract, in particular:
 - (a) the Service Provider shall carry out the Services in accordance with the provisions of the Contract; and
 - (b) the Employer shall make payments to the Service Provider in accordance with the provisions of the Contract.

IN WITNESS WHEREOF, the Parties hereto have caused this Contract to be signed in their respective names as of the day and year first above written.

For and on behalf of *[name of Employer]*

[Authorized Representative]

For and on behalf of *[name of Service Provider]*

[Authorized Representative]

[Note: *If the Service Provider consists of more than one entity, all these entities should appear as signatories, e.g., in the following manner:]*

For and on behalf of each of the Members of the Service Provider

[name of member]

[Authorized Representative]

[name of member]

[Authorized Representative]

Bid Security (Bank Guarantee)

[The Bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]

Beneficiary: _____

Date: _____

BID GUARANTEE No.: _____

We have been informed that _____ (hereinafter called "the Bidder") has submitted to you its bid dated (hereinafter called "the Bid") for the execution of _____ under Invitation for Bids No. _____ ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we _____ hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of _____ (_____) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- (a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Form of Bid; or
- (b) having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity, (i) fails or refuses to execute the Contract Form; or (ii) fails or refuses to furnish the performance security, if required, in accordance with the Instructions to Bidders.

This guarantee will expire: (a) if the Bidder is the successful bidder, upon our receipt of copies of the contract signed by the Bidder and the performance security issued to you upon the instruction of the Bidder; or (b) if the Bidder is not the successful bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder of the name of the successful bidder; or (ii) twenty-eight days after the expiration of the Bidder's Bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.

[signature(s)]

Section IV. Eligible Countries

Eligibility for the Provision of Goods, Works and Services in Bank-Financed Procurement

1. In accordance with Para 1.8 of the Guidelines: Procurement under IBRD Loans and IDA Credits, dated May 2004, the Bank permits firms and individuals from all countries to offer goods, works and services for Bank-financed projects. As an exception, firms of a Country or goods manufactured in a Country may be excluded if:

Para 1.8 (a) (i): as a matter of law or official regulation, the Borrower's Country prohibits commercial relations with that Country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of the Goods or Works required, or

Para 1.8 (a) (ii): by an Act of Compliance with a Decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's Country prohibits any import of goods from that Country or any payments to persons or entities in that Country.

2. For the information of borrowers and bidders, at the present time firms, goods and services from the following countries are excluded from this bidding:

(a) With reference to paragraph 1.8 (a) (i) of the Guidelines:

(b) With reference to paragraph 1.8 (a) (ii) of the Guidelines:

Part II – Activity Schedule

Section V. Activity Schedule

Service	Description of Service	Quantity¹	Physical Unit	Unit Price	Total Price	Place where Services shall be performed	Final Completion Date(s) of Services
<i>[insert Service No]</i>	<i>[insert description of Related Services]</i>	<i>[insert quantity of items to be supplied]</i>	<i>[insert physical unit for the items]</i>			<i>[insert name of the Place]</i>	<i>[insert required Completion Date(s)]</i>
1.	Large repair (vp) of the locomotive series 1141	5	piece			Facilities of the Service Provider	1.6.2017
2.	Medium repair (mr) of the locomotive series 1141	2	piece			Facilities of the Service Provider	1.6.2017

Section V. Activity Schedule - Large repair of the locomotive series 1141

Service	Description of Service	Quantity¹	Physical Unit	Unit Price	Total Price	Place where Services shall be performed	Final Completion Date(s) of Services
1	DELIVERING THE LOCOMOTIVE FOR REPAIRS						
2	REVISION OF THE ROOF EQUIPMENT						
3	REVISION OF THE BOGIES						
4	REVISION OF THE ENGINE ROOM EQUIPMENT						
5	REVISION OF THE K – BLOCK						
6	CONDENSER RACKS OF A THREE-PHASE SYSTEM						
7	RESTRICTORS IN THE RACKS OF A THREE-PHASE SYSTEM						
8	REVISION OF THE S1-S4 MOTOR STAND						
9	REVISION OF THE S5 CABINET – AUXILIARY DRIVE						
10	REVISION OF THE S5 CABINET – THE RELAY SIDE						
11	REVISION OF THE AUTO-STOP DEVICE						
12	AIR COMPONENT REVISION						
13	REVISION OF THE CONTROL ROOM EQUIPMENT						
14	REVISION OF OTHER EQUIPMENT IN THE CONTROL ROOM						
15	REVISION OF EQUIPMENT FOUND ON THE CARBODY WITH BOGIES						
16	REVISION OF ELECTRICAL EQUIPMENT ON THE CARBODY AND BOGIE						
17	ROOF, CARBODY AND BOGIE REVISION						
18	REVISION OF OTHER EQUIPMENT						
19	PAINTING THE LOCOMOTIVE						
20	FINAL INSPECTION						

Section V. Activity Schedule - Medium repair of the locomotive series 1141

Service	Description of Service	Quantity¹	Physical Unit	Unit Price	Total Price	Place where Services shall be performed	Final Completion Date(s) of Services
1	DELIVERING THE LOCOMOTIVE FOR REPAIRS						
2	REVISION OF THE ROOF EQUIPMENT						
3	REVISION OF THE BOGIES						
4	REVISION OF THE ENGINE ROOM EQUIPMENT						
5	REVISION OF THE K - BLOCK						
6	PJUT						
7	REVISION OF THE S1-S4 MOTOR STAND						
8	REVISION OF THE S5 CABINET – AUXILIARY DRIVE						
9	REVISION OF THE S5 CABINET – THE RELAY SIDE						
10	REVISION OF THE AUTO-STOP DEVICE						
11	AIR COMPONENT REVISION						
12	REVISION OF THE CONTROL ROOM EQUIPMENT						
13	REVISION OF OTHER EQUIPMENT IN THE CONTROL ROOM						
14	REVISION OF EQUIPMENT FOUND ON THE CARBODY WITH BOGIES						
15	REVISION OF ELECTRICAL EQUIPMENT ON THE CARBODY AND BOGIE						
16	ROOF, CARBODY AND BOGIE REVISION						
17	REVISION OF OTHER EQUIPMENT						
18	PAINTING THE LOCOMOTIVE						
19	FINAL INSPECTION						

Part III – Conditions of Contract and Contract Forms

Section VI. General Conditions of Contract

Table of Clauses

A. General Provisions	53
1.1 Definitions.....	53
1.2 Applicable Law	54
1.3 Language.....	54
1.4 Notices	54
1.5 Location	55
1.6 Authorized Representatives	55
1.7 Inspection and Audit by the Bank.....	55
1.8 Taxes and Duties.....	55
2. Commencement, Completion, Modification, and Termination of Contract	55
2.1 Effectiveness of Contract.....	55
2.3 Intended Completion Date	55
2.4 Modification.....	56
2.5 Force Majeure	56
2.6 Termination.....	56
3. Obligations of the Service Provider.....	59
3.1 General	59
3.2 Conflict of Interests.....	59
3.3 Confidentiality	60
3.4 Insurance to be Taken Out by the Service Provider	60
3.5 Service Provider's Actions Requiring Employer's Prior Approval.....	60
3.6 Reporting Obligations	60
3.7 Documents Prepared by the Service Provider to Be the Property of the Employer.....	60
3.8 Liquidated Damages	61
3.9 Performance Security.....	61
4. Service Provider's Personnel	61
4.1 Description of Personnel.....	61
4.2 Removal and/or Replacement of Personnel	62
5. Obligations of the Employer	62
5.1 Assistance and Exemptions.....	62
5.2 Change in the Applicable Law.....	62
5.3 Services and Facilities.....	62
6. Payments to the Service Provider.....	62
6.1 Lump-Sum Remuneration.....	62
6.2 Contract Price.....	63

6.3	Payment for Additional Services, and Performance Incentive Compensation	63
6.4	Terms and Conditions of Payment.....	63
6.5	Interest on Delayed Payments.....	63
6.6	Price Adjustment.....	63
6.7	Dayworks	64
7.	Quality Control	64
7.1	Identifying Defects.....	64
7.2	Correction of Defects, and	65
8.	Settlement of Disputes	65
8.1	Amicable Settlement.....	65
8.2	Dispute Settlement	65

Section VI. General Conditions of Contract

A. General Provisions

1.1 Definitions

Unless the context otherwise requires, the following terms whenever used in this Contract have the following meanings:

- (a) The Adjudicator is the person appointed jointly by the Employer and the Contractor to resolve disputes in the first instance, as provided for in Sub-Clause 8.2 hereunder.
- (b) “Activity Schedule” is the priced and completed list of items of Services to be performed by the Service Provider forming part of his Bid;
- (c) “Bank” means the International Bank for Reconstruction and Development, Washington, D.C., U.S.A.;

or

- (c) “Association” means the International Development Association, Washington, D.C., U.S.A.;
- (d) “Completion Date” means the date of completion of the Services by the Service Provider as certified by the Employer
- (e) “Contract” means the Contract signed by the Parties, to which these General Conditions of Contract (GCC) are attached, together with all the documents listed in Clause 1 of such signed Contract;
- (f) “Contract Price” means the price to be paid for the performance of the Services, in accordance with Clause 6;
- (g) “Dayworks” means varied work inputs subject to payment on a time basis for the Service Provider’s employees and equipment, in addition to payments for associated materials and administration.
- (h) “Employer” means the party who employs the Service Provider
- (i) “Foreign Currency” means any currency other than the currency of the country of the Employer;
- (j) “GCC” means these General Conditions of Contract;
- (k) “Government” means the Government of the Employer’s country;
- (l) “Local Currency” means the currency of the country of the

Employer;

- (m) “Member,” in case the Service Provider consist of a joint venture of more than one entity, means any of these entities; “Members” means all these entities, and “Member in Charge” means the entity specified in the SC to act on their behalf in exercising all the Service Provider’ rights and obligations towards the Employer under this Contract;
- (n) “Party” means the Employer or the Service Provider, as the case may be, and “Parties” means both of them;
- (o) “Personnel” means persons hired by the Service Provider or by any Subcontractor as employees and assigned to the performance of the Services or any part thereof;
- (p) “Service Provider” is a person or corporate body whose Bid to provide the Services has been accepted by the Employer;
- (q) “Service Provider’s Bid” means the completed bidding document submitted by the Service Provider to the Employer
- (r) “SCC” means the Special Conditions of Contract by which the GCC may be amended or supplemented;
- (s) “Specifications” means the specifications of the service included in the bidding document submitted by the Service Provider to the Employer
- (t) “Services” means the work to be performed by the Service Provider pursuant to this Contract, as described in Appendix A; and in the Specifications and Schedule of Activities included in the Service Provider’s Bid.
- (u) “Subcontractor” means any entity to which the Service Provider subcontracts any part of the Services in accordance with the provisions of Sub-Clauses 3.5 and 4.

1.2 Applicable Law The Contract shall be interpreted in accordance with the laws of the Employer’s country, unless otherwise **specified in the Special Conditions of Contract (SCC)**.

1.3 Language This Contract has been executed in the language **specified in the SCC**, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Contract.

1.4 Notices Any notice, request, or consent made pursuant to this Contract shall be in writing and shall be deemed to have been made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent by registered mail, telex,

telegram, or facsimile to such Party at the address **specified in the SCC.**

- 1.5 Location** The Services shall be performed at such locations as are specified in Appendix A, in the specifications and, where the location of a particular task is not so specified, at such locations, whether in the Government's country or elsewhere, as the Employer may approve.
- 1.6 Authorized Representatives** Any action required or permitted to be taken, and any document required or permitted to be executed, under this Contract by the Employer or the Service Provider may be taken or executed by the officials **specified in the SCC.**
- 1.7 Inspection and Audit by the Bank** The Service Provider shall permit the Bank to inspect its accounts and records relating to the performance of the Services and to have them audited by auditors appointed by the Bank, if so required by the Bank.
- 1.8 Taxes and Duties** The Service Provider, Subcontractors, and their Personnel shall pay such taxes, duties, fees, and other impositions as may be levied under the Applicable Law, the amount of which is deemed to have been included in the Contract Price.

2. Commencement, Completion, Modification, and Termination of Contract

- 2.1 Effectiveness of Contract** This Contract shall come into effect on the date the Contract is signed by both parties or such other later date as may be **stated in the SCC.**
- 2.2 Commencement of Services**
- 2.2.1 Program** Before commencement of the Services, the Service Provider shall submit to the Employer for approval a Program showing the general methods, arrangements, order and timing for all activities. The Services shall be carried out in accordance with the approved Program as updated.
- Starting Date** The Service Provider shall start carrying out the Services thirty (30) days after the date the Contract becomes effective, or at such other date as may be **specified in the SCC.**
- 2.3 Intended Completion Date** Unless terminated earlier pursuant to Sub-Clause 2.6, the Service Provider shall complete the activities by the Intended Completion Date, as is **specified in the SCC.** If the Service Provider does not complete the activities by the Intended Completion Date, it shall be liable to pay liquidated damage as per Sub-Clause 3.8. In this case,

the Completion Date will be the date of completion of all activities.

2.4 Modification

Modification of the terms and conditions of this Contract, including any modification of the scope of the Services or of the Contract Price, may only be made by written agreement between the Parties and shall not be effective until the consent of the Bank or of the Association, as the case may be, has been obtained.

2.5 Force Majeure

2.5.1 Definition

For the purposes of this Contract, “Force Majeure” means an event which is beyond the reasonable control of a Party and which makes a Party’s performance of its obligations under the Contract impossible or so impractical as to be considered impossible under the circumstances.

2.5.2 No Breach of Contract

The failure of a Party to fulfill any of its obligations under the contract shall not be considered to be a breach of, or default under, this Contract insofar as such inability arises from an event of Force Majeure, provided that the Party affected by such an event (a) has taken all reasonable precautions, due care and reasonable alternative measures in order to carry out the terms and conditions of this Contract, and (b) has informed the other Party as soon as possible about the occurrence of such an event.

2.5.3 Extension of Time

Any period within which a Party shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

2.5.4 Payments

During the period of their inability to perform the Services as a result of an event of Force Majeure, the Service Provider shall be entitled to continue to be paid under the terms of this Contract, as well as to be reimbursed for additional costs reasonably and necessarily incurred by them during such period for the purposes of the Services and in reactivating the Service after the end of such period.

2.6 Termination

2.6.1 By the Employer

The Employer may terminate this Contract, by not less than thirty (30) days’ written notice of termination to the Service Provider, to be given after the occurrence of any of the events specified in paragraphs (a) through (d) of this Sub-Clause 2.6.1:

- (a) if the Service Provider does not remedy a failure in the performance of its obligations under the Contract, within thirty (30) days after being notified or within any further period as the Employer may have subsequently approved in

writing;

- (b) if the Service Provider become insolvent or bankrupt;
- (c) if, as the result of Force Majeure, the Service Provider is unable to perform a material portion of the Services for a period of not less than sixty (60) days; or
- (d) if the Service Provider, in the judgment of the Employer has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

For the purposes of this Sub-Clause:

- (i) “corrupt practice”⁸ is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
- (ii) “fraudulent practice”⁹ is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
- (iii) “collusive practice”¹⁰ is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
- (iv) “coercive practice”¹¹ is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
- (v) “obstructive practice” is
 - (aa) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt,

⁸ For the purpose of this Contract, “another party” refers to a public official acting in relation to the procurement process or contract execution. In this context, “public official” includes World Bank staff and employees of other organizations taking or reviewing procurement decisions.

⁹ For the purpose of this Contract, “party” refers to a public official; the terms “benefit” and “obligation” relate to the procurement process or contract execution; and the “act or omission” is intended to influence the procurement process or contract execution.

¹⁰ For the purpose of this Contract, “parties” refers to participants in the procurement process (including public officials) attempting to establish bid prices at artificial, non competitive levels.

¹¹ For the purpose of this Contract, “party” refers to a participant in the procurement process or contract execution.

fraudulent, coercive or collusive practice; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or

- (bb) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under para. 1.14 (e) of the Bank's Procurement Guidelines.

2.6.2 By the Service Provider

The Service Provider may terminate this Contract, by not less than thirty (30) days' written notice to the Employer, such notice to be given after the occurrence of any of the events specified in paragraphs (a) and (b) of this Sub-Clause 2.6.2:

- (a) if the Employer fails to pay any monies due to the Service Provider pursuant to this Contract and not subject to dispute pursuant to Clause 7 within forty-five (45) days after receiving written notice from the Service Provider that such payment is overdue; or
- (b) if, as the result of Force Majeure, the Service Provider is unable to perform a material portion of the Services for a period of not less than sixty (60) days.

2.6.3 Suspension of Loan or Credit

In the event that the World Bank suspends the loan or Credit to the Employer, from which part of the payments to the Service Provider are being made:

- (a) The Employer is obligated to notify the Service Provider of such suspension within 7 days of having received the World Bank's suspension notice.
- (b) If the Service Provider has not received sums due to by the due date stated in the SCC in accordance with Sub-Clause 6.5 the Service Provider may immediately issue a 14 day termination notice.

2.6.4 Payment upon Termination

Upon termination of this Contract pursuant to Sub-Clauses 2.6.1 or 2.6.2, the Employer shall make the following payments to the Service Provider:

- (a) remuneration pursuant to Clause 6 for Services satisfactorily performed prior to the effective date of termination;
- (b) except in the case of termination pursuant to paragraphs (a), (b), (d) of Sub-Clause 2.6.1, reimbursement of any reasonable cost incident to the prompt and orderly termination of the

Contract, including the cost of the return travel of the Personnel.

3. Obligations of the Service Provider

3.1 General

The Service Provider shall perform the Services in accordance with the Specifications and the Activity Schedule, and carry out its obligations with all due diligence, efficiency, and economy, in accordance with generally accepted professional techniques and practices, and shall observe sound management practices, and employ appropriate advanced technology and safe methods. The Service Provider shall always act, in respect of any matter relating to this Contract or to the Services, as faithful adviser to the Employer, and shall at all times support and safeguard the Employer's legitimate interests in any dealings with Subcontractors or third parties.

3.2 Conflict of Interests

3.2.1 Service Provider Not to Benefit from Commissions and Discounts.

The remuneration of the Service Provider pursuant to Clause 6 shall constitute the Service Provider's sole remuneration in connection with this Contract or the Services, and the Service Provider shall not accept for their own benefit any trade commission, discount, or similar payment in connection with activities pursuant to this Contract or to the Services or in the discharge of their obligations under the Contract, and the Service Provider shall use their best efforts to ensure that the Personnel, any Subcontractors, and agents of either of them similarly shall not receive any such additional remuneration.

3.2.2 Service Provider and Affiliates Not to be Otherwise Interested in Project

The Service Provider agree that, during the term of this Contract and after its termination, the Service Provider and its affiliates, as well as any Subcontractor and any of its affiliates, shall be disqualified from providing goods, works, or Services (other than the Services and any continuation thereof) for any project resulting from or closely related to the Services.

3.2.3 Prohibition of Conflicting Activities

Neither the Service Provider nor its Subcontractors nor the Personnel shall engage, either directly or indirectly, in any of the following activities:

- (a) during the term of this Contract, any business or professional activities in the Government's country which would conflict

with the activities assigned to them under this Contract;

- (b) during the term of this Contract, neither the Service Provider nor their Subcontractors shall hire public employees in active duty or on any type of leave, to perform any activity under this Contract;
- (c) after the termination of this Contract, such other activities as may be **specified in the SCC**.

3.3 Confidentiality

The Service Provider, its Subcontractors, and the Personnel of either of them shall not, either during the term or within two (2) years after the expiration of this Contract, disclose any proprietary or confidential information relating to the Project, the Services, this Contract, or the Employer's business or operations without the prior written consent of the Employer.

3.4 Insurance to be Taken Out by the Service Provider

The Service Provider (a) shall take out and maintain, and shall cause any Subcontractors to take out and maintain, at its (or the Subcontractors', as the case may be) own cost but on terms and conditions approved by the Employer, insurance against the risks, and for the coverage, as shall be **specified in the SCC**; and (b) at the Employer's request, shall provide evidence to the Employer showing that such insurance has been taken out and maintained and that the current premiums have been paid.

3.5 Service Provider's Actions Requiring Employer's Prior Approval

The Service Provider shall obtain the Employer's prior approval in writing before taking any of the following actions:

- (a) entering into a subcontract for the performance of any part of the Services,
- (b) appointing such members of the Personnel not listed by name in Appendix C ("Key Personnel and Subcontractors"),
- (c) changing the Program of activities; and
- (d) any other action that may be **specified in the SCC**.

3.6 Reporting Obligations

The Service Provider shall submit to the Employer the reports and documents specified in Appendix B in the form, in the numbers, and within the periods set forth in the said Appendix.

3.7 Documents Prepared by the Service Provider to Be the Property of the Employer

All plans, drawings, specifications, designs, reports, and other documents and software submitted by the Service Provider in accordance with Sub-Clause 3.6 shall become and remain the property of the Employer, and the Service Provider shall, not later than upon termination or expiration of this Contract, deliver all such documents and software to the Employer, together with a

detailed inventory thereof. The Service Provider may retain a copy of such documents and software. Restrictions about the future use of these documents, if any, shall be **specified in the SCC**.

3.8 Liquidated Damages

3.8.1 Payments of Liquidated Damages The Service Provider shall pay liquidated damages to the Employer at the rate per day **stated in the SCC** for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount **defined in the SCC**. The Employer may deduct liquidated damages from payments due to the Service Provider. Payment of liquidated damages shall not affect the Service Provider's liabilities.

3.8.2 Correction for Overpayment If the Intended Completion Date is extended after liquidated damages have been paid, the Employer shall correct any overpayment of liquidated damages by the Service Provider by adjusting the next payment certificate. The Service Provider shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in Sub-Clause 6.5.

3.8.3 Lack of performance penalty If the Service Provider has not corrected a Defect within the time specified in the Employer's notice, a penalty for Lack of performance will be paid by the Service Provider. The amount to be paid will be calculated as a percentage of the cost of having the Defect corrected, assessed as described in Sub-Clause 7.2 and **specified in the SCC**.

3.9 Performance Security The Service Provider shall provide the Performance Security to the Employer no later than the date specified in the Letter of acceptance. The Performance Security shall be issued in an amount and form and by a bank or surety acceptable to the Employer, and denominated in the types and proportions of the currencies in which the Contract Price is payable. The performance Security shall be valid until a date 28 days from the Completion Date of the Contract in case of a bank guarantee, and until one year from the Completion Date of the Contract in the case of a Performance Bond.

4. Service Provider's Personnel

4.1 Description of Personnel The titles, agreed job descriptions, minimum qualifications, and estimated periods of engagement in the carrying out of the Services of the Service Provider's Key Personnel are described in Appendix C. The Key Personnel and Subcontractors listed by title as well as

by name in Appendix C are hereby approved by the Employer.

4.2 Removal and/or Replacement of Personnel

- (a) Except as the Employer may otherwise agree, no changes shall be made in the Key Personnel. If, for any reason beyond the reasonable control of the Service Provider, it becomes necessary to replace any of the Key Personnel, the Service Provider shall provide as a replacement a person of equivalent or better qualifications.
- (b) If the Employer finds that any of the Personnel have (i) committed serious misconduct or have been charged with having committed a criminal action, or (ii) have reasonable cause to be dissatisfied with the performance of any of the Personnel, then the Service Provider shall, at the Employer's written request specifying the grounds thereof, provide as a replacement a person with qualifications and experience acceptable to the Employer.
- (c) The Service Provider shall have no claim for additional costs arising out of or incidental to any removal and/or replacement of Personnel.

5. Obligations of the Employer

5.1 Assistance and Exemptions

The Employer shall use its best efforts to ensure that the Government shall provide the Service Provider such assistance and exemptions as **specified in the SCC.**

5.2 Change in the Applicable Law

If, after the date of this Contract, there is any change in the Applicable Law with respect to taxes and duties which increases or decreases the cost of the Services rendered by the Service Provider, then the remuneration and reimbursable expenses otherwise payable to the Service Provider under this Contract shall be increased or decreased accordingly by agreement between the Parties, and corresponding adjustments shall be made to the amounts referred to in Sub-Clauses 6.2 (a) or (b), as the case may be.

5.3 Services and Facilities

The Employer shall make available to the Service Provider the Services and Facilities listed under Appendix F.

6. Payments to the Service Provider

6.1 Lump-Sum Remuneration

The Service Provider's remuneration shall not exceed the Contract Price and shall be a fixed lump-sum including all Subcontractors' costs, and all other costs incurred by the Service Provider in carrying out the Services described in Appendix A. Except as provided in Sub-Clause 5.2, the Contract Price may only be increased above the

amounts stated in Sub-Clause 6.2 if the Parties have agreed to additional payments in accordance with Sub-Clauses 2.4 and 6.3.

- 6.2 Contract Price**
- (a) The price payable in local currency is **set forth in the SCC**.
 - (b) The price payable in foreign currency is **set forth in the SCC**.
- 6.3 Payment for Additional Services, and Performance Incentive Compensation**
- 6.3.1 For the purpose of determining the remuneration due for additional Services as may be agreed under Sub-Clause 2.4, a breakdown of the lump-sum price is provided in Appendices D and E.
 - 6.3.2 **If the SCC so specify**, the service provider shall be paid performance incentive compensation as set out in the Performance Incentive Compensation appendix.
- 6.4 Terms and Conditions of Payment**
- Payments will be made to the Service Provider according to the payment schedule **stated in the SCC**. **Unless otherwise stated in the SCC**, the advance payment (Advance for Mobilization, Materials and Supplies) shall be made against the provision by the Service Provider of a bank guarantee for the same amount, and shall be valid for the period **stated in the SCC**. Any other payment shall be made after the conditions **listed in the SCC** for such payment have been met, and the Service Provider have submitted an invoice to the Employer specifying the amount due.
- 6.5 Interest on Delayed Payments**
- If the Employer has delayed payments beyond fifteen (15) days after the due date stated in the SCC, interest shall be paid to the Service Provider for each day of delay at the rate stated in the SCC.
- 6.6 Price Adjustment**
- 6.6.1 Prices shall be adjusted for fluctuations in the cost of inputs only if **provided for in the SCC**. If so provided, the amounts certified in each payment certificate, after deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amounts due in each currency. A separate formula of the type indicated below applies to each Contract currency:
- $$P_c = A_c + B_c \text{ Lmc/Loc} + C_c \text{ Imc/Ioc}$$
- Where:
- P_c is the adjustment factor for the portion of the Contract Price payable in a specific currency “c”.
- A_c , B_c and C_c are coefficients specified in the SCC, representing: A_c the nonadjustable portion; B_c the adjustable portion relative to labor costs and C_c the adjustable portion for other inputs, of the Contract Price payable in that specific currency “c”; and

Lmc is the index prevailing at the first day of the month of the corresponding invoice date and Loc is the index prevailing 28 days before Bid opening for labor; both in the specific currency “c”.

Imc is the index prevailing at the first day of the month of the corresponding invoice date and Ioc is the index prevailing 28 days before Bid opening for other inputs payable; both in the specific currency “c”.

If a price adjustment factor is applied to payments made in a currency other than the currency of the source of the index for a particular indexed input, a correction factor Z_o/Z_n will be applied to the respective component factor of pn for the formula of the relevant currency. Z_o is the number of units of currency of the country of the index, equivalent to one unit of the currency payment on the date of the base index, and Z_n is the corresponding number of such currency units on the date of the current index.

6.6.2 If the value of the index is changed after it has been used in a calculation, the calculation shall be corrected and an adjustment made in the next payment certificate. The index value shall be deemed to take account of all changes in cost due to fluctuations in costs.

6.7 Dayworks

6.7.1 If applicable, the Daywork rates in the Service Provider’s Bid shall be used for small additional amounts of Services only when the Employer has given written instructions in advance for additional services to be paid in that way.

6.7.2 All work to be paid for as Dayworks shall be recorded by the Service Provider on forms approved by the Employer. Each completed form shall be verified and signed by the Employer representative as indicated in Sub-Clause 1.6 within two days of the Services being performed.

6.7.3 The Service Provider shall be paid for Dayworks subject to obtaining signed Dayworks forms as indicated in Sub-Clause 6.7.2

7. Quality Control

7.1 Identifying Defects

The principle and modalities of Inspection of the Services by the Employer shall be as **indicated in the SCC**. The Employer shall check the Service Provider’s performance and notify him of any Defects that are found. Such checking shall not affect the Service

Provider's responsibilities. The Employer may instruct the Service Provider to search for a Defect and to uncover and test any service that the Employer considers may have a Defect. Defect Liability Period is as **defined in the SCC**.

7.2 Correction of Defects, and Lack of Performance Penalty

- (a) The Employer shall give notice to the Service Provider of any Defects before the end of the Contract. The Defects liability period shall be extended for as long as Defects remain to be corrected.
- (b) Every time notice a Defect is given, the Service Provider shall correct the notified Defect within the length of time specified by the Employer's notice.
- (c) If the Service Provider has not corrected a Defect within the time specified in the Employer's notice, the Employer will assess the cost of having the Defect corrected, the Service Provider will pay this amount, and a Penalty for Lack of Performance calculated as described in Sub-Clause 3.8.

8. Settlement of Disputes

8.1 Amicable Settlement

The Parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.

8.2 Dispute Settlement

8.2.1 If any dispute arises between the Employer and the Service Provider in connection with, or arising out of, the Contract or the provision of the Services, whether during carrying out the Services or after their completion, the matter shall be referred to the Adjudicator within 14 days of the notification of disagreement of one party to the other.

8.2.2 The Adjudicator shall give a decision in writing within 28 days of receipt of a notification of a dispute.

8.2.3 The Adjudicator shall be paid by the hour at the rate **specified in the BDS and SCC**, together with reimbursable expenses of the types **specified in the SCC**, and the cost shall be divided equally between the Employer and the Service Provider, whatever decision is reached by the Adjudicator. Either party may refer a decision of the Adjudicator to an Arbitrator within 28 days of the Adjudicator's written decision. If neither party refers the dispute to arbitration within the above 28 days, the Adjudicator's decision will be final and binding.

8.2.4 The arbitration shall be conducted in accordance with the arbitration procedure published by the institution named and in

the place **shown in the SCC**.

- 8.2.5 Should the Adjudicator resign or die, or should the Employer and the Service Provider agree that the Adjudicator is not functioning in accordance with the provisions of the Contract, a new Adjudicator will be jointly appointed by the Employer and the Service Provider. In case of disagreement between the Employer and the Service Provider, within 30 days, the Adjudicator shall be designated by the Appointing Authority **designated in the SCC** at the request of either party, within 14 days of receipt of such request.

Section VII. Special Conditions of Contract

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
1.1	The words “in the Government’s country” are amended to read in Croatia.
1.1(a)	The Adjudicator is: The Permanent Arbitration Court at the Croatian Chamber of Economy, Rooseveltov trg 2, p.p. 630, HR-10000, Zagreb, Hrvatska, telefon (+385 1) 4848-622, 4848-623, telefaks: (+385 1) 4848-625, e-mail: sudiste@hgk.hr
1.1(e)	The contract name is: <i>Repair and modernization of the electric locomotives series 1141, HZC-ICB 07/15</i>
1.1(h)	The Employer is HŽ Cargo d.o.o., Heinzelova 51, 10 000 Zagreb.
1.1(m)	The Member in Charge is _____
1.1(p)	The Service Provider is _____
1.2	The Applicable Law is: Croatian
1.3	The language is English
1.4	The addresses are: Employer: HŽ Cargo d.o.o., Heinzelova 51, 10 000 Zagreb Attention: Mateo Karamati Adress: Heinzelova 51, Room number 13, 10 000 Zagreb Telex: +385/1 4533869 Facsimile: +385/1 4577617 Service Provider: _____ Attention: _____ Telex: _____ Facsimile: _____

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
1.6	<p>The Authorized Representatives are:</p> <p>For the Employer: Danijel Kraki , President of the Management Board</p> <p>For the Service Provider: _____</p>
2.1	<p>The date on which this Contract shall come into effect is <i>one week after signing of the Contract by both parties.</i></p>
2.2.2	<p>The Starting Date for the commencement of Services is 01.01.2017</p>
2.3	<p>The Intended Completion Date is 1.6.2017</p>
3.2.3	<p>Activities prohibited after termination of this Contract are: None</p> <p>_____</p>
3.4	<p>The risks and coverage by insurance shall be:</p> <ul style="list-style-type: none"> (i) Third Party motor vehicle: None (ii) Third Party liability: Yes (iii) Employer’s liability and workers’ compensation: None (iv) Professional liability: None (v) Loss or damage to equipment and property: None
3.7	<p>Restrictions on the use of documents prepared by the Service Provider are:</p> <p>Documents used only for Bidding purposes and data confidentiality guaranteed</p>
3.8.1	<p>The liquidated damages rate is 0.10 percent per day</p> <p>The maximum amount of liquidated damages for the whole contract is 10 % of the final Contract Price.</p>
3.8.3	<p>The percentage to be used for the calculation of Lack of performance Penalty(ies) is 2%. <i>The Invoice amount will be reduced by this percentage for each day exceeding the deadline.</i></p>
5.1	<p>The assistance and exemptions provided to the Service Provider are:</p> <p>Not applicable</p>
6.2(a)	<p>The amount in local currency is _____.</p>

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
6.2(b)	The amount in foreign currency or currencies is _____.
6.3.2	The performance incentive paid to the Service Provider shall be: _____ NOT APPLICABLE
6.4	<p>Payments shall be made according to the following schedule:</p> <ul style="list-style-type: none"> • Advance for Mobilization, Materials and Supplies: 30% percent of the Contract Price shall be paid on the commencement date against the submission of a bank guarantee for the same. • Progress payments in accordance with the milestones established as follows, subject to certification by the Employer, that the Services have been rendered satisfactorily, pursuant to the performance indicators: <ul style="list-style-type: none"> ➤ After 3 locomotive repairs (indicate milestone and/or percentage) 30% ➤ After 2 locomotive repairs (indicate milestone and/or percentage) 20% and ➤ After 2 locomotive repairs (indicate milestone and/or percentage) 20% <p>Should the certification not be provided, or refused in writing by the employer within one month of the date of the milestone, or of the date of receipt of the corresponding invoice, the certification will be deemed to have been provided, and the progress payment will be released at such date.</p> <ul style="list-style-type: none"> • The amortization of the Advance mentioned above shall commence when the progress payments have reached 25% of the contract price and be completed when the progress payments have reached 75%. • The bank guarantee for the advance payment shall be released when the advance payment has been fully amortized.
6.5	<p>Payment shall be made within 60 days of receipt of the invoice and the relevant documents specified in Sub-Clause 6.4, and within 60 days in the case of the final payment.</p> <p>The interest rate is 6%.</p>
6.6.1	<p>Price adjustment is <i>NOT APPLICABLE</i> in accordance with Sub-Clause 6.6.</p> <p>The coefficients for adjustment of prices are _____:</p> <p>(a) For local currency:</p> <p style="padding-left: 40px;">A_L is _____</p>

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
	<p>B_L is _____</p> <p>C_L is _____</p> <p>L_{mc} and L_{oc} are the index for Labor from _____</p> <p>I_{mc} and I_{oc} are the index for _____ from _____</p> <p>(b) For foreign currency</p> <p>A_F is _____</p> <p>B_F is _____</p> <p>C_F is _____</p> <p>L_{mc} and L_{oc} are the index for Labor from _____</p> <p>I_{mc} and I_{oc} are the index for _____ from _____</p>
7.1	<p>The principle and modalities of inspection of the Services by the Employer are as follows: <i>establish minimum 5 phases of control.</i></p> <p>The Defects Liability Period is <i>12 months or 365 days from the day of signing the minutes that the locomotive is ready for traffic.</i></p>
8.2.3	<p>The Adjudicator is The Permanent Arbitration Court at the Croatian Chamber of Economy, Rooseveltov trg 2, p.p. 630, HR-10000, Zagreb, Hrvatska, telefon (+385 1) 4848-622, 4848-623, telefaks: (+385 1) 4848-625, e-mail: sudiste@hgk.hr. Who will be paid a rate of 700,00 HRK per hour of work. The following reimbursable expenses are recognized:</p> <p>_____</p>
8.2.4	<p>The arbitration procedures of <i>The Permanent Arbitration Court at the Croatian Chamber of Economy, Rooseveltov trg 2, p.p. 630, HR-10000, Zagreb, Hrvatska</i> will be used.</p>
8.2.5	<p>The designated Appointing Authority for a new Adjudicator is <i>the competent court in Zagreb, Croatia.</i></p>

Appendix A: Description of the Services

DESCRIPTION OF WORKS

MEDIUM REPAIR

OF THE SERIES 1 141 LOCOMOTIVE

Composed by:

Goran Juriši , engineering graduate

Zagreb, March 2015

CONTENT

DESCRIPTION OF WORKS

STAGE

- 1 DELIVERING THE LOCOMOTIVE FOR REPAIRS**
- 2 REVISION OF THE ROOF EQUIPMENT**
- 3 REVISION OF THE BOGIES**
- 4 REVISION OF THE ENGINE ROOM EQUIPMENT**
- 5 REVISION OF THE K - BLOCK**
- 6 PJUT**
- 7 REVISION OF THE S1-S4 MOTOR STAND**
- 8 REVISION OF THE S5 CABINET – AUXILIARY DRIVE**
- 9 REVIISION OF THE S5 CABINET – THE RELAY SIDE**
- 10 REVISION OF THE AUTO-STOP DEVICE**
- 11 AIR COMPONENT REVISION**
- 12 REVISION OF THE CONTROL ROOM EQUIPMENT**
- 13 REVISION OF OTHER EQUIPMENT IN THE CONTROL ROOM**
- 14 REVISION OF EQUIPMENT FOUND ON THE CARBODY WITH BOGIES**
- 15 REVISION OF ELECTRICAL EQUIPMENT ON THE CARBODY AND BOGIE**
- 16 ROOF, CARBODY AND BOGIE REVISION**
- 17 REVISION OF OTHER EQUIPMENT**
- 18 PAINTING THE LOCOMOTIVE**
- 19 FINAL INSPECTION**

1. DELIVERING THE LOCOMOTIVE FOR REPAIRS

- 1.1 The locomotive is delivered for repairs after a complete inspection and with a sheet of needed repair work, a returned, after defectation, on a turn-key basis.
The key and the log are being handed over with the locomotive.

2. REVISION OF THE ROOF EQUIPMENT

2.1 PANTOGRAPH

- Disassemble the pantograph
- Inspect the components, replace the faulty and worn out ones
- Test the springs, and replace the faulty ones
- Paint the metal construction components
- Lubricate the components and assemble the pantograph
- Install new pantograph sliders
- Adjust the parameters: lifting speed, force, height
- Test the pantograph and provide a measurement sheet

2.2 PANTOGRAPH CYLINDER

- Disassemble the pantograph cylinder
- Clean and wash the components
- Inspect the components (measure the cylinder sheath)
- Replace the faulty and worn out components
- Assemble and lubricate the pantograph cylinder
- Test and provide a measurement sheet

2.3 PANTOGRAPH VALVE

- Disassemble the pantograph valve
- Clean, wash and inspect
- Replace the faulty components
- Assemble the pantograph valve
- Test and provide a measurement sheet

2.4 PANTOGRAPH POST INSULATOR

- Clean the post insulator
- Inspect the roof insulators for possible mechanical and electrical defects
- Replace the damaged insulators
- Inspect the insulator fixture
- Paint the insulator metal components
- Silicone the insulators

2.5 Busbar

- Clean the busbar
- Inspect the busbar for mechanical and electrical defects, repair if needed
- Coat the busbar with anticorrosive protection
- Inspect and replace the damaged elastic ties, and tin the points of contact
- Replace the damaged insulators

2.6 PNEUMATIC ROOF INSTALLATION

- Clean the pipe of corrosion and filth from the outside
- Clean the pipes with compressed air and inspect
- Coat the pipes with anticorrosive protection from the outside
- Fix the terminals
- Inspect the connections of the installation with the car-body and replace the flexible pipes

2.7 LOCOMOTIVE AIRHORN

- Install new two-tone locomotive air horns on the roof and position them facing the direction of travel
- In front of the air horn install a protective net facing the direction of travel
- Test the air horn

2.8 RD DEVICE ANTENNA

- Clean and inspect the protective housing
- While testing the locomotive test the antenna
- Inspect the antenna and cable connector and replace if needed

2.9 AIR CONDITIONER

- Perform a complete revision of the COLEMAN air conditioner in accordance with the user's manual

2.10 MAIN SWITCH

- Perform a complete revision of the main switch in accordance with the user's manual
- Test the switch in accordance with the user's manual

2.11 CATODE OVER-VOLTAGE ARRESTER

- Clean the over-voltage arrester
- Inspect the porcelain for possible mechanical and electrical damage
- Inspect the fixtures and connections
- Paint the metal components of the over-voltage arrester

2.12 PANTOGRAPH DISCONNECTOR

- Disassemble the roof disconnecter
- Clean the insulators
- Inspect the insulators for possible mechanical and electrical damage (replace the damaged ones)
- Disassemble the contact blade, shoe and the driving axle
- Perform a functionality analysis of contact blades and shoes (replace the faulty ones)
- Assemble the contact knife, shoe and driving axle
- Replace the gasket underneath the basic board
- Replace the o - rings
- Assemble the disconnecter
- Monitor the disconnecter

2.13 DISCONNECTOR FOR LOCOMOTIVE GROUNDING

- Perform a functionality analysis of contact blades and shoes (replace the faulty ones)
- Inspect and repair or replace the locks if needed
- Lubricate the disconnecter mechanism

- Monitor the performance and the transference of the switch micro confirmation
- Monitor the disconnecter

2.14 PRIMARY TRANSFORMER WITH A BUSHING INSULATOR

- Clean the parts
- Inspect the components for mechanical and electrical damage, replace the damaged ones
- Replace the rubber gaskets
- Coat the flange with an anticorrosive protection
- Assemble the transformer with the bushing insulator
- Test the insulation resistance of the transformer against mass
- Provide a measurement sheet

2.15 VOLTAGE TRANSFORMER

- Clean the parts
- Inspect the transformer body
- Clean and seal the junction box and connections
- Inspect the condition of the voltage transformer fuse
- Provide a measurement sheet

2.16 ROOF C METAL CONSTRUCTION

- Perform an inspection of the roof metal construction
- Clean and wash the roof metal construction
- Paint the construction from the bottom and topside (if needed)

3. REVISION OF THE BOGIES

3.1 BOGIES

- De-install the bogies
- De-install all the equipment from the bogies

3.2 TRACTION ELECTRIC MOTORS

- De-install the traction motor
- Clean the nameplate
- Disassemble the motor
- Wash the stator and the rotor. Test the insulation before washing and after drying.
- Clean the insulators of the brush holders and the brush holders. Repair the insulation coating.
- Inspect the traction engine bearings and replace the damaged ones
- Clean and varnish the collector slide rails
- Check the rotor flange, replace if damaged
- Test the commutator surface and measure the ovality and impact
- Turn and repair the commutator
- Repair the insulation coating on the commutator flags
- Measure the suppresser power on the holder. Replace the faulty holders
- Install new brushes
- Insulate anew the commutator ring
- Replace the damaged motor cables
- Lubricate the rotation mechanism
- Test the motor winding resistance
- Measure the motor insulation resistance against mass. Repair a faulty motor
- Break in the keys of the motor lid

- Install the traction motor
- Lubricate the motor and replace the re-greasing devices
- Provide a measurement sheet

3.3 **TORSIONAL SHAFT AND TRACTION ASSEMBLY**

- Disassemble, wash and inspect the gear coupling
- In accordance with defectation replace the faulty gear coupling
- Inspect the torsional shaft
- Replace both o- rings of the gear coupling
- Install rubber lids onto the gear couplings
- Fill the gear coupling with LIMA 180 EPG lubricant
- Inspect the plugs

3.4 **REVISION OF THE BOGIE FRAME**

- Wash the frames and clean the frame conjunctive surfaces
- Replace the bushings for brake linkage hangers and gear unit
- Inspect the spark arresters and repair damages
- Test the firmness of the central pin fitting
- Measure the frame
- Inspect the frame (welds and cracks) and repair damages
- Test the housing of the central clamping (welds and cracks) and repair damages
- Coat the frame with anticorrosive protection

3.5 **REVISION OF THE CRADLE AND HANGERS**

- De-install the cradle and the hangers from the bogie
- Wash the cradle and the hangers and the safety ropes
- Inspect the cradle (welds and cracks) and repair damages
- Measure the cradle in accordance with the measurement sheet
- Measure the shock absorber pins
- Replace the damaged shock absorber pins
- Coat the cradle with anticorrosive protection
- Replace the rubber-metal components of the central pin and central pin protection
- Inspect the hangers and replace the faulty ones
- Replace the rubber-metal hanger components and hanger protection
- Replace the drawbar bushings
- Install the cradle and the hangers onto the bogie
- Provide a measurement sheet

3.6 **TRACTION MOTOR SUSPENSION**

- Wash the components
- Inspect the fittings and replace the faulty parts

3.7 **REVISION OF THE SECONDARY SUSPENSION AND LATERAL CLAMPING OF THE BOX**

- Wash the yokes, springs and drawbars
- Inspect the parts
- Measure the shock absorber pins and replace the damaged ones
- Coat the parts with anticorrosive protection
- Replace the rubber-metal components of the drawbar

- Replace the rubber-metal components of the lateral buffer
- Replace the rubber-metal spring components
- Replace the horizontal and vertical shock absorbers
- Test and pair up springs, replace the faulty ones

3.8 REVISION OF THE PRIMARY SUSPENSION

- Wash the parts
- Inspect the beams and repair damages
- Inspect and replace the damaged shock absorber pins
- Measure the rubber-metal L9 component holders and replace the damaged ones
- Replace the rubber-metal L9 components
- Install new AM 8x1 re-greasing devices

3.9 REVISION OF THE AXLE BEARINGS

- De-install the axle bearing housing
- Wash the de-installed components
- Inspect the axle bearings and replace the damaged ones
- Inspect other components
- Install axle bearings, rubber elements of the axle bearings and safety
- Install the axle bearing housing
- Provide a measurement sheet

3.10 REVISION OF THE AXLE ASSEMBLY

- Release the oil from the gear unit
- Wash the axle assembly
- De-install the safety stop and the reaction bar from the housing
- Test the axles with ultrasound
- Install new wheels if the radius of the existing ones is smaller than allowed

3.11 REVISION OF THE GEAR UNIT

- It is necessary to re-seal the gear unit
- Monitor the condition of the magnetic plug
- Monitor the condition of the vent pipe and the lid and repair the faulty or damaged ones
- Repair the axial clearance of the small gear
- Repair the reaction bar and clamping
- Replace the GME reaction bars
- Monitor the tothing of the gear through an opening in the housing
- If needed tighten the housing of the reaction bar pin
- Check the tightness of the binding screws of the relay housing poles
- Replace the relay oil
- Lubricate the relay bearings
- Install new re-greasing devices

3.12 REVISION OF THE ELASTIC COUPLER

- De-install the elastic coupler
- De-install the driver from its housing
- Disassemble the driver
- Wash the components
- Inspect the tothing of the drive gear and repair the damages
- Inspect the lids of the driver and replace the damaged ones

- Inspect the NJ 324 bearings and replace if faulty
- Replace the GME elastic couplers with bolts
- Assemble the drive
- Install the drive
- Install the elastic coupler

3.13 REVISION OF THE GEAR UNIT SAFETY JOINT

- Wash the parts
- Inspect the parts
- Replace the pins
- Replace the fittings and the plastic bushing

3.14 REVISION OF THE BRAKE SLACK AND SLACK ADJUSTER

- De-install the brake linkage and adjusters from the bogie
- Disassemble the brake linkage
- Wash the components
- Replace the bushing and pins on the slack
- Install repaired slack adjusters. Attach the testing sheet
- Measure the fitting of the brake shaft journal and repair the damages
- Assemble and install the parts of the brake slack. Install new re-greasing devices
- Lubricate the joints and flows
- Replace the bearing and the springs of the brake slack
- Inspect and repair the mechanism of the hand brake clamp
- Repair the equalizers of the brake insert holder
- Monitor the mobility and clearance of the slack
- Fasten the brake slack and adjuster with steel cords
- Install the brake slack and adjusters onto the bogie
- Provide measurement sheets

3.15 LOCOMOTIVE MAGNETS OF THE AS DEVICE

- De-install the locomotive magnets and protective sheet metal
- Disassemble the locomotive magnets from the girder and brake in the threads
- Clean and visually inspect the locomotive magnets and connectors
- Install new cables and cable glands onto the locomotive magnet connectors
- Test the AS-device of the locomotive magnet
- Install the locomotive magnets onto girders
- Install protective metal sheets of the locomotive magnet

3.16 GROUNDING UNIT OF THE AXLE ASSEMBLY

- Clean, wash and inspect the components
- Replace the grounding contact
- Monitor the connecting cable, and replace the damaged one
- Monitor the mobility of the contact disc and spring
- Clean the cables and grounding plates

3.17 SPEED SENSOR

- Install a new speed sensor and cable (for KWR 6)
- TŽV Gredelj is compiling documentation for installation

3.18 REVISION OF BOGIE PNEUMATIC EQUIPMENT

- Revise the 10" brake cylinders : in accordance with RK2
- All bogie pneumatic pipes should be cleaned with compressed air and of corrosion
- Connective flexible pipes connected to the crate should be replaced with new ones

3.19 DEVICE FOR LUBRICATING THE WHEEL RIM

- Clean the lubricant reservoir
- Clean and inspect the pumps. Replace the faulty and damaged ones
- Clean the pipes with compressed air and repair
- Replace faulty re-greasing devices
- Replace damaged flexible pipes
- Test the re-greasing devices
- If not installed, install a new re-greasing device for the wheel rim

3.21 SAND BLASTERS

- Release the sand from the reservoir. Clean the reservoirs
- De-install the girders and diffusers, replace the faulty and damaged ones
- Clean the nozzles
- Replace the damaged air hoses connected to nozzles
- Replace the damaged hoses for draining sand and repair the support hoses
- Install reservoir lids on hinges (same as on the tilting train)
- Test the sandblasters
- If not done already, the sandblasters should be modified (in accordance with the 100 series)

3.22 STAND ASSEMBLY

- Assemble the bogies
- The frame with the cradle should be lowered onto the axle assemblies
- Install traction electric MOTORS onto the chassis and connect them to the relay
- Connect and secure the brake slack
- Adjust the bogie measures
- Adjust the position of the traction electric motor
- Adjust the measures between the plates of the torsional shaft and elastic coupler
- Adjust the vertical and horizontal relay deflection
- Adjust the cross measure
- Adjust the measures of the axle assembly

4. REVISION OF THE ENGINE ROOM EQUIPMENT**4.1 MAIN TRANSFORMER**

- Wash the main transformer tank from the outside
- Clean the insulators and connections and replace the faulty components
- Centrifuge the oil
- Test the opening of the safety valve and the closing of flaps
- Replace the connecting pipes
- Replace the agent in the moisture collector
- Test the transformer in accordance with the transformer testing programme MLR 5500

- Provide a measurement sheet

4.2 **VOLTAGE SELECTOR SWITCH**

- Perform a complete revision of the voltage selector switch in accordance with the user's manual
- Test the voltage selector switch in accordance with the user's manual
- Provide a measurement sheet

4.3 **SAFETY GRID OF THE MAIN TRANSFORMER**

- Inspect the safety grids
- Revise the locks on the safety grids

4.4 **TRANSFER RESISTOR**

- Clean the resistor with compressed air
- Inspect the fittings and insulation elements, repair the damaged parts
- Monitor the insulating barriers and replace the damaged components
- Replace the support insulators
- Measure the insulation resistance and total resistor resistance

4.5 **CARGO SWITCH**

- Disassemble the cargo switch
- Clean the main components
- Inspect the components, and replace the faulty and damaged ones
- Replace the main contacts
- If needed replace the support insulators of the freight switch and respective gaskets
- Lubricate the switch components
- Assemble the freight switch

4.6 **CURRENT TRANSFORMERS**

- Clean the current transformers
- Check the transmission ratio and insulation resistance
- Provide a measurement sheet

4.7 **OVER-VOLTAGE ARRESSTER OF TRAIN HEATING**

- Clean the insulator and connections
- Inspect the arrester

4.8 **THERMOMETAR**

- Clean from the outside, inspect the contacts
- Monitor the accuracy
- Provide a measurement sheet

4.9 **GROUNDING TRANSFORMER**

- Clean the grounding transformer
- Measure the insulation resistance
- Provide a measurement sheet

4.10 BUS GIRDER AND BUS

- Disassemble the bus girder
- Clean the bus connections
- Assemble

4.11 SERVOMOTOR OF THE VOLTAGE SELECTOR

- Disassemble the servo motor of the voltage selector
- Replace the brushes
- Monitor the brush holders
- Measure the thread and insulation resistance
- Lubricate and assemble the motor
- Test the servomotor

4.12 LIGHTING BODIES AND PLUGS IN THE ENGINE ROOM

- Disassemble, clean and inspect the housing of boat type lamps and replace the damaged ones
- Test the bulbs and lamp sockets and replace the faulty and damaged ones
- Assemble the lamps
- Clean and inspect the socket housings
- Test the sockets

4.13 ELECTRICAL INSTALATTION

- Test and inspect the complete installation
- Replace the damaged cables

4.14 PLUGS AND TERMINAL BLOCKS IN THE ENGINE ROOM

- Inspect the plugs and terminal blocks and replace the damaged ones

4.15 BATTERY CHARGER

- Clean the transformer and control card with compressed air
- Inspect all connections on the control card and check the automatic fuse
- Clean the semiconductor coolers
- Check the transformer
- Inspect the terminal blocks for connecting cables
- Test and adjust the battery charger performance

5. REVISION OF THE K - BLOCK**5.1 OIL COLLER FAN**

- De-install the fan from the electric motor axle
- Clean the fan
- Inspect the fan for mechanical damage, repair or replace the fan
- Perform a fan balancing
- Disassemble the motor drive and replace its bearings
- Test the motor windings and the insulation resistance against mass
- Connect the motor and test its performance and the fan performance
- Provide a measurement sheet

5.2 OIL PUMP

- Disassemble the oil pump

- Clean and inspect the oil pump components
- Test the insulation of the stator windings and provide a measurement sheet
- Replace the pump gaskets
- Assemble the oil pump
- Connect the motor to a VEAM socket with a new cable
- Test and de-vent the pump
- Provide a measurement sheet

5.3 **TRANSFORMER OIL AND OIL PIPE COOLER**

- Clean the air ducts with compressed air and clean the cooler from the outside
- Inspect the cooler for mechanical damage and repair if needed
- Wash out the oil ducts
- Clean the oil pipes from the inside and outside
- Inspect the pipes for mechanical damage and repair if needed
- Fasten the connections and check the seals

5.4 **SNUBBER RESISTOR**

- Disassemble the resistors from the insulators
- Clean both the resistors and insulators
- Visually check the resistors and insulators, repair the damages
- Assemble the resistors and insulators
- Install snubber resistors
- Test the resistors
- Provide a measurement sheet

5.5 **TRACTION ENGINE MAIN RESTRICTOR**

- Clean the restrictor with compressed air, wash and dry
- Take out and check the windings
- Inspect the restrictor for any damage
- Impregnate the restrictor windings
- Clean the restrictor housing
- Complete the restrictors
- Tighten the connections and mechanical fixture
- Test the insulation and restrictor winding resistance
- Provide a measurement sheet

6. **PJUT**

- Perform a complete revision of the PJUT in accordance with the user's manual

7. **REVISION OF THE S1-S4 MOTOR STAND**

7.1 **DRIVING DIRECTION SWITCH**

- Remove the tin lid from the switch
- Clean the lid
- De-install the EP-valves, disassemble them and replace the damaged components
- Test the EP valves
- Inspect and clean the switch

- Inspect the main and auxiliary contacts, replace the damaged ones with new ones
- Replace all gaskets
- Lubricate the cylinder, piston, gear lever and gear segment
- Install a pneumatic mechanism, main contact roller, system of auxiliary contacts
- Install EP- valves
- Adjust the contact pressure of main contacts
- Adjust the contact pressure of auxiliary contacts
- Test the insulation resistance
- Functionally test the functionality of the switch and install the lid
- Provide a measurement sheet

7.2 TRACTION AND BRAKE RELAY

- De-install the arcing chamber
- Disassemble and clean the arcing chamber
- Inspect the chamber and replace if damaged
- Assemble the chamber and clean with compressed air
- De-install the EP valves, disassemble them and replace the damaged ones
- Complete and test the EP valves
- Lubricate the mobile components of the relay and the drive piston
- Replace the main contacts
- Install the EP-valve
- Seal the air connections and fittings
- Monitor auxiliary contacts
- Monitor the cams of auxiliary contacts and replace the damaged ones
- Monitor the main contacts
- Monitor the contact print of main contacts and functionality of the relay
- Install the arcing chamber onto the relay
- Provide a measurement sheet

7.3 SHUNT RELAYS

- De-install the arcing chamber
- Disassemble and clean the arcing chamber
- Inspect the chamber and replace if damaged
- Assemble the chamber and clean with compressed air
- De-install EP valves, disassemble and replace the damaged components
- Complete and test the EP valves
- Lubricate the mobile relay and drive piston components
- Replace the main contacts
- Install an EP valve
- Seal the air clearance and fittings
- Monitor the main contacts
- Monitor the contact print of main contacts and functionality of the relay
- Install the arcing chambers onto the relay
- Provide a measurement sheet

7.4 HEATING RELAY

- De-install the arcing chamber
- Disassemble and clean the arcing chamber
- Inspect the chamber and replace if damaged
- Assemble the chamber and clean with compressed air
- De-install the EP valves, disassemble them and replace the damaged ones

- Complete and test the EP valves
- Lubricate the mobile components of the relay and the drive piston
- Replace the main contacts
- Install the EP-valve
- Seal the air connections and fittings
- Monitor auxiliary contacts
- Monitor the cams of auxiliary contacts and replace the damaged ones
- Monitor the main contacts
- Monitor the contact print of main contacts and functionality of the relay
- Install the arcing chamber onto the relay
- Provide a measurement sheet

7.5 TRACTION ENGINE RECTIFIER

- De-install the rectifiers
- Clean the rectifiers
- Check the functionality of diodes, capacitor and the resistor
- Replace faulty diodes or other elements
- Clean the post insulators and tighten the connections on buses
- Measure the insulation resistance of the rectifier against mass
- Install

7.6 CABELS IN S1-S4 STANDS

- Inspect, test and replace the damaged cables

7.7 PENUMATIC INSTALLATION PIPES

- Clean the pipe (upper, lower, connective)
- Visually inspect
- The pipes should be cleaned with compressed air
- Revise the 1/4" cock
- Connect the stand with new flexible pipes and pipe clamps
- Replace the damaged pipes

7.8 METAL CONSTRUCTION OF THE S1- S4 STAND

- Clean and wash the stand construction
- Visually monitor the stands and repair damages
- Seal the doors on the stands

7.9 TRACTION NEGINE SHUNT RELAYS

- De-install and disassemble the cables and pipe clamps from the resistor box
- Inspect the cables and insulators and clean them
- De-install the resistor from its box
- Clean the resistor boxes
- Disassemble the resistors and inspect the post insulators
- Perform a resistor testing and replace the faulty ones
- Replace the foam
- Install the resistor in the resistor box
- Install buses, tighten and connect the cables
- Provide a measurement sheet

7.10 MOTORS AND FANS ON THE MOTOR STANDS

- De-install the motors with fans

- De-install the fan from the motor
- Inspect the fan for mechanical damage
- Balance the fan
- Coat the fan with anticorrosive protection
- Disassemble the drive motor and replace its bearings
- Test the motor windings and the insulation resistance against mass
- Install the motor with a fan and connect to multi-pole sockets
- Connect the cables onto a terminal box of the motor
- Perform a test spin of the motor with a fan

8. REVISION OF THE S5 CABINET – AUXILIARY DRIVE

8.1 MOTOR SAFETY SWITCHES

- De-install
- Disassemble the housing of the AS-switch
- Remove the arcing chambers of the contact and replace the damaged ones
- Remove the assembly of auxiliary contacts and replace the damaged ones
- Monitor the contacts and bimetallic parallel keys of the switch
- Check the mobile component of the assembly
- Clean, individually, all the elements of the AS- switch with compressed air
- Replace the damaged levers
- Test the performance of the AS switch
- Install

8.2 EG RELAYS

- Disassemble the relays by separating the upper part
- Inspect the auxiliary contacts and replace the damaged and faulty ones
- Replace worn out or damaged main contacts
- Test the stroke of the rotor armature
- Test the functionality of the electromagnetic coil
- Monitor the plugging in of the respective discharge and economy resistor
- Assemble the relays

8.3 CAM SWITCHES

- Clean the switches with compressed air, protect the contacts with a spray
- Monitor the damages, replace the faulty components.
- Replace the damaged shift levers
- Check the quality of the conductor fittings on the clamps
- Monitor the easiness of switch handling

8.4 INDIRECT SWITCH FOR TRAIN HEATING

- Clean with compressed air
- Inspect the contacts on the switch
- Replace the worn out contacts
- Monitor the functionality of the electromagnetic coil
- Monitor the mobility of the mechanism for switching contacts

- Lubricate the mobile components and the contact roller
- Tighten all the mechanical fittings and contact points

9. REVISION OF THE S5 CABINET – THE RELAY SIDE

9.1 CONTROL RELAYS

- De-install
- Clean the relays and inspect the base
- Replace the damaged relays and base if needed
- Test the auxiliary relays and adjust them on a test rig. Replace the faulty primary relays.
- Test the safety relays on the test rig and adjust them in accordance with the adjustment sheet
- Inspect the connecting side of the relay base
- Replace the damaged relay bases
- Install relays

9.2 MEASUREMENT AMPLIFIERS AND SUPPLY UNITS

- De-install the measurement amplifiers and supply units
- Clean the components and connecting pins with compressed air
- Test the amplifiers and supply units on a test rig
- Adjust in accordance with the adjustment sheet
- Install

9.3 AUTOMATIC CIRCUIT BRAKERS (FUSES)

- De-install
- Inspect the performance
- Replace the faulty fuses
- Install

9.4 RESISTORS

- Check the condition of the conductor and tighten the connections on all resistors in the S5 cabinet
- Replace the damaged or overheated resistors
- Measure the resistance

9.5 MULTI-POLE SOCKETS AND TERMINAL BLOCKS

- Replace the damaged multi-pole sockets and terminal blocks with new ones

10. REVISION OF THE AUTO-STOP DEVICE

10.1 ELECTRIC EQUIPMENT OF THE AUTO-STOP DEVICE

- De-install and clean the DC/DC voltage converter
- Test the DC/DC converter and measure the in-out values
- De-install and clean the relay group
- Test the functionality of the relay group and replace the faulty components
- Clean the box with the electronics
- Inspect the brake group, replace the damaged and faulty components
- Inspect the installation inside the cabinet
- Inspect and test the automatic fuses and replace the faulty ones
- Test and measure the current in the frequency generator
- Replace the installation of the auto-stop device towards the locomotive magnets and sensors

- Inspect the multi-pole sockets and repair bad connections
- Integrate the KWR 6 into the auto stop device
- Test the complete functionality of the device
- Provide a measurement sheet

10.2 PNEUMATIC EQUIPMENT OF THE AUTO-STOP DEVICE

- De-install the shut-off cock and adjust it like on the sub-series 100
- De-install the purifier with the drain cock
- De-install the auxiliary valve
- De-install the air pipes
- Revise the shut off cock
- Revise the purifier with the drain cock
- Revise the auxiliary valves

11. AIR COMPONENT REVISION

11.1 MAIN AIR COMPRESSOR

- Revise the main compressor in accordance with the Instructions on handling and major repairs of the compressor

11.2 MAIN COMPRESSOR SAFETY VALVES

- De-install and disassemble the safety valve
- Clean all the components and assemble the valve
- Test the valve and adjust the pressure, seal the valve
- Provide a measurement sheet

11.3 AIR DRYER

- Install a new air dryer

11.4 P - STAND

- De-install the equipment from the P-stand
- Revise the equipment in accordance with the Instructions on brake maintenance (RK-2)
- Install a switch for a pantograph, the same as on sub-series 100

11.5 SHUT OFF COCKS

- Disassemble and clean with compressed air
- Hone the conjunctive surfaces
- Assemble after replacing the gaskets and seal with SIM 80
- Test

11.6 CHECK VALVES

- Disassemble and clean with compressed air
- Inspect the valve fittings
- Assemble after replacing the piston and seal with SIM 80
- Test the valves

11.7 AIR PURIFIERS

- Disassemble and clean with compressed air
- Assemble after replacing the gaskets, cartridges and seal with SIM 80

11.8 PRESSURE SWITCH

- Disassemble
- Wash and clean with compressed air
- Assemble and replace the gaskets
- Test and adjust on a test rig

11.9 PNEUMATIC VALVE OF THE DEADMAN CONTROL

- Disassemble the valve
- Wash and clean with compressed air
- Inspect the fittings
- Assemble after replacing the gaskets and seal with SIM 80

11.10 DOUBLE BACK PRESSURE VALVES

- Disassemble the valve
- Wash and clean with compressed air
- Inspect the fittings
- Assemble after replacing the gaskets and sealing with SIM 80

11.11 DUST COLLECTOR

- Disassemble and clean with compressed air
- Assemble and seal with SIM 80

11.12 P – STAND INSTALLATION

- Clean the pipes from the inside

11.13 P – STAND CONSTRUCTION

- Clean and wash the stand construction

11.14 AUXILLIARY AIR COMPRESSOR

- Disassemble and clean the motor
- Inspect the brush holders
- Replace the brushes
- Perform a collector turning
- Assemble and lubricate
- Test the performance

11.15 ALCHOCOL SPRINKLER

- Disassemble and clean with compressed air
- Replace the gaskets
- Inspect the alcohol supplier
- Assemble the sprinkler

11.16 SANDBLASTER EP VALVES

- Disassemble the EP-valve
- Clean and inspect
- Test the insulation of the coil and the resistance of the economy resistor
- Replace the rubber gaskets and cartridges

- Assemble, test and provide a measurement sheet

11.17 **DEADMAN CONTROL WITH A MICROSWITCH**

- Disassemble and clean with compressed air
- Hone the conjunctive surfaces of the cock
- Assemble after replacing the gaskets and seal with SIM 80
- Check the tightness of the cam lever
- Monitor the micro switch and replace the faulty one
- Inspect the wiring and monitor the connection towards the deadman control

11.18 **HAND BRAKE**

- Disassemble the hand brake
- Clean, wash and inspect the components
- Replace the bushings, steel cords and the tightener
- Perform a security check on the hand brake bolts, so there is no self-loosening
- Install and lubricate the hand brake
- Clean and inspect the micro switch
- Install the micro switch and test the functionality

12. **REVISION OF THE CONTROL ROOM EQUIPMENT**

- 12.1 ➤ Perform a better sound and warmth insulation of the control room

12.2 **CONTROLLER F1 A (B)**

- De-install
- Clean and de-grease the controller drum
- Polish the cam lifters
- Inspect and replace the faulty contacts
- Check the wirings. Repair bad connections.
- Lubricate the cam lifters
- Check the performance of the contact starting order
- Clean and inspect the chain and gear
- Repair and lubricate the turning mechanism
- Repair the too big controller and gear shift stroke
- Repair the handrail of the controller cab and coat in plastic
- Replace the worn out handle of the direction switch
- Replace the nameplates on the controller
- Check the mechanical block of the direction switch
- Repair the lid and its hinges
- Install

12.3 **F2 CABINET A (B) EQUIPMENT**

- De-install the F2 cabinet and clean with compressed air
- De-install the equipment from the front plate
- Clean, repair and test the instruments
- Replace the damaged glass and lighting bulbs
- Check the zero position of the instrument and the swinging of the needle
- Replace the masks with signs on signal plates (replace all signs with pictograms)
- Replace the faulty signal bulbs or LED

- Replace the faulty buttons and switches
- Inspect the cam switches, replace the faulty ones
- Replace the nameplates
- Inspect and repair the sockets and instrument lighting bulbs
- Inspect and repair the wiring inside the F2 cabinet
- Clean and inspect the multi-pole sockets
- Paint the cabinet
- Install

12.4 **F3 DOORS AND DOOR EQUIPMENT A (B)**

- De-install the door with the equipment
- De-install, clean and test the instruments
- Inspect the cam switches, replace the faulty ones
- Replace the nameplates
- Clean and measure the resistance of the wire-wound resistors. Replace the faulty ones
- Install a three-tone horn with volume regulation (ALTPRO type)
- Inspect the plug and contacts, replace the faulty ones
- Repair the door construction
- Paint the doors
- Install

12.5 **FOOT OPENING**

- Install new push floor switches for the locomotive horn, deadman control and sandblasters (like in the 300)
(Electric control of the horn)

12.6 **F5 CABINET WITH RESISTORS**

- De-install the box and clean it
- Check the connections of the board components
- Test the components, replace the faulty ones
- Check the wiring and clean the multipole sockets
- Install

12.7 **ASHTRAYS AND WASTEBASKETS**

- Install two new ashtrays on each counter (apply the solution from the 2062 100 locomotive)
- Install one more wastebasket in each control room

12.8 **CALORIFIER IN THE CONTROL ROOM**

- Disassemble, clean and inspect the housing and other components of its metal construction
- Modify the housing (for easier replacement of heaters)
- Disassemble the calorifier motor and check the motor bearings, replace the faulty ones
- Test the winding of the motor stator and the condenser and replace the faulty ones
- Inspect the fan
- Assemble the motor
- Clean and inspect the thermostat and replace the faulty one
- Install the motor with a fan and a thermostat
- Test the heaters and replace the faulty ones
- Assemble the air heaters
- Reconstruct the calorifier so that it takes the air from outside the cab, therefore a dust filter should be

12.9 FLOOR HEATER

- De-install and clean the floor heater
- Test the heater and replace the faulty with a new one
- Check the inlet conductors and replace the faulty ones

12.10 RD DEVICE

- Revise the complete devise and test on a grid

12.11 AC UNIT

- De-install the AC unit
- Inspect the completeness of the AC block
- Repair minor damages
- A unit with considerable damages send to a repair shop
- Lubricate the fan bearings
- Clean the filters
- Inspect the heater and replace a faulty one
- Replace the
- Replace the filters
- Repair the protective lid or install a protective sheet metal
- Inspect and test the performance of the switch and the thermostat. Replace the faulty ones
- Clean and wash the mask
- Test the performance

12.12 SPEEDOMETER

- Install a new DEUTA speedometer type KWR 6
- Connect the signalization of the device with the signal panel of the F2 cabinet as well (solution from locomotive)

12.13 CONTROL ROOM PNEUMATIC EQUIPMENT

- In accordance with the RK2 revise the following equipment:
 - double manometer 0-16bar (2 pcs)
 - double manometer 0-10bar (2 pcs)
 - combined reservoir 1/3/7 lit
- Provide a measurement sheet

12.14 AIR INSTALLATION SHUT OFF COCKS

- Disassemble, wash and clean with compressed air
- Hone the conjunction surfaces
- Assemble after replacing the gaskets and seal with SIM 80
- Test

12.15 AIR PURIFIERS

- Disassemble
- Wash and clean with compressed air
- Assemble after replacing the gaskets, cartridges and seal with SIM 80

12.16 DOUBLE CHECK VALVES

- Disassemble the valves

- Wash and clean the components with compressed air
- Inspect the fittings
- Assemble after replacing the gaskets and seal with SIM 80

12.17 **WINDOW WIPERS**

- Install electric window wipers from the lower side of the window, with nozzles on wiper brushes for w
- Install appropriate containers and pumps for the washing fluid

12.18 **BYPASS COCK**

- Disassemble the cock
- Wash and clean the components with compressed air
- Inspect and tighten the fittings
- Assemble after replacing the gaskets and seal with SIM 120
- Test
- Install in accordance with the 300 subseries

13. **REVISION OF OTHER EQUIPMENT IN THE CONTROL ROOM**

13.1 **TOOL AND EQUIPMENT CABINET**

- De-install and repair the tool cabinet
- Install tin padlock hooks
- Paint the cabinet

13.2 **FOLDING SEAT**

- Disassemble and clean
- Upholster the seat and the back of the chair with a fabric (the same used for the engineer seat)
- Inspect and lubricate the spring and components for lifting the seat
- Assemble the seats

13.3 **ENGINEER SEAT**

- Install new engineer seats (type BG 9100 with "click" turning, headrests and armrests)

13.4 **SHADES AND CURTAINS**

- Install new shades with rails onto the front windows (TŽV Gredelj will recommend the type of shades)

13.5 **CONTROL ROOM LIGHTING**

- Install led lighting in the control room 2x18W per lamp
- Install auxiliary lighting of 5 W with own switch

14. **REVISION OF EQUIPMENT FOUND ON THE CARBODY WITH BOGIES**

14.1 **PNEUMATIC EQUIPMENT UNDERNEATH THE BOGIE**

- Revise the containers in accordance with RK2
 - container 800 lit
 - container 200 lit
 - container 100 lit
- Provide a measurement sheet

- 14.2 **OIL AND WATER SEPARATOR WITH A DRAIN COCK**
- Disassemble the separator from the cock and wash the components and inspect
 - Assemble after replacing the gaskets and seal with SIM 120
- 14.3 **DRAIN VALVES**
- Disassemble the valves, wash and inspect the valves
 - Assemble after replacing the gaskets and seal with SIM 120
- 14.4 **CHECK VALVES**
- Disassemble, wash and clean with compressed air
 - Inspect the fittings in the valves
 - Assemble after replacing the piston and seal with SIM 80
 - Test the valves
- 14.5 **PIPE END COCKS AND HALF COUPLINGS**
- Disassemble
 - Wash the components and clean with compressed air
 - Inspect the fittings
 - Assemble after replacing the gasket and seal with SIM 80
 - Install new rubber half couplings
 - Test
 - Coat the cocks in accordance with regulations on anticorrosive protection
- 14.6 **DUAL SAFETY VALVE**
- Disassemble the valve
 - Wash the parts and inspect
 - Assemble after replacing the gasket and seal with SIM 120 or 80
- 14.7 **BUMPER AND TRACION EQUIPMENT**
- Revise the tow hook with rails and elastomeric inserts
 - Revise the buffers with elastomer
 - Provide a measurement sheet
15. **REVISION OF ELECTRICAL EQUIPMENT ON THE CARBODY AND BOGIE**
- 15.1 **FRONT LIGHTS**
- Front lights of the locomotive should be reconstructed
(Led diodes (red/white); Ksenon reflector; H-1 high beams)
- 15.2 **FINAL SIGNAL GIRDER**
- Diagonally install a final signal girder. Apply the solution from DMV 7121 100
- 15.3 **UIC SOCKETS**
- Install a UIC socket in accordance with the UIC regulations
- 15.4 **WORKSHOP CONNECTOR SOCKET**
- Disassemble, clean with detail and lubricate
 - Check the mobility of contacts
 - Check and tighten the electrical connections

- Check the functionality of the block and lid

15.5 **TERMINAL BOXES ON THE CARBODY**

- Clean the grounding, sensor and magnet boxes
- Inspect visually. Replace the damaged components

15.6 **BOXES WITH BATTERY FUSES**

- Clean and inspect the box
- Inspect the base of the fuse and test it
- Break in the lid of the box
- Assemble the box

15.7 **RECHARGEABLE BATTERIES**

- Install new Ni-Cd rechargeable batteries
- Provide a measurement sheet

15.8 **ELECTRIC HEATING SOCKETS**

- De-install the heating socket
- De-install the socket and clean in detail. Replace the damaged components
- Check the locking mechanism and revert it to its original condition
- Install the socket after sealing glands

16. **ROOF, CARBODY AND BOGIE REVISION**

16.1 **ROOF CONSTRUCTION**

- Replace the gaskets of the roof lid fitting
- Clean and if needed repair the water drain on the roof and replace faulty parts

16.2 **LOCKSMITH WORKS ON THE CARBODY, ROOF AND BOGIE**

- Prepare for installation of an UIC socket ta the front of the locomotive

16.3 **COW CATCHER**

- De-install the cow catcher
- Inspect and if needed repair the damaged parts on the plow girder
- Repair the track cleaners
- Install and adjust the height of the plow and rail cleaner above the GRT

16.4 **RECHARGEABLE BATTERIES**

- Clean the vent pipe
- Wash the crate inside and out
- Wash the cart
- Pain the body and the cart
- Lubricate the rails and the cart
- Repair the levers for closing the crate door
- Inspect and repair the connective cables

16.5 CONTROL ROOM DOOR

- Install new doors

16.6 DOOR TOWARDS THE ENGINE ROOM

- Clean, inspect and repair any damages
- Inspect the locks, repair if damaged
- Check the seal, replace the gaskets
- Inspect and repair the suspension of the doors in hinges

16.7 ENGINE ROOM SIDE DOOR

- Clean, inspect and repair what is damaged
- Inspect the locks and doorknobs, replace if faulty
- Inspect the seal and replace the gaskets
- Inspect and repair the suspension

16.8 MOBILE SIDE WINDOWS

- De-install and disassemble the windows
- Install new aluminium slide rails with felt
- Revise the window mechanism
- Clear the water drain, assemble the windows and replace the gaskets
- Adjust the opening/closing mechanism and install a handle stop
- There should be a manufacturer designation engraved in the window along with a safety attestation

16.9 FRONT WINDOWS

- De-install the windows
- Replace any damaged glass
- Clean the conjunction surfaces
- Replace the seal rubber
- Install the windows

16.10 FIXED WINDOWS OF THE ENGINE ROOM

- If needed replace damaged glass
- Clean the conjunction surfaces of the frame and protect them with paint
- Replace the rubber seals

17. REVISION OF OTHER EQUIPMENT**17.1 H GIRDERS FOR BELLOWS AND FOR COLLING CANAL BELLOWS**

- Install new bellow girders
- Install new bellows from a non-flammable material with slide plates and springs

17.2 FIRE EXTINGUISHERS AND THEIR GIRDERS

- De-install the fire extinguishers and send to an authorized service
- Equip the locomotive with fire extinguishers in accordance with valid HŽ rule book

17.3 INSTALLATION OF SPILT OIL DRAINAGE

- Install a drainage barrier around the transformer and compressor
- Install a pipe for draining oil
- Install a container for collection of drained oil

- Clean the container and drainage installation

17.4 RUBBER TRACKS

- Install new rubber tracks with aluminium curbs

17.5 REAR-VIEW MIRRORS AND THEIR GIRDERS

- Clean and protect from corrosion
- Repair and paint the rear-view mirror girders
- Replace the damaged rear-view mirrors with new ones
- Replace damaged rear-view mirrors

17.6 RAIN TINS (eaves)

- Repair or install the missing eaves

17.7 HALF COUPLING GIRDER AND KEY

- Inspect and repair the half coupling girder if necessary
- Coat the girder with anti-corrosive protection
- Install the half coupling girder and key for changing the half coupling by the main compressor
- Inspect the key for changing half couplings, and if needed repair or install

17.8 AIR INLET SIDE GRILLS

- Repair the damaged side grills

17.9 NAMEPLATES

- Replace all damaged or missing nameplates
- Wash the plates so that the captions are visible

18. PAINTING THE LOCOMOTIVE

- Prepare and paint the locomotive completely from the inside and outside

18.1 NUMBER OR LETTER SIGNS ON THE LOCOMOTIVE

- All number and letter signs must be in accordance with the Instructions on labelling railroad vehicles
- All other signs must be in accordance with the same Instruction and the Rulebook on requirements for vehicles

19. FINAL INSPECTION

19.1 LOCOMOTIVE WEIGHING

- Weigh the locomotive and balance the mass

19.2 TESTING THE SEALING

- Test the sealing with a rain test in accordance with the IC instruction

19.3 QUALITY CONTROL

- Monitoring over the repair will be done in accordance with the quality control plan as agreed between the contractor and the contractor

19.4 FINAL INSPECTION AND HAND OVER OF THE LOCOMOTIVE

- Delivery of keys and documentation. Documentation consists of:
 - locomotive log book

- measurement sheets
- testing sheets
- certificates for recently installed components and materials
- technical documentation for use and maintenance of newly installed components
- handling and maintenance instructions for newly installed devices and equipment
- Before putting the locomotive back on the tracks provide the testing sheets and a functionality diagram for the brake equipment
- Test the locomotive and the brakes in place under KM and record the stopping paths in drive mode
- Record the functionality of the locomotive while pulling the train
- Compile a delivery log

HŽ CARGO d.o.o.

DESCRIPTION OF WORKS

**MAJOR REPAIRS OF THE
series 1 141 LOCOMOTIVE**

Composed by:

Goran Juriši , engineering graduate

Zagreb, March 2015

CONTENT

DESCRIPTION OF WORKS

STAGE >

- 1 > DELIVERING THE LOCOMOTIVE FOR REPAIRS**
- 2 REVISION OF THE ROOF EQUIPMENT**
- 3 REVISION OF THE BOGIES**
- 4 REVISION OF THE ENGINE ROOM EQUIPMENT**
- 5 REVISION OF THE K - BLOCK**
- 6 CONDENSER RACKS OF A THREE-PHASE SYSTEM**
- 7 RESTRICTORS IN THE RACKS OF A THREE-PHASE SYSTEM**
- 8 REVISION OF THE S1-S4 MOTOR STAND**
- 9 REVISION OF THE S5 CABINET – AUXILIARY DRIVE**
- 10 REVIISION OF THE S5 CABINET – THE RELAY SIDE**

- 11 REVISION OF THE AUTO-STOP DEVICE
- 12 AIR COMPONENT REVISION
- 13 REVISION OF THE CONTROL ROOM EQUIPMENT
- 14 REVISION OF OTHER EQUIPMENT IN THE CONTROL ROOM
- 15 REVISION OF EQUIPMENT FOUND ON THE CARBODY WITH BOGIES
- 16 REVISION OF ELECTRICAL EQUIPMENT ON THE CARBODY AND BOGIE
- 17 ROOF, CARBODY AND BOGIE REVISION
- 18 REVISION OF OTHER EQUIPMENT
- 19 PAINTING THE LOCOMOTIVE
- 20 FINAL INSPECTION

1. DELIVERING THE LOCOMOTIVE FOR REPAIRS

- 1.1 The locomotive is delivered for repairs after a complete inspection and with a sheet of needed repair work, and should be returned after defectation, on a turn-key basis.
The key and the log are being handed over with the locomotive.

2. REVISION OF THE ROOF EQUIPMENT

2.1 PANTOGRAPH

- Disassemble the pantograph
- Inspect the components, replace the faulty and worn out ones
- Test the springs, and replace the faulty ones
- Paint the metal construction components
- Lubricate the components and assemble the pantograph
- Adjust the parameters: lifting speed, force, height
- Install
- Test the pantograph and provide a measurement sheet

2.2 PANTOGRAPH CYLINDER

- Disassemble the pantograph cylinder
- Clean and wash the components

- Inspect the components (measure the cylinder sheath)
- inspect the spring
- Replace the faulty and worn out components
- Assemble and lubricate the pantograph cylinder
- Install
- Test and provide a measurement sheet

2.3 PANTOGRAPH VALVE

- Disassemble the pantograph valve
- Clean, wash and inspect
- Replace the faulty components
- Assemble the pantograph valve
- Install
- Test and provide a measurement sheet

2.4 PANTOGRAPH POST INSULATOR

- Clean the post insulator
- Inspect the roof insulators for possible mechanical and electrical defects
- Replace the damaged insulators
- Inspect the insulator fixture
- Paint the insulator metal components
- Silicone the insulators

2.5 BUSBAR

- Clean the busbar
- Inspect the busbar for mechanical and electrical defects, repair if needed
- Coat the busbar with anticorrosive protection
- Inspect and replace the damaged elastic ties
- Install

2.6 BUSBAR POST INSULATOR

- Clean the post insulator
- Inspect the roof insulators for possible mechanical and electrical defects
- Replace the damaged insulators
- Inspect the insulator fixture
- Paint the insulator metal components
- Silicone the insulators
- Test and install

2.7 PNEUMATIC ROOF INSTALLATION

- Clean the pipe of corrosion and filth from the outside
- Clean the pipes with compressed air and inspect
- Coat the pipes with anticorrosive protection from the outside
- Fix the terminals
- Inspect the connections of the installation with the car-body and replace the flexible pipes

ROOF METAL CONSTRUCTION

- Perform an inspection of the roof metal construction
- 2.8
- Clean and wash the roof metal construction
 - Paint the construction from the bottom and top side (if needed)
 - Repair the nets and frames on the opening of the resistor fan

- Install

2.9 LOCOMOTIVE AIRHORN

- Install new two-tone locomotive air horns on the roof and position them facing the direction of travel
- In front of the air horn install a protective net facing the direction of travel
- Test the air horn

2.10 RD DEVICE ANTENNA

- Clean and inspect the protective housing
- While testing the locomotive test the antenna
- Inspect the antenna and cable connector and replace if needed

2.11 AIR CONDITIONER

- Perform a complete revision of the COLEMAN air conditioner in accordance with the user's manual

2.12 MAIN SWITCH

- Perform a complete revision of the main switch in accordance with the user's manual
- Test the switch in accordance with the user's manual
- Provide a measurement sheet

2.13 CATODE OVER-VOLTAGE ARRESTER

- Clean the over-voltage arrester
- Inspect the porcelain for possible mechanical and electrical damage
- Inspect the fixtures and connections
- Paint the metal components of the over-voltage arrester
- Replace the damaged over-voltage arrester
- Install

2.14 PANTOGRAPH DISCONNECTOR

- Disassemble the roof disconnecter
- Clean the insulators
- Inspect the insulators for possible mechanical and electrical damage (replace the damaged ones)
- Disassemble the contact blade, shoe and the driving axle
- Perform a functionality analysis of contact blades and shoes (replace the faulty ones)
- Assemble the contact knife, shoe and driving axle
- Replace the gasket underneath the basic board
- Replace the o - rings
- Assemble the disconnecter
- Monitor the disconnecter
- Install

2.15 DISCONNECTOR FOR LOCOMOTIVE GROUNDING

- Perform a functionality analysis of contact blades and shoes (replace the faulty ones)
- Inspect and repair or replace the locks if needed
- Lubricate the disconnecter mechanism
- Monitor the performance and the transference of the switch micro confirmation
- Monitor the disconnecter
- Install

2.16 PRIMARY TRANSFORMER WITH A BUSHING INSULATOR

- Clean the parts
- Inspect the components for mechanical and electrical damage, replace the damaged ones
- Replace the rubber gaskets
- Coat the flange with an anticorrosive protection
- Assemble the transformer with the bushing insulator
- Test the insulation resistance of the transformer against mass
- Install
- Provide a measurement sheet

2.17 VOLTAGE TRANSFORMER

- Clean the parts
- Inspect the transformer body
- Clean and seal the junction box and connections
- Inspect the condition of the voltage transformer fuse
- Install
- Provide a measurement sheet

3. REVISION OF THE BOGIES

3.1 BOGIES

- De-install the bogies
- Adjust the bogie measurements
- De-install all the equipment from the bogies
- Adjust the cross measure
- Install all the equipment from the bogies
- Install the bogies
- Furnish the measurement sheets

3.2 TRACTION ELECTRIC MOTORS

- De-install the traction motor
- Clean the nameplate
- Disassemble the motor
- Wash the stator and the rotor. Test the insulation before washing and after drying.
- Clean the insulators of the brush holders and the brush holders. Repair the insulation coating.
- Inspect the traction engine bearings and replace the damaged ones
- Clean and varnish the collector slide rails
- Check the rotor flange, replace if damaged
- Impregnate the rotor
- Test the commutator surface and measure the ovality and impact
- Turn and fix up the commutator
- Repair the insulation coating on the commutator flags
- Test the om resistance, and the resistance against mass and in between the curvatures
- Measure the suppresser power on the holder. Replace the faulty holders
- Install new brushes
- Refresh the insulation on the stator
- Repair the nets and slip rings at the motor intake
- Insulate anew the commutator ring
- Replace the damaged motor cables, cable holders, plugs and rubber holders
- Lubricate the rotation mechanism, replace what is damaged
- Test the motor winding resistance

- Measure the motor insulation resistance against mass. Repair a faulty motor
- Break in the keys of the motor lid
- Repair the damaged lids
- Assemble the motor
- Install the motor
- Lubricate the motor and replace the re-greasing devices
- Perform a high voltage testing
- Test the motor by rotating it in both directions, measure the axial movements of the rotor
- Provide a measurement sheet

3.3 TORSIONAL SHAFT AND TRACTION ASSEMBLY

- Disassemble, wash and inspect the gear coupling
- In accordance with defectation replace the faulty gear coupling
- Inspect the torsional shaft
- Replace both o- rings of the gear coupling
- Install rubber lids onto the gear couplings
- Fill the gear coupling with LIMA 180 EPG lubricant
- Inspect the plugs

3.4 REVISION OF THE BOGIE FRAME

- Wash the frames and clean the frame conjunctive surfaces
- Replace the bushes for brake linkage hangers and gear unit
- Inspect the spark arresters and repair damages
- Test the firmness of the central pin fitting
- Measure the frame
- Inspect the frame (welds and cracks) and repair damages
- Test the housing of the central clamping (welds and cracks) and repair damages
- Coat the frame with anticorrosive protection
- Provide a measurement sheet

3.5 REVISION OF THE CRADLE AND HANGERS

- De-install the cradle and the hangers from the bogie
- Wash the cradle and the hangers and the safety ropes
- Inspect the cradle (welds and cracks) and repair damages
- Measure the cradle in accordance with the measurement sheet
- Measure the shock absorber pins
- Strengthen the cradle and the central girder of the stand (if not already done)
- Replace the damaged shock absorber pins
- Coat the cradle with anticorrosive protection
- Replace the rubber-metal components of the central pin and central pin protection
- Inspect the hangers and replace the faulty ones
- Replace the rubber-metal hanger components and hanger protection
- Replace the drawbar bushings
- Install the cradle and the hangers onto the bogie
- Provide a measurement sheet

3.6 TRACTION MOTOR SUSPENSION

- Wash the components
- Inspect the fittings and replace the faulty parts

- Adjust the motor on its stand

3.7 REVISION OF THE SECONDARY SUSPENSION AND LATERAL CLAMPING OF THE BOX

- Wash the yokes, springs and drawbars
- Inspect the parts
- Measure the shock absorber pins and replace the damaged ones
- Coat the parts with anticorrosive protection
- Replace the rubber-metal components of the drawbar
- Replace the rubber-metal components of the lateral buffer
- Replace the rubber-metal spring components
- Replace the horizontal and vertical shock absorbers
- Test and pair up springs, replace the faulty ones
- Provide a measurement sheet

3.8 REVISION OF THE PRIMARY SUSPENSION

- Wash the parts
- Inspect the beams and repair damages
- Inspect and replace the damaged shock absorber pins
- Measure the rubber-metal L9 component holders and replace the damaged ones
- Replace the rubber-metal L9 components
- Install new AM 8x1 re-greasing devices

3.9 REVISION OF THE AXLE BEARINGS

- De-install the axle bearing housing
- Wash the de-installed components
- Inspect the axle bearings and replace the damaged ones
- Inspect other components
- Install axle bearings, rubber elements of the axle bearings and safety
- Install the axle bearing housing
- Lubricate the housing
- Check or repair the cover plate of the housing grounding
- Install an axle bearing grounding contact
- Provide a measurement sheet

3.10 REVISION OF THE AXLE ASSEMBLY

- Release the oil from the gear unit
- Wash the axle assembly
- De-install the safety stop and the reaction bar from the housing
- Test the axles with ultrasound
- Replace the monoblock wheels

3.11 REVISION OF THE GEAR UNIT

- It is necessary to re-seal the gear unit
- Monitor the condition of the magnetic plug
- Monitor the condition of the vent pipe and the lid and repair the faulty or damaged ones
- Repair the axial clearance of the small gear
- Repair the reaction bar and clamping
- Replace the GME reaction bars
- Monitor the toothing of the gear through an opening in the housing
- If needed tighten the housing of the reaction bar pin
- Check the tightness of the binding screws of the relay housing poles

- Replace the relay oil
- Lubricate the relay bearings
- Install new re-greasing devices

3.12 REVISION OF THE ELASTIC COUPLER

- De-install the elastic coupler
- De-install the driver from its housing
- Disassemble the driver
- Wash the components
- Inspect the toothing of the drive gear and repair the damages
- Inspect the lids of the driver and replace the damaged ones
- Inspect the NJ 324 bearings and replace if faulty
- Replace the GME elastic couplers with bolts
- Assemble the drive
- Install the drive
- Install the elastic coupler

3.13 REVISION OF THE GEAR UNIT SAFETY JOINT

- Wash the parts
- Inspect the parts
- Replace the pins
- Replace the fittings and the plastic bushing

3.14 REVISION OF THE BRAKE SLACK AND SLACK ADJUSTER

- De-install the brake linkage and adjusters from the bogie
- Disassemble the brake linkage
- Wash the components
- Replace the bushing and pins on the slack
- Install repaired slack adjusters. Attach the testing sheet
- Measure the fitting of the brake shaft journal and repair the damages
- Assemble and install the parts of the brake slack. Install new re-greasing devices
- Lubricate the joints and flows
- Replace the bearing and repair the coulisse mechanism
- Replace the bearing and the springs of the brake slack
- Inspect and repair the mechanism of the hand brake clamp
- Repair the equalizers of the brake insert holder
- Monitor the mobility and clearance of the slack
- Fasten the brake slack and adjuster with steel cords
- Install the brake slack and adjusters onto the bogie
- Install new brake fillers and replace the damaged pistons
- Provide measurement sheets

3.15 LOCOMOTIVE MAGNETS OF THE AS DEVICE

- De-install the locomotive magnets and protective sheet metal
- Disassemble the locomotive magnets from the girder and brake in the threads
- Clean and visually inspect the locomotive magnets and connectors
- Install new cables and cable glands onto the locomotive magnet connectors
- Test the AS-device of the locomotive magnet
- Install the locomotive magnets onto girders

3.16 GROUNDING UNIT OF THE AXLE ASSEMBLY

- Clean, wash and inspect the components
- Replace the grounding contact
- Monitor the connecting cable, and replace the damaged one
- Monitor the mobility of the contact disc and spring

3.17 SPEED SENSOR

- Install a new speed sensor and cable (for KWR 6)
- The air component should be installed after a dual valve towards the brake cylinders

3.18 REVISION OF BOGIE PNEUMATIC EQUIPMENT

- Revise the 10" brake cylinders : in accordance with RK3
- Inspect the air distribution pipe and repair damages
- All bogie pneumatic pipes should be cleaned with compressed air and of corrosion
- Connective flexible pipes connected to the crate should be replaced with new ones

3.19 DEVICE FOR LUBRICATING THE WHEEL RIM

- Clean the lubricant reservoir
- Clean and inspect the pumps. Replace the faulty and damaged ones
- Clean the pipes with compressed air and repair
- Replace faulty re-greasing devices
- Replace damaged flexible pipes
- Test the re-greasing devices
- If not installed, install a new re-greasing device for the wheel rim

3.21 SAND BLASTERS

- Release the sand from the reservoir. Clean the reservoirs
- De-install the girders and diffusers, replace the faulty and damaged ones
- Clean the nozzles
- Replace the damaged air hoses connected to nozzles
- Replace the damaged hoses for draining sand and repair the support hoses
- Install reservoir lids on hinges (same as on the tilting train)
- Fill the reservoirs with sand and test the flow
- If not done already, the sandblasters should be modified (in accordance with the 100 series)

3.22 STAND ASSEMBLY

- Assemble the bogies
- The frame with the cradle should be lowered onto the axle assemblies
- Install traction electric MOTORS onto the chassis and connect them to the relay
- Connect and secure the brake slack
- Adjust the bogie measures
- Adjust the position of the traction electric motor
- Adjust the measures between the plates of the torsional shaft and the elastic coupler
- Adjust the vertical and horizontal relay deflection
- Adjust the cross measure
- Adjust the measures of the axle assembly

3.23 MEASURING THE BOGIE

- Adjust the bogie measures
- Adjust the position of the traction electric motor

- Adjust the measures between the plate of the torsional shaft and the elastic coupler
- Adjust the horizontal and vertical deflection of the relay
- Adjust the cross measure
- Adjust the measures of the axle assembly

4. REVISION OF THE ENGINE ROOM EQUIPMENT

4.1 MAIN TRANSFORMER

- Wash the main transformer tank from the outside
- Clean the insulators and connections and replace the faulty components
- Change the oil
- Test the opening of the safety valve and the closing of flaps
- Replace the connecting pipes
- Replace the agent in the moisture collector
- Test the transformer in accordance with the transformer testing programme MLR 5500 (ENERGOINVEST LJUBLJANA, RNU E testing sheet)
- Provide a measurement sheet

4.2 VOLTAGE SELECTOR SWITCH

- Perform a complete revision of the voltage selector switch in accordance with the user's manual
- Test the voltage selector switch in accordance with the user's manual
- Provide a measurement sheet

4.3 SAFETY GRID OF THE MAIN TRANSFORMER

- Inspect the safety grids
- Revise the locks on the safety grids

4.4 TRANSFER RESISTOR

- Clean the resistor with compressed air
- Inspect the fittings and insulation elements, repair the damaged parts
- Monitor the insulating barriers and replace the damaged components
- Replace the support insulators
- Measure the insulation resistance and total resistor resistance
- Clean the resistor insulators. Replace the damaged ones and those that are glued off
- Install

4.5 CARGO SWITCH

- De-install
- Clean the switch
- De-install the arcing chambers, inspect and repair
- Check the wear of the plate and bearings
- Replace the faulty components
- Replace the worn out contacts and damaged girders
- Inspect the elastic straps and replace damaged ones
- Inspect the insulator and gears. Repair damages
- Lubricate the mechanism and test the functionality of the switch
- Check the clearance in the axle and synchronize the switch performance
- Inspect the mechanical stability of the switch
- Inspect and tighten the connections of switch conductors
- Install

4.6 CURRENT TRANSFORMERS

- Clean the current transformers
- Check the transmission ratio and insulation resistance
- Provide a measurement sheet

4.7 OVER-VOLTAGE ARRESSTER OF TRAIN HEATING

- Clean the insulator and connections
- Inspect the arrester, replace if damaged

4.8 THERMOMETAR

- Clean from the outside, inspect the contacts
- Monitor the accuracy
- Provide a measurement sheet

4.9 GROUNDING TRANSFORMER

- Clean the grounding transformer
- Measure the insulation resistance
- Provide a measurement sheet

4.10 BUS GIRDER AND BUS

- Disassemble the bus girder
- Clean the bus connections
- Assemble

4.11 SERVOMOTOR OF THE VOLTAGE SELECTOR

- Disassemble the servo motor of the voltage selector
- Replace the brushes
- Monitor the brush holders
- Measure the thread and insulation resistance
- Lubricate and assemble the motor
- Test the servomotor

4.12 LIGHTING BODIES AND PLUGS IN THE ENGINE ROOM

- Disassemble, clean and inspect the housing of boat type lamps and replace the damaged ones
- Test the bulbs and lamp sockets and replace the faulty and damaged ones
- Assemble the lamps
- Clean and inspect the socket housings
- Test the sockets

4.13 VN and NN CURCUIT INSTALLATION

- Replace the complete installation of the main circuit
- Replace the complete installation of the auxiliary circuit
- Replace the complete installation of the control circuit

4.14 PLUGS AND TERMINAL BLOCKS IN THE ENGINE ROOM

- Install new plugs and terminal blocks

4.15 BATTERY CHARGER

- Clean the transformer and control card with compressed air
- Inspect all connections on the control card and check the automatic fuse
- Clean the semiconductor coolers
- Check the transformer
- Inspect the terminal blocks for connecting cables
- Test and adjust the battery charger performance
- Install the charger

4.16 AC DEVICE VOLTAGE CONVERTER

- De-install
- Inspect, test and if needed repair
- Install

5. REVISION OF THE K - BLOCK

5.1 OIL COLLER FAN

- De-install the hood with the fan
- Replace the foam for sealing, repair the frame
- De-install the fan from the electric motor axle
- Clean the fan
- Inspect the fan for mechanical damage
- Perform a fan balancing
- Disassemble the motor drive and replace its bearings
- Test the motor windings and the insulation resistance against mass
- Connect the motor to a VEAM socket with a new cable, replace the damaged socket
- Inspect the housing /hood) of the motor fan, repair what is damaged
- Test the motor and fan performance
- Pain the housing of the motor fan (hood) and the electric motor itself
- Install

5.2 OIL PUMP

- Disassemble the oil pump
- Clean and inspect the oil pump components
- Test the insulation of the stator windings and provide a measurement sheet
- Replace the pump gaskets
- Assemble the oil pump
- Connect the motor to a VEAM socket with a new cable, replace the damaged sockets
- Test the functionality, inspect the seal and de-vent the pump
- Install

- Provide a measurement sheet

5.3 TRANSFORMER OIL AND OIL PIPE COOLER

- Clean the air ducts with compressed air and clean the cooler from the outside
- Inspect the cooler for mechanical damage and repair if needed
- Wash out the oil ducts
- Clean the oil pipes from the inside and outside
- Inspect the pipes for mechanical damage and repair if needed
- Fasten the connections and check the seals
- Install

5.4 SNUBBER RESISTOR

- Disassemble the resistors from the insulators
- Clean both the resistors and insulators
- Visually check the resistors and insulators, repair the damages
- Assemble the resistors and insulators
- Install snubber resistors
- Test the resistors
- Install
- Provide a measurement sheet

5.5 TRACTION ENGINE MAIN RESTRICTOR

- Clean the restrictor with compressed air, wash and dry
- Take out and check the windings
- Inspect the restrictor for any damage
- Impregnate the restrictor windings
- Clean the restrictor housing
- Complete the restrictors
- Tighten the connections and mechanical fixture
- Test the insulation and restrictor winding resistance
- Provide a measurement sheet

5.6 PJUT

- Perform a complete revision of the PJUT in accordance with the user's manual

6. CONDENSER RACKS OF A THREE-PHASE SYSTEM

- Clean the condenser and connection points
- Measure the capacity individually and in a group and replace the faulty ones
- Measure the value of the discharge resistor and replace the faulty ones
- Check the resistor-condenser connections and connection cables
- Repair the protective nets
- Provide a measurement sheet

7. RESTRICTORS IN THE RACKS OF A THREE-PHASE SYSTEM

- De-install and clean the restrictors
- Inspect and repair the connection points and damaged insulation
- Inspect the tightness of connections
- Measure the inductance of restrictors and replace the faulty ones
- Install the restrictors
- Provide a measurement sheet

8. REVISION OF THE S1-S4 MOTOR STAND

8.1 DRIVING DIRECTION SWITCH

- Remove the tin lid from the switch
- Clean the lid
- De-install the EP-valves, disassemble them and replace the damaged components
- Test the EP valves
- Inspect and clean the switch
- Inspect the main and auxiliary contacts, replace the damaged ones with new ones
- Replace all gaskets
- Lubricate the cylinder, piston, gear lever and gear segment
- Install a pneumatic mechanism, main contact roller, system of auxiliary contacts
- Install EP- valves
- Adjust the contact pressure of main contacts
- Adjust the contact pressure of auxiliary contacts
- Test the insulation resistance
- Functionally test the functionality of the switch and install the lid
- Provide a measurement sheet

8.2 TRACTION RELAYS

- De-install the arcing chamber
- Disassemble and clean the arcing chamber
- Inspect the chamber and replace if damaged
- Assemble the chamber and clean with compressed air
- De-install the EP valves, disassemble them and replace the damaged ones
- Complete and test the EP valves
- Lubricate the mobile components of the relay and the drive piston
- Replace the main contacts
- Install the EP-valve
- Seal the air connections and fittings
- Monitor auxiliary contacts
- Monitor the cams of auxiliary contacts and replace the damaged ones
- Monitor the main contacts
- Monitor the contact print of main contacts and functionality of the relay
- Install the arcing chamber onto the relay
- Provide a measurement sheet

8.3 SHUNT RELAYS

- De-install the arcing chamber
- Disassemble and clean the arcing chamber
- Inspect the chamber and replace if damaged
- Assemble the chamber and clean with compressed air
- De-install EP valves, disassemble and replace the damaged components
- Complete and test the EP valves
- Lubricate the mobile relay and drive piston components
- Replace the main contacts
- Install an EP valve
- Seal the air clearance and fittings
- Monitor the main contacts

- Monitor the contact print of main contacts and functionality of the relay
- Install the arcing chambers onto the relay
- Provide a measurement sheet

8.4 HEATING RELAY

- De-install the arcing chamber
- Disassemble and clean the arcing chamber
- Inspect the chamber and replace if damaged
- Assemble the chamber and clean with compressed air
- De-install the EP valves, disassemble them and replace the damaged ones
- Complete and test the EP valves
- Lubricate the mobile components of the relay and the drive piston
- Replace the main contacts
- Install the EP-valve
- Seal the air connections and fittings
- Monitor auxiliary contacts
- Monitor the cams of auxiliary contacts and replace the damaged ones
- Monitor the main contacts
- Monitor the contact print of main contacts and functionality of the relay
- Install the arcing chamber onto the relay
- Provide a measurement sheet

8.5 TRACTION ENGINE RECTIFIER

- De-install the rectifiers
- Clean the rectifiers
- Check the functionality of diodes, capacitor and the resistor
- Replace faulty diodes or other elements
- Clean the post insulators and tighten the connections on buses
- Measure the insulation resistance of the rectifier against mass
- Install

8.6 CABELS IN S1-S4 STANDS

- Inspect, test and replace the damaged cables

8.7 PENUMATIC INSTALLATION PIPES

- Clean the pipe (upper, lower, connective)
- Visually inspect
- The pipes should be cleaned with compressed air
- Revise the 1/4" cock
- Connect the stand with new flexible pipes and pipe clamps
- Replace the damaged pipes

8.8 METAL CONSTRUCTION OF THE S1- S4 STAND

- Clean and wash the stand construction
- Visually monitor the stands and repair damages
- Inspect the door closing mechanism and the functionality of locks
- Repair the paint on the stand construction
- Seal the doors on the stands

8.9 TRACTION NEGINE SHUNT RELAYS

- De-install and disassemble the cables and pipe clamps from the resistor box
- Inspect the cables and insulators and clean them
- De-install the resistor from its box
- Clean the resistor boxes
- Disassemble the resistors and inspect the post insulators
- Perform a resistor testing and replace the faulty ones
- Replace the foam
- Install the resistor in the resistor box
- Install buses, tighten and connect the cables
- Provide a measurement sheet

8.10 MOTORS AND FANS ON THE MOTOR STANDS

- De-install the motors with fans
- De-install the fan from the motor
- Inspect the fan for mechanical damage
- Balance the fan
- Coat the fan with anticorrosive protection
- Disassemble the drive motor and replace its bearings
- Test the motor windings and the insulation resistance against mass
- Install the motor with a fan and connect to multi-pole sockets
- Connect the cables onto a terminal box of the motor
- Perform a test spin of the motor with a fan

8.11 EP- VALVES, EP AND EP -20

- De-install
- Disassemble, clean and inspect, replace the faulty ones
- Replace the rubber gaskets and cartridges
- Test the resistance and insulation of the coil and the resistance of the economy resistor
- Assemble and test the valve
- Install

9. REVISION OF THE S5 CABINET – AUXILIARY DRIVE

9.1 MOTOR SAFETY SWITCHES

- De-install
- Disassemble the housing of the AS-switch
- Remove the arcing chambers of the contact and replace the damaged ones
- Remove the assembly of auxiliary contacts and replace the damaged ones
- Monitor the contacts and bimetallic parallel keys of the switch
- Check the mobile component of the assembly
- Clean, individually, all the elements of the AS- switch with compressed air
- Replace the damaged levers
- Test the performance of the AS switch
- Install

9.2 EG RELAYS

- Disassemble the relays by separating the upper part
- Inspect the auxiliary contacts and replace the damaged and faulty ones

- Replace worn out or damaged main contacts
- Test the stroke of the rotor armature
- Test the functionality of the electromagnetic coil
- Monitor the plugging in of the respective discharge and economy resistor
- Check the cable connections by tightening
- Assemble the relays

9.3 CAM SWITCHES

- Clean the switches with compressed air, protect the contacts with a spray
- Monitor the damages, replace the faulty components.
- Replace the damaged shift levers
- Check the quality of the conductor fittings on the clamps
- Monitor the easiness of switch handling

9.4 INDIRECT SWITCH FOR TRAIN HEATING

- Clean with compressed air
- Inspect the contacts on the switch
- Replace the worn out contacts
- Monitor the functionality of the electromagnetic coil
- Monitor the mobility of the mechanism for switching contacts
- Lubricate the mobile components and the contact roller
- Tighten all the mechanical fittings and contact points

9.5 SWITCH WITH A KEY

- Clean the switch with compressed air, protect the contacts with a spray
- Check for current damages, if faulty repair.
- Inspect the quality of connections of conductors at the clamps
- Inspect the seal

10. REVISION OF THE S5 CABINET – THE RELAY SIDE

10.1 CONTROL RELAYS

- De-install
- Clean the relays and inspect the base
- Replace the damaged relays and base if needed
- Test the auxiliary relays and adjust them on a test rig. Replace the faulty primary relays.
- Test the safety relays on the test rig and adjust them in accordance with the adjustment sheet
- Inspect the connecting side of the relay base
- Replace the damaged relay bases
- Install relays

10.2 MEASUREMENT AMPLIFIERS AND SUPPLY UNITS

- De-install the measurement amplifiers and supply units
- Clean the components and connecting pins with compressed air
- Test the amplifiers and supply units on a test rig

- Adjust in accordance with the adjustment sheet
- Install

10.3 AUTOMATIC CIRCUIT BRAKERS (FUSES)

- De-install
- Inspect the performance
- Replace the faulty fuses
- Install

10.4 RESISTORS

- Check the condition of the conductor and tighten the connections on all resistors in the S5 cabinet
- Replace the damaged or overheated resistors
- Measure the resistance

10.5 THERMAL PROTECTION RTN762R, RTN734R, RVP 40

- De-install
- Open and clean the thermal protection
- Test the functionality of the protection
- Install

10.6 MULTI-POLE SOCKETS AND TERMINAL BLOCKS

- Replace the damaged multi-pole sockets and terminal blocks with new ones

AUXILLIARY TRANSFORMER

- ### 10.7
- Inspect the auxiliary transformer and measure the output voltage
 - Check the wiring on the transformer
 - Clean

11. REVISION OF THE AUTO-STOP DEVICE

11.1 ELECTRIC EQUIPMENT OF THE AUTO-STOP DEVICE

- De-install and clean the DC/DC voltage converter
- Test the DC/DC converter and measure the in-out values
- De-install and clean the relay group
- Test the functionality of the relay group and replace the faulty components
- Clean the box with the electronics
- Inspect the brake group, replace the damaged and faulty components
- Inspect the installation inside the cabinet
- Inspect and test the automatic fuses and replace the faulty ones
- Test and measure the current in the frequency generator
- Replace the installation of the auto-stop device towards the locomotive magnets and sensors
- Inspect the multi-pole sockets and repair bad connections
- Integrate the KWR 6 into the auto stop device
- Test the complete functionality of the device
- Provide a measurement sheet

11.2 PNEUMATIC EQUIPMENT OF THE AUTO-STOP DEVICE

- De-install the shut-off cock and adjust it like on the sub-series 100
- De-install the purifier with the drain cock
- De-install the auxiliary valve

- De-install the air pipes
- Revise the shut off cock
- Revise the purifier with the drain cock
- Revise the auxiliary valves

12. AIR COMPONENT REVISION

12.1 MAIN AIR COMPRESSOR

- Revise the main compressor in accordance with the Instructions on handling and major repairs of the type 243VC compressor

12.2 MAIN COMPRESSOR SAFETY VALVES

- De-install and disassemble the safety valve
- Clean all the components and assemble the valve
- Test the valve and adjust the pressure, seal the valve
- Provide a measurement sheet

12.3 AIR DRYER

- Install a new dual-chamber air dryer

12.4 P - STAND

- De-install the equipment from the P-stand
- Revise the equipment in accordance with the Instructions on brake maintenance (RK-2)
- Install a switch for a pantograph, the same as on sub-series 100
- Replace the rubber pipes for feeding the electric pneumatic devices with air

12.5 SHUT OFF COCKS

- Disassemble and clean with compressed air
- Hone the conjunctive surfaces
- Assemble after replacing the gaskets and seal with SIM 80
- Test

12.6 CHECK VALVES

- Disassemble and clean with compressed air
- Inspect the valve fittings
- Assemble after replacing the piston and seal with SIM 80
- Test the valves

12.7 AIR PURIFIERS

- Disassemble and clean with compressed air
- Assemble after replacing the gaskets, cartridges and seal with SIM 80

12.8 PRESSURE SWITCH

- Disassemble
- Wash and clean with compressed air
- Assemble and replace the gaskets
- Test and adjust on a test rig

12.9 PNEUMATIC VALVE OF THE DEADMAN CONTROL

- Disassemble the valve
- Wash and clean with compressed air
- Inspect the fittings
- Assemble after replacing the gaskets and seal with SIM 80

12.10 DOUBLE BACK PRESSURE VALVES

- Disassemble the valve
- Wash and clean with compressed air
- Inspect the fittings
- Assemble after replacing the gaskets and sealing with SIM 80

12.11 DUST COLLECTOR

- Disassemble and clean with compressed air
- Assemble and seal with SIM 80

12.12 P – STAND INSTALLATION

- Clean the pipes from the inside
- Clean with compressed air

12.13 P – STAND CONSTRUCTION

- Clean and wash the stand construction
- Repair the paint

12.14 AUXILLIARY AIR COMPRESSOR

- Disassemble and clean the motor
- Inspect the brush holders
- Replace the brushes
- Perform a collector turning
- Assemble and lubricate
- Test the performance

12.15 ALCHOCOL SPRINKLER

- Disassemble and clean with compressed air
- Replace the gaskets
- Inspect the alcohol supplier
- Assemble the sprinkler

12.16 SANDBLASTER EP VALVES

- Disassemble the EP-valve
- Clean and inspect
- Test the insulation of the coil and the resistance of the economy resistor
- Replace the rubber gaskets and cartridges
- Assemble, test and provide a measurement sheet

12.17 DEADMAN CONTROL WITH A MICROSWITCH

- Disassemble and clean with compressed air

- Hone the conjunctive surfaces of the cock
- Assemble after replacing the gaskets and seal with SIM 80
- Check the tightness of the cam lever
- Monitor the micro switch and replace the faulty one
- Inspect the wiring and monitor the connection towards the deadman control

12.18 HAND BRAKE

- Disassemble the hand brake
- Clean, wash and inspect the components
- Replace the bushings, steel cords and the tightener
- Perform a security check on the hand brake bolts, so there is no self-loosening
- Install and lubricate the hand brake
- Clean and inspect the micro switch
- Install the micro switch and test the functionality
- Check the number of revolutions regarding the signalization of hand brake tightness

SQIRHC FOR CHOOSING A PANTOGRAPH

- 12.19 ➤ De-install
- Install a switch for choosing a pantograph
- Install EP valves for lifting the pantograph

13. REVISION OF THE CONTROL ROOM EQUIPMENT

- 13.1 ➤ Perform a better sound and warmth insulation of the control room

13.2 CONTROLLER F1 A (B)

- De-install
- Clean and de-grease the controller drum
- Polish the cam lifters
- Inspect and replace the faulty contacts
- Check the wirings. Repair bad connections.
- Lubricate the cam lifters
- Check the performance of the contact STARTING order
- Clean and inspect the chain and gear
- Repair and lubricate the turning mechanism
- Repair the too big controller and gear shift stroke
- Repair the handrail of the controller cab and coat in plastic
- Replace the worn out handle of the direction switch
- Replace the nameplates on the controller
- Check the mechanical block of the direction switch
- Repair the lid and its hinges
- Install

13.3 F2 CABINET A (B) EQUIPMENT

- De-install the F2 cabinet and clean with compressed air

- De-install the equipment from the front plate
- Replace all the instruments
- The lighting should be of the same colour on all instruments
- Inspect the cam switches, replace the faulty ones
- Replace the nameplates
- Replace the faulty buttons and switches
- Install new multi-pole sockets
- Paint the cabinet

13.4 F3 DOORS AND DOOR EQUIPMENT A (B)

- De-install the door with the equipment
- De-install, clean and test the instruments
- Inspect the cam switches, replace the faulty ones
- Replace the nameplates
- Clean and measure the resistance of the wire-wound resistor. Replace the faulty ones.
- Install a three-tone horn.
- Paint the door

13.5 FOOT OPENING

- Install new push floor switches for the locomotive horn, deadman control and sandblasters (like in the subseries 300)
(Electric control of the horn)

13.6 ASHTRAYS AND WASTEBASKETS

- Install two new ashtrays on each counter (apply the solution from the 2062 100 locomotive)
- Install one more wastebasket in each control room

13.7 CALORIFIER IN THE CONTROL ROOM

- Reconstruct the heating of the control room in accordance with the solution from 1 141 300 - II

13.8 FLOOR HEATER

- De-install and clean the floor heater
- Test the heater and replace the faulty with a new one
- Check the inlet conductors and replace the faulty ones

13.9 RD DEVICE

- Revise the complete device and test on a grid

13.10 AC UNIT

- De-install the AC unit
- Inspect the completeness of the AC block
- Repair minor damages
- A unit with considerable damages send to a repair shop
- Lubricate the fan bearings
- Clean the filters
- Inspect the heater and replace a faulty one
- Replace the
- Replace the filters

- Repair the protective lid or install a protective sheet metal
- Inspect and test the performance of the switch and the thermostat. Replace the faulty ones
- Clean and wash the mask
- Test the performance

13.11 SPEEDOMETER

- Install a new DEUTA speedometer type KWR 6
- Connect the signalization of the device with the signal panel of the F2 cabinet as well (solution from the 2132 300 locomotive)

13.12 CONTROL ROOM PNEUMATIC EQUIPMENT

- In accordance with the RK2 revise the following equipment:
 - double manometer 0-16bar (2 pcs)
 - double manometer 0-10bar (2 pcs)
 - combined reservoir 1/3/7 lit
- Provide a measurement sheet

13.13 AIR INSTALLATION SHUT OFF COCKS

- Disassemble, wash and clean with compressed air
- Hone the conjunction surfaces
- Assemble after replacing the gaskets and seal with SIM 80
- Test

13.14 AIR PURIFIERS

- Disassemble
- Wash and clean with compressed air
- Assemble after replacing the gaskets, cartridges and seal with SIM 80

13.15 DOUBLE CHECK VALVES

- Disassemble the valves
- Wash and clean the components with compressed air
- Inspect the fittings
- Assemble after replacing the gaskets and seal with SIM 80

13.16 WINDOW WIPERS

- Install electric window wipers from the lower side of the window, with nozzles on wiper brushes for washing
- Install appropriate containers and pumps for the washing fluid
- Connect the wiper motor through a commutator

13.17 BYPASS COCK

- Disassemble the cock
- Wash and clean the components with compressed air
- Inspect and tighten the fittings
- Assemble after replacing the gaskets and seal with SIM 120
- Test
- Install in accordance with the 300 subseries

14. REVISION OF THE OTHER EQUIPMENT IN THE CONTROL ROOM

14.1 TOOL AND EQUIPMENT CABINET

- De-install and repair the tool cabinet
- Install tin padlock hooks
- Paint the cabinet

14.2 FOLDING SEAT

- Disassemble and clean
- Upholster the seat and the back of the chair with a fabric (the same used for the engineer seat)
- Inspect and lubricate the spring and components for lifting the seat
- Assemble the seats

14.3 ENGINEER SEAT

- Install new engineer seats (type BG 9100 with “click” turning, headrests and armrests)

14.4 SHADES AND CURTAINS

- Install new shades with rails onto the front windows (TŽV Gredelj will recommend the type of shades and rails)

14.5 CONTROL ROOM LIGHTING

- Install led lighting in the control room 2x18W per lamp
- Install auxiliary lighting of 5 W with own switch
- Install a timetable lighting (12 V; 5 W) with a toggle switch

14.6 220V SOCKETS IN THE CONTROL ROOM

- Install new 220 V sockets

15. REVISION OF THE EQUIPMENT FOUND ON THE CARBODY WITH BOGIE

15.1 PNEUMATIC EQUIPMENT UNDERNEATH THE BOGIE

- Revise the containers in accordance with RK2
 - container 800 lit
 - container 200 lit
 - container 100 lit
- Provide a measurement sheet

15.2 OIL AND WATER SEPARATOR WITH A DRAIN COCK

- Disassemble the separator from the cock and wash the components and inspect
- Assemble after replacing the gaskets and seal with SIM 120

15.3 DRAIN VALVES

- Disassemble the valves, wash and inspect the valves
- Assemble after replacing the gaskets and seal with SIM 120

15.4 CHECK VALVES

- Disassemble, wash and clean with compressed air
- Inspect the fittings in the valves

- Assemble after replacing the piston and seal with SIM 80
- Test the valves

15.5 PIPE END COCKS AND HALF COUPLINGS

- Disassemble
- Wash the components and clean with compressed air
- Inspect the fittings
- Assemble after replacing the gasket and seal with SIM 120 or 80
- Install new rubber half couplings
- Test
- Coat the cocks in accordance with regulations on anticorrosive protection

15.6 DUAL SAFETY VALVE

- Disassemble the valve
- Wash the parts and inspect
- Assemble after replacing the gasket and seal with SIM 120 or 80

15.7 BUMPER AND TRATCION EQUIPMENT

- Revise the tow hook with rails and elastomeric inserts
- Revise the buffers with elastomer
- Provide a measurement sheet

16. REVISION OF ELECTRICAL EQUIPMENT ON THE CARBODY AND BOGIE

16.1 FRONT LIGHTS

- Front lights of the locomotive should be reconstructed (Led diodes (red/white); Ksenon reflector; H-1 high beams)
- Everything should be connected through a commutator and has to be adjustable

16.2 FINAL SIGNAL GIRDER

- Diagonally install a final signal girder. Apply the solution from DMV 7121 100

16.3 UIC SOCKETS

- Install a UIC socket in accordance with the UIC regulations

16.4 WORKSHOP CONNECTOR SOCKET

- Disassemble, clean with detail and lubricate
- Check the mobility of contacts
- Check and tighten the electrical connections
- Check the functionality of the block and lid

16.5 TERMINAL BOXES ON THE CARBODY

- Clean the grounding, sensor and magnet boxes
- Inspect visually. Replace the damaged components

16.6 BOXES WITH BATTERY FUSES

- Clean and inspect the box
- Inspect the base of the fuse and test it
- Break in the lid of the box
- Assemble the box

16.7 RECHARGEABLE BATTERIES

- Install new Ni-Cd rechargeable batteries
- Provide a measurement sheet

16.8 ELECTRIC HEATING SOCKETS

- De-install the heating socket
- De-install the socket and clean in detail. Replace the damaged components
- Check the locking mechanism and revert it to its original condition
- Install the socket after sealing glands

17. ROOF, CARBODY AND BOGIE REVISION

17.1 ROOF CONSTRUCTION

- Replace the gaskets of the roof lid fitting
- Clean and if needed repair the water drain on the roof and replace faulty parts

17.2 LOCKSMITH WORKS ON THE CARBODY, ROOF AND BOGIE

- Prepare for installation of an UIC socket ta the front of the locomotive

17.3 COW CATCHER

- De-install the cow catcher
- Inspect and if needed repair the damaged parts on the plow girder
- Repair the track cleaners
- Install and adjust the height of the plow and rail cleaner above the GRT

17.4 RECHARGEABLE BATTERIES

- Clean the vent pipe
- Wash the crate inside and out
- Wash the cart
- Pain the body and the cart
- Lubricate the rails and the cart
- Repair the levers for closing the crate door
- Inspect and repair the connective cables

17.5 CONTROL ROOM DOOR

- Install new doors

17.6 DOOR TOWARDS THE ENGINE ROOM

- Clean, inspect and repair any damages
- Inspect the locks, repair if damaged
- Check the seal, replace the gaskets
- Inspect and repair the suspension of the doors in hinges

17.7 ENGINE ROOM SIDE DOOR

- Clean, inspect and repair what is damaged
- Inspect the locks and doorknobs, replace if faulty
- Inspect the seal and replace the gaskets
- Inspect and repair the suspension

17.8 MOBILE SIDE WINDOWS

- De-install and disassemble the windows
- Install new aluminium slide rails with felt
- Revise the window mechanism
- Clear the water drain, assemble the windows and replace the gaskets
- Adjust the opening/closing mechanism and install a handle stop
- There should be a manufacturer designation engraved in the window along with a safety attestation

17.9 FRONT WINDOWS

- De-install the windows
- Replace any damaged glass
- Clean the conjunction surfaces
- Install the window in accordance with the gluing procedure used for the locomotive 1 142

17.10 FIXED WINDOWS OF THE ENGINE ROOM

- If needed replace damaged glass
- Clean the conjunction surfaces of the frame and protect them with paint
- Replace the rubber seals

18. REVISION OF OTHER EQUIPMENT**18.1 H GIRDERS FOR BELLOWS AND FOR COLLING CANAL BELLOWS**

- Install new bellow girders
- Install new bellows from a non-flammable material with slide plates and springs

18.2 FIRE EXTINGUISHERS AND THEIR GIRDERS

- De-install the fire extinguishers and send to an authorized service
- Equip the locomotive with fire extinguishers in accordance with valid HŽ rule book

18.3 INSTALLATION OF SPILT OIL DRAINAGE

- Install a drainage barrier around the transformer and compressor
- Install a pipe for draining oil
- Install a container for collection of drained oil
- Clean the container and drainage installation

18.4 RUBBER TRACKS

- Install new rubber tracks with aluminium curbs

18.5 REAR-VIEW MIRRORS AND THEIR GIRDERS

- Clean and protect from corrosion

- Repair and paint the rear-view mirror girders
- Replace the damaged rear-view mirrors with new ones
- Install heated rear-view mirrors

18.6 RAIN TINS (eaves)

- Repair or install the missing eaves

18.7 HALF COUPLING GIRDER AND KEY

- Inspect and repair the half coupling girder if necessary
- Coat the girder with anti-corrosive protection
- Install the half coupling girder and key for changing the half coupling by the main compressor
- Inspect the key for changing half couplings, and if needed repair or install

18.8 AIR INLET SIDE GRILLS

- Repair the damaged side grills

18.9 NAMEPLATES

- Replace all damaged or missing nameplates
- Wash the plates so that the captions are visible

19. PAINTING THE LOCOMOTIVE

- After sandblasting, perform a complete anticorrosion protection from the inside and out
- After applying the anticorrosion protection, paint the locomotive with paint based on water soluble elements and compounds, in order to fulfil the ecologic protection requirements

19.1 NUMBER OR LETTER SIGNS ON THE LOCOMOTIVE

- All number and letter signs must be in accordance with the Instructions on labelling railroad vehicles
- All other signs must be in accordance with the same Instruction and the Rulebook on requirements for railroad vehicles

20. FINAL INSPECTION AND CHECK

20.1 LOCOMOTIVE WEIGHING

- Weigh the locomotive and balance the mass

20.2 TESTING THE SEALING

- Test the sealing with a rain test in accordance with the IC instruction

20.3 QUALITY CONTROL

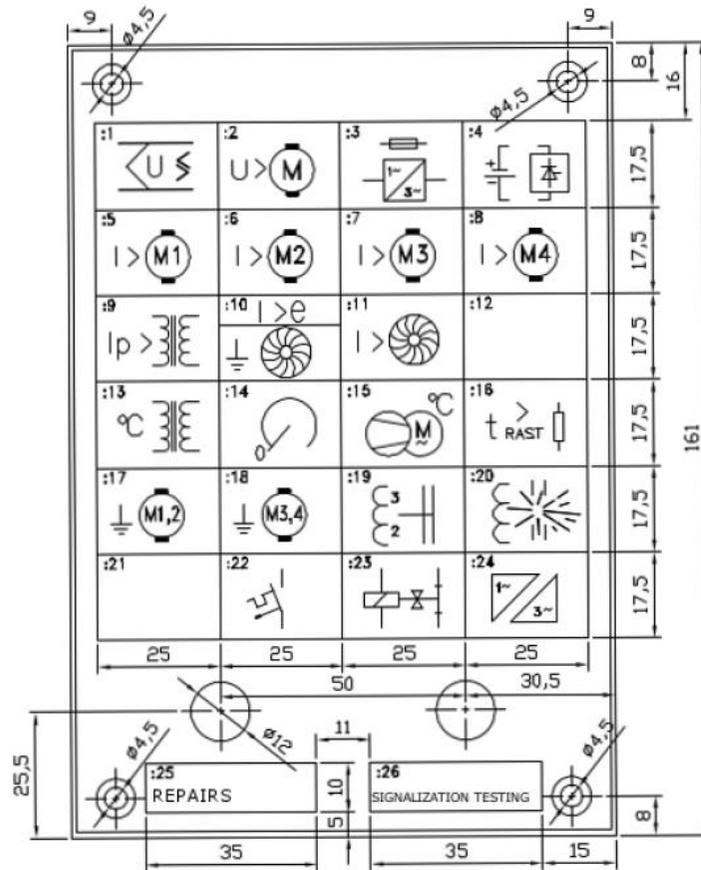
- Monitoring over the repair will be done in accordance with the quality control plan as agreed between the owner and contractor

20.4 FINAL INSPECTION AND HAND OVER OF THE LOCOMOTIVE

- Delivery of keys and documentation. Documentation consists of:
 - locomotive log book
 - measurement sheets
 - testing sheets
 - certificates for recently installed components and materials
 - technical documentation for use and maintenance of newly installed components
 - handling and maintenance instructions for newly installed devices and equipment
- Before putting the locomotive back on the tracks provide the testing sheets and a functionality diagram for air and b

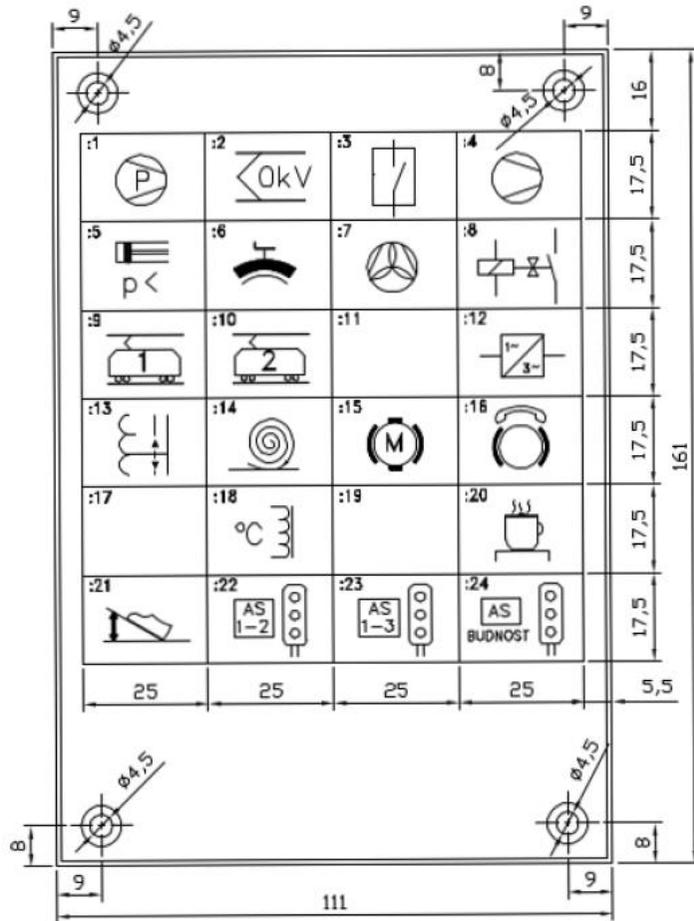
equipment

- Test the locomotive and the brakes in place under KM and record the stopping paths in drive mode
- Record the functionality of the locomotive while pulling the train
- Compile a delivery log



1	Overvoltage / undervoltage (yellow)
2	Overvoltage of traction motors (red)
3	PJUT switch burned (red)
4	The charger for batteries isn't working (yellow)
5	Overload of the traction motors M1 (red)
6	Overload of the traction motor M2 (red)
7	Overload of the traction motor M3 (red)
8	Overload of the traction motor M4 (red)
9	Overload of the primary of the main transformer (red)
10	Overload of train heating and ground connection of the auxiliary drive (red)
11	Overload of auxiliary drives (red)
12	(yellow)
13	Main transformer overheating (red)
14	Error KWR – 6 (red)
15	Main compressor motor overheating (red)
16	Snubber resistor working too long (yellow)
17	Ground connection of traction motors M1 and M2 (red)
18	Ground connection of traction motors M3 and M4 (red)
19	Intermediate position of the selector (red)
20	Explosion of the selector (red)
21	(yellow)
22	Switch As dropout (yellow)
23	Jammed relay (red)
24	PJUT out of function (red)
pos.	Signalization description

SIGNAL TABLE 1



pos.	Signalization description
1	Auxiliary compressor on (yellow)
2	No voltage (yellow)
3	Main switch turned off (yellow)
4	Main compressor on (blue)
5	Pressure is too low (yellow)
6	Hand brake tightened (red)
7	No ventilation (yellow)
8	Traction relays off (yellow)
9	Locomotive 1 ready (blue)
10	Locomotive 2 ready (blue)
11	(yellow)
12	Pjut off (yellow)
13	Selector in selection (yellow)
14	Sliding (yellow)
15	Traction with braking (yellow)
16	RDC braking (red)
17	(yellow)
18	Restrictor overheating (red)
19	(yellow)
20	Cooker on (yellow)
21	Deadman control (yellow)
22	AS regime 1-2 (blue)
23	AS regime 1-3 (blue)
24	AS - on (yellow)

SIGNAL TABLE II

Appendices

Appendix A—Description of the Services

Give detailed descriptions of the Services to be provided, dates for completion of various tasks, place of performance for different tasks, specific tasks to be approved by Employer, etc.

Appendix B—Schedule of Payments

List all milestones for payments.

Appendix C—Key Personnel and Subcontractors

- List under:*
- C-1 Titles [and names, if already available], detailed job descriptions and minimum qualifications of foreign Personnel to be assigned to work in the Government's country, and staff-months for each.*
 - C-2 Same as C-1 for Key foreign Personnel to be assigned to work outside the Government's country.*
 - C-3 List of approved Subcontractors (if already available); same information with respect to their Personnel as in C-1 or C-2.*
 - C-4 Same information as C-1 for Key local Personnel.*

Appendix D—Breakdown of Contract Price in Foreign Currency

List here the elements of cost used to arrive at the breakdown of the lump-sum price—foreign currency portion:

- 1. Rates for Equipment Usage or Rental or for Personnel (Key Personnel and other Personnel).*
- 2. Reimbursable expenditures.*

This appendix will exclusively be used for determining remuneration for additional Services.

Appendix E—Breakdown of Contract Price in Local Currency

List here the elements of cost used to arrive at the breakdown of the lump-sum price—local currency portion:

- 1. Rates for Equipment Usage or Rental or for Personnel (Key Personnel and other Personnel).*
- 2. Reimbursable expenditures.*

This appendix will exclusively be used for determining remuneration for additional Services.

Appendix F—Services and Facilities Provided by the Employer

Performance Bank Guarantee (Unconditional)

To: _____

Whereas _____ (hereinafter called "the Service Provider") has undertaken, in pursuance of Contract No. _____ dated _____ to execute _____ (hereinafter called "the Contract");

And whereas it has been stipulated by you in the said Contract that the Service Provider shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligations in accordance with the Contract;

And whereas we have agreed to give the Service Provider such a Bank Guarantee;

Now therefore we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Service Provider, up to a total of _____, _____, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, and we undertake to pay you, upon your first written demand and without cavil or argument, any sum or sums within the limits of _____/ as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Service Provider before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Services to be performed there under or of any of the Contract documents which may be made between you and the Service Provider shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any such change, addition, or modification.

This Guarantee shall be valid until a date 28 days from the date of issue of the Certificate of Completion.

Signature and seal of the Guarantor _____

Name of Bank _____

Address _____

Date _____

Bank Guarantee for Advance Payment

To: _____

Gentlemen:

In accordance with the provisions of the Conditions of Contract, Sub-Clause 6.4 (“Terms and Conditions of Payment”) of the above-mentioned Contract, _____ (hereinafter called “the Service Provider”) shall deposit with _____ a Bank Guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of _____

We, the _____, as instructed by the Service Provider, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to _____ on his first demand without whatsoever right of objection on our part and without his first claim to the Service Provider, in the amount not exceeding _____

We further agree that no change or addition to or other modification of the terms of the Contract or of Services to be performed there under or of any of the Contract documents which may be made between _____ and the Service Provider, shall in any way release us from any liability under this Guarantee, and we hereby waive notice of any such change, addition, or modification.

This Guarantee shall remain valid and in full effect from the date of the advance payment under the Contract until _____ receives full repayment of the same amount from the Service Provider.

Yours truly,

Signature and seal: _____

Name of Bank/Financial Institution: _____

Address: _____

Date: _____

Invitation for Bids (IFB)

Date: 23.09.2016

Contract Identification N^o: HZC-ICB 07/15

World Bank Loan/Credit N^o: 8502 - HR

World Bank Loan/Credit Name: Sustainable Croatian Railways in Europe Project

1. The HŽ Cargo d.o.o. has received¹² a loan from the International Bank for Reconstruction and Development¹³ towards the cost of the Sustainable Croatian Railways in Europe Project and intends to apply part of the funds to cover eligible payments under the Contract for Repair and modernization of the electric locomotives series 1141. Bidding is open to all bidders from eligible source countries as defined in the *Guidelines: Procurement under IBRD Loans and IDA Credits*¹⁴.
2. The HŽ Cargo d.o.o. invites sealed bids from eligible bidders for carrying out the major and medium repair of the electric locomotives series 1141.
3. Bidding documents (and additional copies) may be downloaded at <http://www.hzcargo.hr/default.aspx?id=278> for free. Interested bidders may obtain further information at the address specified in Bidding documents.
4. Bids shall be valid for a period of 90 days after Bid closing and must be accompanied by security of 90.000,00 HRK or its equivalent in a convertible currency, and shall be delivered to HŽ Cargo d.o.o., Heinzelova 51, 10 000 Zagreb, officer Mateo Karamati on or before 25th November 2016, 13:00h, at which time they will be opened in the presence of the bidders who wish to attend.

¹² Substitute “has applied for,” if appropriate.

¹³ Substitute International Development Association (IDA) and “credit” for “loan” where a credit has been extended by (or requested from) IDA.

¹⁴ Occasionally, contracts may be financed out of special funds that would further restrict eligibility to a particular group of member countries. When this is the case, it should be mentioned in this paragraph. Also indicate any margin of preference that may be granted as specified in the loan or credit arrangement and set forth in the bidding documents.

