

SPOORNET TECHNOLOGY MANAGEMENT – TRAIN DESIGN

File Ref:	EVALUATION OF TECHNICAL COMPLIANCE OF OFFERS ON ECPB/WDP TENDER 1020 72218 000	Document no: Spoornet RM/ES/ME-04/076
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Technical Workgroup Members

J.M. Mulder

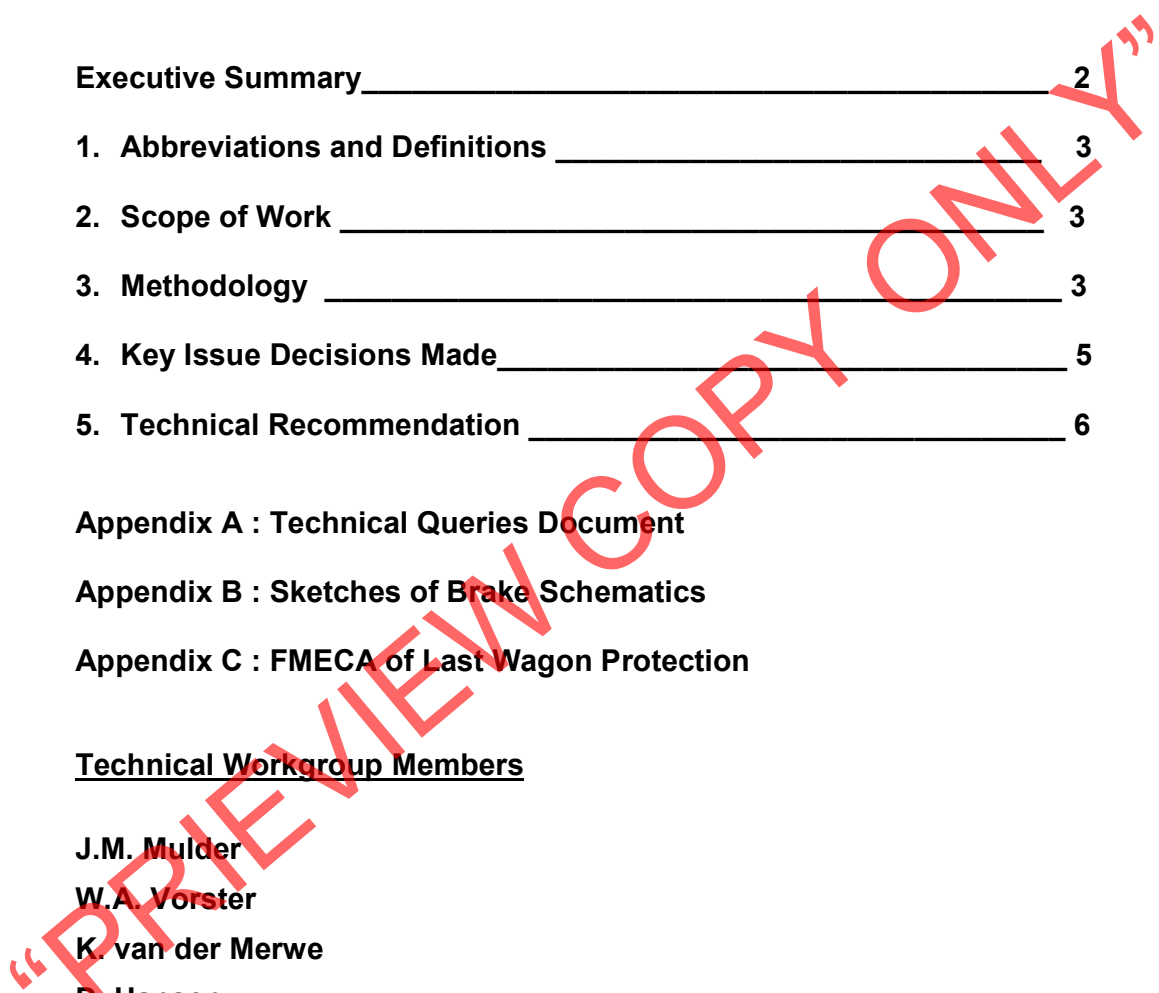
W.A. Vorster

K. van der Merwe

D. Hansen

N. Harilal

C. Kayser



EXECUTIVE SUMMARY

This document reports on the findings by the Technical Workgroup of the technical evaluation of the two tender submissions from Messrs WABTEC and KNORR AMABHILIKI.

The Scope of Work and Methodology employed in the technical evaluation are provided in the document. All issues still requiring clarification by Technical Discussion with both suppliers and Design Reviews, have been identified.

Summary of Key Issues, as reflected in Clause 4:

- Load sensing to be fitted to all wagons.
- All aspects of interoperability to be finalised prior to placement of business.
- Last wagon protection not required.
- Transition Vehicles to be fully prototyped prior to roll-out.
- Stand-Alone vs. Overlay ECPB systems to be evaluated in service prior to final decision.
- Emergency portion of brake control valve to be retained in system by WABTEC and vent valve to be used in KNORR system.
- One CCD per two wagons to be used.

It is recommended by the Technical Workgroup that both tenderers comply with the technical requirements of the specification contained in Tender 1020 72218 000.

1. ABBREVIATIONS AND DEFINITIONS

ECPB : Electronically Controlled Pneumatic Braking System

WDP : Wire Line Distributed Power

FMECA : Failure Mode Evaluation and Criticality Analysis

1.1 Definition of Technical Compliance

Technical compliance is defined as the minimum technical requirement that must be complied with in order that trains may be operated using ECPB with WDP with a high degree of operational reliability, resulting in enhanced commodity throughput, to the benefit of Spoornet.

2. SCOPE OF WORK

To evaluate technical compliance by Messrs WABTEC and KNORR AMABHILIKI with the requirements of Spoornet specification RT/TE/CTD/0042, Amendment 1, dated 2 March 2004, included in tender 1020 72218 000.

3. METHODOLOGY

3.1 Two offers were received in response to the abovementioned tender:

3.1.1 Messrs WABTEC Railway Electronics under unreferenced letter dated 6 April 2004.

3.1.2 Messrs KNORR-AMABHILIKI (Pty)(Ltd) under unreferenced letter dated 6 April 2004.

3.2 Technical sections C, D, E, F, G and H of both tender submissions were made available to Technology Management (Train Design Cluster) (comprising BRAKE VIT and TRAIN DESIGN TECHNOLOGY) during May 2004 with the request to evaluate technical compliance of the offers with the specification.

3.2.1 Section C : System Specification to Convert COALink Rolling Stock for ECPB/WDP Operations.

3.2.2 Section D : Specification for Equipping COALink Locomotives with Integrated ECPB / WDP System.

3.2.3 Section E : Specification for ECPB Transition Vehicle / Device.

3.2.4 Section F: Specification for Equipping COALink Wagons with ECPB System.

3.2.5 Section G: Specification for End of Train Device.

3.2.6 Section H: Appendices and Data Pack.

3.3 A Technical Workgroup was established comprising Messrs J.M. Mulder, W.A. Vorster, K. van der Merwe, N. Harilal, D. Hansen and C. Kayser.

- 3.4 The Workgroup met between 24 and 26 May 2004 to evaluate the offers on a clause-by-clause basis for technical compliance in terms of the requirements of the specification.
- 3.4.1 A document entitled “Technical Queries” was compiled with queries directed to each of the tenderers, as follows:
- 3.4.1.1 All clauses compliant with specified requirements were left unshaded.
- 3.4.1.2 Matters requiring further discussion and queries to be directed to tenderers were highlighted in yellow.
- 3.4.1.3 Matters deemed appropriate for discussion at Design Reviews / Technical Discussions, were highlighted in red.
- 3.4.2 The document “Technical Queries” is included as Appendix A to this document.
- 3.5 Discussion Workshops, to address to contents of the Technical Queries document were held on 1 July 2004 and 29 July 2004. These Workshops were attended by representatives of Rolling Stock Engineering, Traction, Wagons and the Richards Bay Service Delivery Zone.
- 3.6 Technical enquiries to tenderers have been addressed satisfactorily and the only remaining technical discussions to still take place are those highlighted in red, in terms of clause 3.4.1.3.
- 3.6.1 It is understood that the first Technical Discussions with tenderers will take place within one month of placing the business, after tender option date expiry of 30 September 2004.

4. KEY ISSUE DECISIONS MADE DURING TECHNICAL EVALUATION

4.1 Load Sensing

- 4.1.1 L-1 Load sensing equipment must be fitted to all CCE wagons to prevent wheel skidding when a pneumatic emergency brake application takes place with wagons in the empty condition.
- 4.1.2 Tenderers were requested to provide an FMECA to ascertain the degree of risk of wheel skidding without L-1 equipment on the wagons.

4.2 Interoperability

- 4.2.1 All aspects related to interoperability of vehicles fitted with equipment from both tenderers must be addressed to the satisfaction of Spoornet, prior to placement of business.
- 4.2.2 AAR Representation to be invited to participate in technical discussions on interoperability between Spoornet and tenderers.

4.3 Last Wagon Protection

It was agreed in terms of FMECA results, that last wagon break-away risk is minimal and that the ECPB braking system configuration need not cater for last wagon protection.

4.4 Transition Vehicles

4.4.1 Design drawings to be complete by end August 2004.

4.4.2 Four prototypes to be built for evaluation with First Phase Stand-Alone Operation (200 wagons each per supplier).

4.5 Stand-Alone vs. Overlay Systems

Agreed that the First Phase Stand-Alone operation (400 wagons) be evaluated in service in comparison with the 200 wagon Overlay Pilot Train before making a final decision on Stand-Alone or Overlay for the balance of the ECPB/WDP fleet roll-out.

4.6 Control Valve Emergency Portion or Vent Valve

Agreed that new emergency portions would be fitted to the 200 wagons equipped with the WABTEC system and that the KNORR type vent valve would be fitted to the 200 wagons equipped with the KNORR system, to be built for the First Phase Operation.

4.7 One CCD per Wagon / per 2 Wagons / per 4 Wagons

Agreed that one CCD per 2 wagons will be fitted.

5. TECHNICAL RECOMMENDATION

Although many technical matters still require clarification by Technical Discussion and/or Design Reviews, both tenderers comply with the technical requirements of Technical Sections C, D, E, F and G of the specification in tender 1020 72218 000.

Should the decision, after evaluation in terms of clause 4.3, be to make use of the overlay system, it is required that wire-line DP be retained to permit operation in DP in pneumatic mode in the event of ECPB failure.

Technical Recommendation Supported by the following Technical Workgroup Members

J.M. Mulder	
W.A. Vorster	
K. van der Merwe	
N. Harilal	
D. Hansen	
C. Kayser	

APPENDIX A

TECHNICAL QUERIES DOCUMENT

“PREVIEW COPY ONLY”

APPENDIX B

SKETCHES OF BRAKE SCHEMATICS

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APPENDIX C

LAST WAGON PROTECTION FMECA

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