



TRANSNET

CAPITAL PROGRAM TENDER REQUIREMENTS

LOCOMOTIVE CAB and REAR UNIT EOT'S

Author:

N Breytenbach

Nick Breytenbach

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1. SCOPE OF THE TENDER

1.1 The tender comprises the manufacture and supply of End Of Train (EOT) and Head Of Train (HoT) devices as per specification BBB1776 Version3.

1. CAB (HoT) units:	QTY	Delivered to	Type and notes
1.1 37 Class diesel locos	30	Pretoria	3.3.1.4b,d
1.2 34 Class diesel locos	20	Pretoria	3.3.1.4b,d
1.3 10E Class locos	65	Pretoria	3.3.1.4b,d
1.4 7E Class locos	25	Pretoria	3.3.1.4b,d
1.5 43D Class diesel locos	1- 55 56 -110	Pretoria	3.3.1.4b,c
1.6 ORE line loco units	50	Saldanha	3.3.1.4b,d + On train repeater
1.7 ORE line Trolleys	8	Saldanha	3.3.1.4b
1.8 ORE line Tipplers	5	Saldanha	3.3.1.4a
2. REAR (EoT) units:			
2.1 37 Class diesel locos	30	Pretoria	GPRS included
2.2 34 Class diesel locos	20	Pretoria	GPRS included
2.3 10E Class locos	65	Pretoria	GPRS included
2.4 7E Class locos	25	Pretoria	GPRS included
2.5 43D Class diesel locos	30	Pretoria	GPRS included
2.6 ORE line rear units	20	Saldanha	GPRS included
2.7 ORE line tipplers	5	Saldanha	GPRS included
3. REAR (EoT) chargers units:			
3.1 37 Class locos.	30	Pretoria	Charger cable included
3.2 34 Class locos.	20	Pretoria	Charger cable included
3.3 10E Class locos.	65	Pretoria	Charger cable included
3.4 7E Class locos.	25	Pretoria	Charger cable included
3.5 43D Class diesel locos.	30	Pretoria	Charger cable included
3.6 ORE line chargers	25	Pretoria	Charger cable included The front and rear must use the same charger.
3.5 Charge adaptors cable to fit other TFR chargers (Optional. TFR will adjudicate if needed)	30	Pretoria	 Adaptor cable to fit these two connectors.
3.6 Charge adaptors cable to fit other TFR chargers. (Optional. TFR will adjudicate if needed)	1-70 71- 140	Pretoria	 Adaptor cable to fit these two connectors.
4. Portable cab housing <i>without</i> HoT.			

4.1 Portable cab unit with battery connectors and all wiring.	5		3.3.1.4a See: Portable EoT unit for dimensions. The standard CAB unit must fit inside.
5. Chain and locks (Optional. TFR will adjudicate if needed)	1- 100 101- 195	(25 delivered to Saldanha & 170 to Pretoria)	The supplier must include his lock if it is integral to his telemeter otherwise the supplier must also quote for a separate lock & chain.
6. Pipe & coupler (Optional. TFR will adjudicate if needed)	1- 100 101- 195	25 delivered to Saldanha & 170 to Pretoria	The supplier must not include the pipe and coupler to the EoT price. The supplier must quote for a separate pipe & coupler unit. The supplier can quote an additionally item and include the pipe if there is a reduced cost benefit to TFR.
7. EoT remote heads.	1-55 56 - 110	Pretoria	Direct Ethernet connection See: Telemeter remote head for dimensions and Annexure-B
8. Fix repeaters .			.
8.1 Fix units in standard CAB format	1-10 11-20	Pretoria	Fix repeaters 3.3.1.4a Fix repeaters must repeat both rear to front and front to rear messages via ONE radio. TFR need for management and maintenance purposes to monitor the operation of these repeaters remotely via GPRS. (See Annexure-D)
8.2 Housing with battery backup	1-10 11-20	Pretoria	See: Portable EoT unit for dimensions.
9. Keys & tools	1-50 51-100	Pretoria	The supplier must quote for extra keys to work on

	100 -200		his REAR telemeter if an integrated lock is used and for the lose key & chain requirement in this tender. Any special tools required must be quoted separately.
10. Gerotek vibration & rust test. (Optional. TFR will decide and adjudicate if required)			
10.1 CAB unit	1		The supplier must quote on ONE Gerotek test. TFR will decide if the equipment must be subjected to the test. If the equipment fails then the supplier must fix the problems and carry any further Gerotek test cost to prove the compliance of his equipment.
10.2 REAR unit	1		The supplier must quote on ONE Gerotek test. TFR will decide if the equipment must be subjected to the test. If the equipment fails then the supplier must fix the problem and carry any further Gerotek test cost to prove the compliance of his equipment.

11. Antenna VSWR indication	TFR prefer that all new EoT and HoT's include this function. The CAB unit must indicate the vswr in the technician area while the REAR unit must populate the GPRS field.
12. Interfacing with present EOT's	A supplier who deliver EOT's in the past to TFR and quote on this tender must include in the CAB units the protocol to talk to his old rear units not supporting the protocol defined in this tender.
13. Delivery	The supplier must indicate clearly the delivery schedules.
14. Testing	The supplier will provide all test equipment needed to evaluate the final product.
15. Approving the CAB unit housing	The successful supplier must provide one sample for approval before full production starts. (If not

	supplied previously to TFR)
16. Rear unit GPRS tracking	All rear units must have GPRS tracking included. The rear unit must comply to GPRS tracking specification BBD5420 version-2
17. Portable units	The portable units must have external Power ,VHF, GPS antenna and data logging connectors. The standard CAB unit must fit inside the portable unit.
18. ORE line CAB units	The CAB units must have the on train repeater function included and activated.
19. ORE line trolley CAB units	These units must have the special software function included as described.
20. Testing and certifying.	The supplier shall test and certify his units as per spec and or against a TFR ATP before TFR will attempt acceptance testing of any equipment.
21. Chargers	The chargers must have swappable end peaces. The charger must be able to charge the rear unit while the GPRS is active. The charger must have a build in function to revert automatically to trickle charge when the battery is full.
22. Locks & chain.	The lock and chain must be quoted separately as one unit.
23. Pipe and coupler	The pipe and coupler must be quoted separately as one unit. TFR are interested in using the units on AIR & VACUUM trains in the future pending on the easy of use, simplicity and cost implications.
24. Automated Train line test function. (Request for information)	<p>TFR want feedback from the suppliers on the feasibility to implementation this function on their HoT's. The supplier must indicate the cost implication to supply this function in one unit for testing and to equipped all future latest supplied telemeters.</p> <p>The Driver select the menu "Train brake line test" The HoT check with the EoT for distance and speed correlation and then request the Driver to do a light brake application. The HoT gave the Driver 10 sec to do it after which it check with the EoT if the rear brake value drop at least 50kpa. If the HoT are satisfied with the readings a massage "Train brake line successful" or " Train brake line Failure" is displayed.</p>
25. Count down odometer (Request for information)	<p>TFR want feedback from the suppliers on the feasibility to implementation this function on their HoT's. The supplier must indicate the cost implication to supply this function in one unit for testing and to equipped all future and latest supplied telemeters.</p> <p>The Driver select the menu "Odometer" on the CAB HoT. The HoT check the length of the train then add the error length and start counting down the odometer using the CAB</p>

	<p>GPS. The count down value will be displayed in the non vital right portion of the display. When completing the count down a short beep will be reported to the Driver and the count down counter will disappear. Every odometer activation will be recorded on the CAB telemeter. To make sure the distance is always on the save side using GPS data which is +-30m accurate the worst scenario will be take in consideration.</p>
<p>26. Accelerometer to monitor ruff EoT handling. (Request for information)</p>	<p>TFR want feedback from the suppliers on the feasibility to implementation this function on their rear EoT's. The supplier must indicate the cost implication to supply this function in one unit for testing and to equipped all future telemeters.</p> <p>An Accelerometer must be build in to the REAR unit electronics measuring three dimension forces while on a train and send date when the preset parameters are exceeded. When Off the train and with zero Kpa it will indicate ruff EoT handling. The REAR EoT send a message via GPRS to a DB on an Oracle server. The REAR unit send the message every time it exceeding the accelerometer preset parameters or as per trigger list in the GPRS specification. A field already exist in the present GPRS DB structure.</p>
<p>27. Compliance sheet.</p>	<p>The supplier must provide a compliant list based on al the attached specifications and this document.</p>
<p>28. Contracts & Retention money.</p>	<p>A formal contract will be signed with the supplier where the delivery schedule will play a major role and at least 10% retention money will be hold back until the supplier complies fully with the specifications including the delivery of all documentation and resolving any design issues.</p>
<p>29. Development Status.</p>	<p>The supplier must indicate by a presentation basis how far his equipment and software development complies with the specifications listed in this tender.</p> <ol style="list-style-type: none"> 1. HoT CAB unit hardware with TCS and remote head interface. 2. HoT with the ORE line repeater function. 3. EoT REAR unit hardware with GPRS software. 4. Remote head with interface software to HoT. 5. Portable housing for repeaters. 6. EoT hardware with repeater function and GPRS management software. 7. EoT suitable for trolley working. 8. Implementing VSWR on CAB units. 9. Implementing VSWR on REAR units.

30. SIM cards	TFR will arrange and activate the SIM cards for the two TFR APN's
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2. GENERAL

2.1 Tenderers must fully acquaint themselves with all the requirements of TFR before submitting any tenders.

2.2 TFR must be consulted on all matters on which this specification is silent, or on which doubt exists.

End of document.

SPOORNET
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INFRASTRUCTURE (SIGNALS)

**STANDARD SPECIFICATION
FOR
DOCUMENTATION FOR SIGNALS EQUIPMENT**

NOTE: This specification replaces CSE-52 of February 1993.

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File reference:

Drawn up by: Senior Engineer, Signals (R&D): B.M.Ostendorf

Checked by: RBW / JCH / BPZ

Authorised by: Senior Engineer, Signals (R&D): G.B.Paverd

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1 SCOPE

1.1 Identification.

The subject of this specification is documentation which must be supplied with electrical, electronic or power equipment supplied to Infrastructure (Signals), excluding equipment of which the design is fully owned by Spoornet.

1.2 Item overview.

All electrical, electronic and power equipment and systems delivered in assembled form must be accompanied by a full set of documentation to facilitate installation, commissioning, operation and maintenance. This documentation includes operating manuals, maintenance manuals, installation instructions and complete technical descriptions.

Components of the equipment and systems (such as printed circuit cards and sub-assemblies) which may be ordered and delivered separately are not subject to this specification, provided that their details are contained in the documentation for their host equipment or system.

Proprietary equipment, such as personal computers and non-specific test equipment, are not subject to this specification.

1.3 Document overview.

This specification serves to establish the minimum requirements for documentation which must accompany all relevant equipment delivered. This specification replaces Spoornet specification no. CSE-52 of February 1993.

2 APPLICABLE DOCUMENTS

2.1 Integrated documents.

Spoornet (Infrastructure) (Signals) specification CSE-1152-001, category D48, latest issue: "Preparation of Signalling Plans and Diagrams".

2.2 References.

Spoornet (Infrastructure) (Signals) specification CSE-52, February 1993: replaced by this specification.

3 TYPES OF DOCUMENTATION

3.1 Technical description.

A detailed technical description of the equipment and all its modules shall be supplied. It shall be written on a level which a technician-trained (T3) technician with limited experience can comprehend. It shall include:

- (1) A brief overview of the equipment and a description of the requirements which it fulfils.
- (2) A data sheet containing detail on all critical parameters of the equipment, e.g. inputs, outputs, power consumption, dimensions, etc..
- (3) Detailed description of the equipment and all its modules, including block diagrams.
- (4) Detailed description of how the equipment works.
- (5) A complete set of drawings, as specified below (section 0).
- (6) A complete set of component lists, as specified below (section 0).

3.2 **Installation manual.**

Where appropriate, a manual containing all detail required for installation, set-up and commissioning of the equipment shall be supplied.

3.3 **Operating manual.**

If the equipment is manually operated, a manual describing in detail the method of operation shall be supplied. It shall be written on a level which the intended operator can comprehend.

3.4 **Maintenance manual.**

A manual describing routine maintenance, fault-finding detail and workshop repairs shall be supplied. It shall be concise and well indexed. It shall include:

- (1) **Maintenance:** Full detail on procedures and required tools for routine maintenance. This section shall be written on a level which the lowest skilled person who can be expected to maintain the equipment can comprehend. A schedule of recommended regularity of maintenance shall be included.
- (2) **Fault-finding:** Procedures and flowcharts to guide first-line fault-finding. The objective shall be to get the equipment back in working order in minimum time, typically on a card or module replacement basis. This section shall be written on a level which an engineering technician with limited experience can comprehend.
- (3) **Workshop repairs:** Procedures for tracing faults down to component level. Set-up and adjustment routines after component or module replacement. Operation and description of special test rigs, if applicable. Safety precautions, if applicable. Special attention must be given to providing all the necessary reference voltage levels, waveforms, timing diagrams, etc.. The objective of this section shall be to repair and test the system or module in such a way that it is guaranteed to work once installed in the equipment. This section shall be written on a level which an experienced technician-trained (T3) technician can comprehend.

It is recommended that each of the three sections should be separately bound and indexed.

3.5 **Software manual.**

Where applicable, a manual containing comprehensive detail on all software used in the equipment shall be provided. It shall include detail on software architecture, comprehensive flowcharts, complete detail on all software modules and items, timing diagrams, detail on resource utilisation, compiler detail and a complete source code listing.

4 **IDENTIFICATION AND CONFIGURATION CONTROL**

4.1 **Identification of documents.**

Every manual shall have with a document number, which shall appear on the front page. The issue number and issue date shall also appear on the front page.

4.2 **Configuration control.**

- (1) Whenever the document is altered in any way whatsoever, the issue number shall likewise be updated.
- (2) The range of serial numbers of the equipment to which the document is applicable shall be clearly documented in the document, preferably on the front page or second

page.

- (3) All units of the equipment supplied shall be exactly in accordance with the documentation, as approved. No alterations to the design, layout or any component shall be made without written approval from the duly authorised person in Spoornet.

5 DOCUMENT FORMAT

5.1 Front page.

The following shall appear on the front page of every document:

- (1) Name of the manufacturer of the equipment.
- (2) Document number, issue number and date of issue.
- (3) Type of equipment.
- (4) Type of document, e.g. "technical description" or "maintenance manual".
- (5) The number of the relevant Spoornet specification.

5.2 List of contents.

A comprehensive list of contents of the document shall appear either on the front page or on one of the subsequent pages, but before the start of the text. The number of levels listed depends on the type and subject of the document, but shall be adequate for speedy tracing of the required topic.

5.3 List of figures.

It is recommended that a list of figures be provided immediately after the list of contents.

5.4 Data to appear on every page.

The document number, issue number and page number shall appear on every page of the document, preferably as headers and/or footers.

6 DRAWINGS

6.1 Compliance with specification.

Where applicable, drawings shall comply with Spoornet (Infrastructure) (Signals) specification no. CSE-1152-001, category D48, latest issue.

6.2 Types of drawings.

The following drawings shall be supplied, if applicable:

- (1) Physical layouts on which all cabinet dimensions, as well as the positioning of all main components such as transformers, inductors, capacitors, diodes, contactors, switches, fuses, printed circuit boards, plug-in modules, etc. are shown to scale.
- (2) A block diagram by means of which the overall operation of the equipment is explained.
- (3) The circuit diagram of each printed circuit board or module, on which each component is clearly labelled, together with value, type number, etc..
- (4) Physical layout drawings (to scale) of each printed circuit board or module, on which each component is clearly labelled in agreement with the circuit diagram.
- (5) A detailed overall circuit diagram on which each of the modules is clearly shown and labelled, as well as any other components such as transformers, contactors, etc., together with the details of all interconnections.

6.3 Title blocks.

The title blocks of all drawings shall be positioned on the bottom right-hand side of the sheet, with provision for sheet number, issue number, and date and number of amendment.

6.4 **Reference grid.**

It is recommended that a reference grid should be used on drawings, especially for circuit diagrams and layout drawings, in order to easily locate and cross-reference components, or refer to them in the description.

6.5 **Standards.**

All components, especially digital integrated circuits, shall be drawn according to current American standard practice. The naming of parts and components, e.g. signal lines, shall be consistent throughout the documentation.

6.6 **Unused sections.**

Unused outputs and sections of integrated circuits shall be clearly marked as such.

6.7 **Reference data.**

Reference voltages and waveforms, where applicable, shall be clearly indicated and labelled on diagrams.

6.8 **Paper size.**

Drawings shall preferably be printed on A3 or A4 size paper.

6.9 **Position in document.**

Drawings not in text shall be positioned at the back of the document as appendices.

7 **COMPONENT LISTS**

7.1 **List requirements.**

Component lists covering every component used in the equipment shall be supplied. Components in each list shall be grouped together (e.g. resistors, capacitors, transistors). The following lists are required:

- (1) An overall list of all major components, e.g. transformers and contactors. In this list printed circuit boards or modules shall be regarded as major components, and shall be listed as such.
- (2) A separate list for every printed circuit board or module, covering all the components on the board or module.

7.2 **Component detail.**

The following detail per component shall be provided in tabular form:

- (1) Component number, as used in the circuit diagrams and descriptions.
- (2) Type of component (description), e.g. resistor, capacitor or transistor.
- (3) Component's value and rating. Manufacturer's reference number in the case of semi-conductors.
- (4) Tolerances, where applicable.
- (5) Manufacturer's name, if single sourced.
- (6) Names of at least two suppliers in RSA.

8 **QUANTITY AND PRESENTATION**

8.1 **Quantity.**

- (1) One complete set of documentation shall be supplied to the office of the Chief Engineer (Infrastructure) (Signals).
- (2) One complete set of documentation shall be supplied to the office of the Regional Signal Manager in every region where the equipment is installed.
- (3) One complete set of documentation shall be supplied to every site where the equipment is installed.

8.2 **Presentation medium.**

- (1) All documentation delivered as specified in section 0 shall be paper copies.
- (2) For equipment which appears on an approved list of Infrastructure (Signals), a complete set of documentation in reproducible form shall be supplied in addition to the above-mentioned hard copy. Magnetic media in the form of 5,25" floppy disks (360kB or 1,2MB) or 3,5" stiffer disks (720kB or 1,44MB), in files fully compatible with software packages approved by the office of the Chief Engineer (Infrastructure) (Signals), are preferable. Transparent sepias are also acceptable.

8.3 **Delivery.**

- (1) The Chief Engineer's set of documentation shall be posted or handed to the contract engineer in head office, if applicable, before final payment; alternatively to the Chief Engineer (Infrastructure) (Signals).
- (2) The Regional Signal Manager's set of documentation shall be handed to the Regional Signal Manager or his representative before completion of installation.
- (3) The site copy of the set of documentation shall be delivered with the equipment.
- (4) Relevant documentation shall be supplied to Signals' electronic repair workshop.

8.4 **Format of hard copy.**

- (1) The text shall be printed on A4 size paper.
- (2) Drawings shall be bound as appendices with the text.
- (3) Separate documents of the same equipment shall either be bound separately, or shall be compiled in a suitable file (3 or 4 rings), with documents separated by suitable dividers. Should the documents be compiled in a file, a title page and list of documents shall be provided.

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10 **PROPRIETARY SOFTWARE PACKAGES**

Where a licence fee is paid by the supplier on behalf of Spoornet for the supply of proprietary software packages necessary for the operation of the system or equipment, the supplier shall provide all original documentation including source magnetic media to the Regional Signal Manager.



TRANSNET
Freight Rail

CAPITAL PROGRAM

Annexure-D to BBB1776 version3

Author:

N Breytenbach

Nick Breytenbach

Date:

2 July 2010

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CONTENT

1. Scope..... 3

1. SCOPE.

This serve as additional information to **BBB1776 Version 3.**

Function	Information																																																																																																												
1. ICASA approval radio	The supplier must submit the ICASA approval certificate for his radio before TFR will accept any deliveries.																																																																																																												
2. Setting the parameters.	All parameter settings in the CAB and REAR unit must be via the serial port in standard AT commands or with supplier specific software.																																																																																																												
3. Service record rear unit.	<p>The service date and time and fault code are generated as follows. The first code = R.</p> <ul style="list-style-type: none"> ➤ The supplier can supply software to easy the code generation and updating the REAR unit or. ➤ An AT command set can be used which must be documented clearly in the documentation. ➤ The service date and time and three fault codes must be stored and retrieved at any time. ➤ This information is send via the GPRS. <div style="text-align: center;"> <p>REAR ID : 09701</p> <p>2009/11/12 01:14:15 PM</p> <p>Date: 2009/11/12, Time 13:14:15</p> <p>Get Info Get Info Edr Edr Edr</p> <p>CODES RDEF0 RHIJ0 RLMNO</p> </div> <table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Second Code for Rear Fix</th> <th style="text-align: left;">Third code: Root cause :-X-</th> <th style="text-align: left;">Fourth code: Action: --X-</th> <th style="text-align: left;">Fifth code: WorkShop --X-</th> </tr> </thead> <tbody> <tr><td>A=VHF Antenna</td><td>A=Accident</td><td>A=</td><td>A=Bellville</td></tr> <tr><td>B=Battery</td><td>B=</td><td>B=</td><td>B=Kimberley</td></tr> <tr><td>C=VHF Antenna connector</td><td>C=Component failure</td><td>C=</td><td>C=Bloerfontein</td></tr> <tr><td>D=</td><td>D=</td><td>D=</td><td>D=Durban</td></tr> <tr><td>E=</td><td>E=</td><td>E=</td><td>E=Empangeni</td></tr> <tr><td>F=Back light</td><td>F=</td><td>F=</td><td>F=Erniele</td></tr> <tr><td>G=GPS engine</td><td>G=Lightning</td><td>G=</td><td>G=Germiston</td></tr> <tr><td>H=Pushy buttons</td><td>H=</td><td>H=</td><td>H=Johannesburg</td></tr> <tr><td>I=Housing</td><td>I=</td><td>I=</td><td>I=Klerksdorp</td></tr> <tr><td>J=Brake hose</td><td>J=</td><td>J=</td><td>J=Kroonstad</td></tr> <tr><td>K=</td><td>K=</td><td>K=</td><td>K=Hetzpruit</td></tr> <tr><td>L=Data logging</td><td>L=Loose connection</td><td>L=Replace</td><td>L=Parow</td></tr> <tr><td>M=Main electronic board</td><td>M=</td><td>M=Modify</td><td>M=Port Elizabeth</td></tr> <tr><td>N=New (Inteltrack)</td><td>N=New (Inteltrack)</td><td>N=New (Inteltrack)</td><td>N=Pretoria</td></tr> <tr><td>O=Butter bracket</td><td>O=</td><td>O=</td><td>O=Richardsbay</td></tr> <tr><td>P=Power supply</td><td>P=</td><td>P=</td><td>P=</td></tr> <tr><td>Q=Chain lock</td><td>Q=</td><td>Q=</td><td>Q=Pieterburg</td></tr> <tr><td>R=RBA valve</td><td>R=</td><td>R=Repair</td><td>R=</td></tr> <tr><td>S=</td><td>S=Software</td><td>S=Scrap</td><td>S=</td></tr> <tr><td>T=Transducer</td><td>T=</td><td>T=Tighten</td><td>T=</td></tr> <tr><td>U=Charging connector</td><td>U=</td><td>U=Upgrade software</td><td>U=</td></tr> <tr><td>V=Air charger</td><td>V=Vandalism</td><td>V=</td><td>V=</td></tr> <tr><td>W=GPS connector</td><td>W=</td><td>W=</td><td>W=</td></tr> <tr><td>X=</td><td>X=</td><td>X=</td><td>X=</td></tr> <tr><td>Y=GPS antenna</td><td>Y=</td><td>Y=</td><td>Y=</td></tr> <tr><td>Z=Buzzer</td><td>Z=Unknown</td><td>Z=</td><td>Z=</td></tr> </tbody> </table>	Second Code for Rear Fix	Third code: Root cause :-X-	Fourth code: Action: --X-	Fifth code: WorkShop --X-	A=VHF Antenna	A=Accident	A=	A=Bellville	B=Battery	B=	B=	B=Kimberley	C=VHF Antenna connector	C=Component failure	C=	C=Bloerfontein	D=	D=	D=	D=Durban	E=	E=	E=	E=Empangeni	F=Back light	F=	F=	F=Erniele	G=GPS engine	G=Lightning	G=	G=Germiston	H=Pushy buttons	H=	H=	H=Johannesburg	I=Housing	I=	I=	I=Klerksdorp	J=Brake hose	J=	J=	J=Kroonstad	K=	K=	K=	K=Hetzpruit	L=Data logging	L=Loose connection	L=Replace	L=Parow	M=Main electronic board	M=	M=Modify	M=Port Elizabeth	N=New (Inteltrack)	N=New (Inteltrack)	N=New (Inteltrack)	N=Pretoria	O=Butter bracket	O=	O=	O=Richardsbay	P=Power supply	P=	P=	P=	Q=Chain lock	Q=	Q=	Q=Pieterburg	R=RBA valve	R=	R=Repair	R=	S=	S=Software	S=Scrap	S=	T=Transducer	T=	T=Tighten	T=	U=Charging connector	U=	U=Upgrade software	U=	V=Air charger	V=Vandalism	V=	V=	W=GPS connector	W=	W=	W=	X=	X=	X=	X=	Y=GPS antenna	Y=	Y=	Y=	Z=Buzzer	Z=Unknown	Z=	Z=
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4. REAR GPS & GPRS indication.	The supplier must implement a display method to determine at any time if the REAR GPS has satellite lock and if the GPRS successfully send data to the server.																																																																																																												
5. REAR matching status.	It is desirable that the REAR unit indicated when matched to the CAB unit and if the Valve is ARMED. Suppliers must look into methods to provide such information.																																																																																																												
6. Rear brake valve in Vacuum mode.	No arming and no brake valve activation must be possible in Vacuum mode.																																																																																																												
7. Disable of CAB units.	The CAB unit must shut down after 30 "COMMS FAIL" tries. The CAB unit will disable the RBA "ARMING" and stop RF transmission. To re-activate, a new CAB unit start up sequence must be initiated.																																																																																																												

8. TCS Interface software.	Must be standard in all CAB units. See Annexure-B
9. Interface to remote head.	Must be standard in all CAB units. See Annexure-B
10. Manual switched of off REAR unit	The REAR button must be hold in for at least 30 sec before the unit switched off.
11. Logging of REAR unit data.	<p>Typical data logged.</p> <p>The supplier must provide an AT command set where by the REAR unit must output the data in a comma delimiter file format via the serial port. At least 5 days of info must be stored.</p> <pre> RU ID, Latitude, Longitude, Pressure, Date, Time, Speed, Batt, Brake Type, EBA Active, HVM Status, GSM Status, CRC, Count 18395,-25.863312,28.140606,45,2009-02-10,18:03:12,0,116,1,0,1,1,0x0d0e,451 18395,-25.863314,28.140608,39,2009-02-10,18:03:15,0,117,1,0,1,1,0x08eb,452 18395,-25.863319,28.140606,33,2009-02-10,18:03:21,0,117,1,0,1,1,0x0ef3b,453 18395,-25.863323,28.140600,27,2009-02-10,18:03:27,0,116,1,0,1,1,0xcd5e,454 18395,-25.863323,28.140589,33,2009-02-10,18:03:36,0,116,1,0,0,1,0xc6e,455 18395,-25.863306,28.140583,37,2009-02-10,18:03:50,0,117,1,0,0,1,0x7291,456 18395,-25.863300,28.140585,35,2009-02-10,18:03:57,0,116,1,0,1,1,0x75d5,457 18395,-25.863295,28.140591,29,2009-02-10,18:04:04,0,116,1,0,1,1,0x07a5,458 18395,-25.863291,28.140593,18,2009-02-10,18:04:07,0,116,0,0,1,1,0xc443,459 18395,-25.863285,28.140593,34,2009-02-10,18:04:10,0,116,0,0,1,1,0xc73e,460 18395,-25.863279,28.140593,48,2009-02-10,18:04:13,0,116,0,0,1,1,0x236e,461 18395,-25.863270,28.140598,58,2009-02-10,18:04:16,0,116,0,0,1,1,0xb650,462 18395,-25.863254,28.140602,63,2009-02-10,18:04:18,0,116,0,0,0,1,0xb41d,463 18395,-25.863252,28.140602,71,2009-02-10,18:04:22,0,116,0,0,1,1,0xb1cd,464 </pre> <p>575 x 246 x 24 BPP 67/91 100 % 56.36 KB / 415.16 KB 2009/02/10 / 19:20:23</p>
12. Logging of CAB unit data.	<p>Typical data logged.</p> <p>The supplier must provide an AT command set where by the CAB unit must output the data in a comma delimiter file format via the serial port. At least 5 days of info must be stored.</p> <pre> Rear ID, CU Latitude, CU Longitude, RU Latitude, RU Longitude, Pressure, Date, Time, CU Speed, RU Speed, CU Batt, RU Batt, Brake Type, EBA Equiped, EBA Active, Air Gen Fitted, HVM Status, Armed Status, Comms Status, TC Status, GPRS Status, CRC, Count 18395,-25.863321,28.140648,-25.863205,28.140596,-46,2009-02-10,17:52:59,0,0,120,36,1,1,0,0,0,1,0,6,0,0, 675 18395,-25.863302,28.140608,-25.863203,28.140642,-46,2009-02-10,17:53:30,0,0,119,36,1,1,0,0,0,1,0,6,0,0, 676 18395,-25.863317,28.140549,-25.863194,28.140623,-46,2009-02-10,17:54:00,0,0,119,36,1,1,0,0,0,1,0,6,0,0, 677 18395,-25.863325,28.140589,-25.863190,28.140604,-46,2009-02-10,17:54:31,0,0,120,36,1,1,0,0,0,1,0,6,0,0, 678 18395,-25.863308,28.140579,-25.863178,28.140554,-46,2009-02-10,17:55:01,0,0,119,36,1,1,0,0,0,1,0,6,0,0, 679 18395,-25.863354,28.140528,-25.863173,28.140459,-46,2009-02-10,17:55:32,0,0,119,36,1,1,0,0,0,1,0,6,0,0, 680 18395,-25.863295,28.140587,-25.863203,28.140478,-46,2009-02-10,17:56:02,0,0,119,34,1,1,0,0,0,1,0,6,0,0, 681 18395,-25.863249,28.140602,-25.863190,28.140564,-46,2009-02-10,17:56:33,0,0,119,36,1,1,0,0,0,1,0,6,0,0, 682 </pre> <p>554 x 195 x 24 BPP 13/92 100 % 52.93 KB / 316.91 KB 2009/02/10 / 18:52:46</p>
13. Fix repeater GPRS connection.	<p>The supplier must provide server software to connect, decode and insert the message information in an Oracle database. TFR only define the table.</p> <p>The server software must support at least the following.</p> <ol style="list-style-type: none"> 1. Changing the repeater server IP remotely. 2. Accommodate and changing two APN names on the repeater remotely 3. Changing the repeater port connection remotely. 4. Request and repeater update remotely. 5. Revert back to the previous settings if remote changes fail. <p>The proposed table look like this which will be finalised with the successful tenderer.</p> <p>Datetime: Reporting date & time Charging: Are the unit charging UnitSerNo: Unit serial number. Vswr: Unit vswr status Longitude: GPS Longitude</p>

	<p>Latitude: GPS latitude</p> <p>RearRepIDI: Rear idi of unit repeated.</p> <p>Direction: Was it a front to back or rear to front repeating</p> <p>Triggers:</p> <ol style="list-style-type: none">1. When request remote update.2. Send one message when any Eot enters the repeater area and trigger a repeater function.3. When the charging fails.4. Once every hour. <p>Notes:</p> <p>The unit can send back the last repeated IDI if another EoT was not causing the trigger. TFR only define the table structure. The supplier must implement a suitable and reliable protocol using the least data over the air via his server software with above functions. The server must support up to 100 connections and run on Window XP.</p>
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End of document.