DEPARTMENT OF TRANSPORT

NO. R. 1650 **31 December 2021**

RAILWAY SAFETY REGULATOR

NOTIFICATION OF THE PUBLICATION OF THE DRAFT VERBAL SAFETY CRITICAL COMMUNICATION STANDARD FOR PUBLIC COMMENTS

I, Mmuso Selaledi, acting Chief Executive Officer of the Railway Safety Regulator (RSR), hereby, in terms of the Railway Safety Regulator Act No. 16 of 2002, as amended ("the Act"), publish for comments the draft Verbal Safety Critical Communication Standard.

Interested and affected Railway Stakeholders are hereby invited to submit their written comments within 60 days from the date of publication of this Standard in the Government Gazette, for consideration by the RSR in the development and finalisation of this Standard.

After finalisation, this Standard will apply to all Operators as defined in terms of the Act.

The RSR is confident that this Standard will contribute to achieving the Act's objectives, namely safe railway operations.

Written comments are to be addressed to Mrs M Makwela, E-mail: matselanyanem@rsr.org.za, Tel: (087) 284 6596 or Mr R Ntshingila, E-mail: reginald.ntshingila@rsr.org.za, Tel: (087) 284 6628.

Signed at Waterfall on this 13th day of Dec 2021

Mmuso Selaledi

Acting Chief Executive Officer: Railway Safety Regulator

RAILWAY SAFETY REGULATOR
RAIL SAFETY ON THE RIGHT TRACK

RSR 00-2-5-1:2021

Edition 1.0

REGULATOR STANDARD

RAILWAY SAFETY MANAGEMENT

Part 2-5-1: Verbal Safety Critical Communication

RSR 00-2-5-1:2021

Edition 1.0

REGULATOR STANDARD

Railway Safety Management

Part 2-5-1: Railway Operations – Verbal Safety Critical Communication

Regulator Standards are updated by amendment or revision. Users of Regulator Standards should ensure that they possess and are using the latest amendments or editions.

This Regulator Standard was researched and developed by the *Railway Safety Regulator's Standards Technical Committee* (TC RSR-001) and the *Working Group on Verbal Safety Critical Communications* (WG RSR 00-2-5-1).

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Railway Safety Regulator
Building 4, Waterfall Point Office Park,
Cnr Waterfall and Woodmead Drive,
Waterfall City, Midrand,
1685
Telephone: +27 10 495 5391
Website: *http://www.rsr.org.za*

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REGULATOR STANDARD

Railway Safety Management

Part 2-5-1: Railway Operations – Verbal Safety Critical Communication

NOTE: It is essential that this standards document is read together with the South African National Standards, SANS 3000-1 and SANS 3000-2-5.

Table of changes

Edition and version number	Date	Scope
1.0	2021.12.15	First published edition

Acknowledgements

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TRAXTION SHELTAM

Foreword

This Regulator Standard was developed and approved by the Railway Safety Regulator's *Technical Committee for the Development of Regulator Standards for Railway Safety* (TC RSR-001), in accordance with the *National Railway Safety Regulator Act* (NRSRA) (Act No. 16, 2002), the *Safety Standards Development Regulations, 2006* and the *RSR Procedure for the Development of Regulator Standards*.

This document extends and augments the *SANS 3000* series of standards pertaining to railway safety that are published by the South African Bureau of Standards (SABS) on behalf of the Railway Safety Regulator and, in particular, Technical requirements for engineering and operational standards Operational principles for safe movement on rail, the Railway Safety Regulator Standards, and the Standards for Transport of dangerous goods by rail

The *SANS 3000* series of standards presently consists of the following parts, under the general title of *Railway Safety Management*:

SANS 3000-1:2016 – Part 1: General.

SANS 3000-2-1:2017 – Part 2-1: Requirements for systemic engineering and operational

safety standards - Electrical distribution and overhead traction systems

SANS 3000-2-2:2016 – Part 2-2: Requirements for systemic engineering and operational

standards: Track and civil infrastructure.

SANS 3000-2-2-1:2012 – Part 2-2-1: Technical requirements for engineering and operational standards – Track, civil and electrical infrastructure – Level crossings.

SANS 3000-2-3:2017 – Part 2-3: Requirements for systemic engineering and operational

safety standards - Rolling Stock

SANS 3000-2-4:2013 – Part 2-4: Technical requirements for engineering and operational standards – Train authorization and control, and telecommunications.

SANS 3000-2-5:2013 – Part 2-5: Technical requirements for engineering and operational standards – Operational principles for safe movement on rail.

SANS 3000-2-6:2013 – Part 2-6: Technical requirements for engineering and operational standards – Interoperability, and interface and intraface management.

SANS 3000-4:2011 – Part 4: Human factors management.

The RSR 00 series of standards presently consists of the following parts, under the general title of Railway Safety Management:

RSR 00-2-3-1:2016 – Part 2-3-1: Requirements for systemic engineering and operational safety standards – Rolling stock – Wheels, axles and bearings.

RSR 00-2-7:2016 – Part 2-7: Requirements for systemic engineering and operational safety standards – Railway Stations.

RSR 00-3:2016 – Part 3: Occurrence management.

RSR 00-4-1:2016 – Part 4-1: Human factors management – Fatigue management.

The standard on the Transportation of dangerous goods by rail is the following:

SANS 10405:2014 - Transport of dangerous goods by rail.

Where reference is made to a specific published date, version or edition of a document that version of the document shall apply. Where reference is made to a document without specifying a date, version or edition, it should be assumed that the latest published version shall apply.

Reference is made in this document in clause 3.1.12 to the “relevant national Legislation”. In South Africa and for the purpose of this document, this shall mean the “Railway Safety Regulator” (RSR) as established in terms of *National Railway Safety Regulator Act as amended* (NRSRA) (Act No. 16 of 2002).

Annexure A is provided for information only.

Introduction

This document has been developed primarily with a view to achieving uniform and seamless verbal safety critical communication (VSCC) within the railway operations in South Africa. The railway industry in South Africa has seen itself conducting operational activities including verbal communication under normal, abnormal, and degraded modes of working, and during emergency situations. Non-adherence to VSCC has contributed to numerous railway occurrences, including collisions and signals passed at danger (SPADS).

VSCC therefore is a crucial component of safe railway operations, and consequently non-adherence to it may contribute to occurrences.

This standard outlines the minimum requirements for the management of VSCC, including the framework to be implemented for safety related personnel in the execution of their operational activities. It seeks to explain the level of VSCCs required for safety related personnel within the railway industry in South Africa.

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1. Purpose and Scope

1.1. Purpose

1.1.1. This standard provide a communication framework for effective VSCCs during railway operations.

1.1.2. To clarify what safety verbal critical communication within railway operations is, the procedure for using it and to ensure safe and seamless railway operations.

1.1.3. To contribute to the reduction of railway occurrences attributable to communication errors

1.1.4. To provide a standardised approach to VSCC within the railway operations in South Africa.

1.2. Scope

1.2.1. This standard describes the VSCC requirements and approach applicable to safe railway operations

1.2.2. The standard amplifies and augments communication requirements outlined in SANS 3000-2-5

1.2.3. The standard is applicable to all railway operations, applicable technologies, processes, procedures, rules , systems, sub-systems, or components that form part of a railway system.

1.2.4. It is designed for use by railway safety related personnel (safety critical personnel included) when they communicate verbally during the execution of their operational duties that relates to safe movement of trains, regardless of the technology that is being used.

2. Normative References

2.1. The following referenced documents are indispensable for the understanding and application of this standard. For undated references, the latest edition of the referenced document (including any amendments) shall apply:

SANS 3000-1: Railway safety management – Part 1: General.

SANS 3000-2-4:2013 – Part 2-4: Technical requirements for engineering and operational standards – Train authorization and control, and telecommunications.

SANS 3000-2-5:2013 – Part 2-5: Technical requirements for engineering and operational standards – Operational principles for safe movement on rail.

SANS 3000-4: Railway safety management – Human factors management.

2.2. Information on current, valid national (SANS) and international standards (ISO) can be obtained from the South African Bureau of Standards (SABS), Standards Division. Website: https://www.sabs.co.za/.

2.3. Information on current, valid Regulator Standards can be obtained from the Railway Safety Regulator, South Africa. Website: http://rsr.org.za/.

3. Definition of Terms & Abbreviations

3.1. Definitions

3.1.1 abnormal working

deviation from the train's normal working on a portion of the network that may or may not impact on the service capacity

3.1.2 accountability

obligation or willingness, which cannot be shared, to accept ultimate responsibility or to account for one's actions

3.1.3 authorization

official permission or approval granted for the movement of rolling stock, i.e. train or shunt movement

3.1.4 competent

having the qualification, knowledge, skills, attitudes and capabilities required to function successfully, effectively and efficiently in a given job

3.1.5 communication

the act or process of using words, sounds, signs, or behaviours to express or exchange information or to express your ideas, thoughts, feelings, etc., to someone else. : a message that is given to someone : a letter, telephone call, etc. communications : the ways of sending information to people by using technology.

3.1.6 communication barriers

obstacles in a workplace that prevent effective exchange of ideas or thoughts. Such barriers include, Status differences, gender differences, cultural differences, prejudices, the organizational environment and linguistic barriers

3.1.7 degraded mode

any deviation from the primary mode of train movement on a portion of the network, including the condition of the rolling stock and railway infrastructure elements, which impact on service capacity, but which are still safe

3.1.8 digital Migration

migrating services from analogue to digital technology

3.1.9 emergency

serious, unexpected and potentially dangerous situation that requires immediate action

3.1.10 handshaking

exchange of information between an individual, group or device (or any combination of these) such that the sender and receiver(s) are in agreement that the information received is identical to that sent and that the interpretation of the information by the receiver(s) is the same as that intended by the sender

3.1.11 infrastructure (railway infrastructure)

physical elements constituting the network comprised of the track, civil infrastructure, electrical infrastructure, train authorization and control, and telecommunication infrastructure.

3.1.12 interoperability

ability of network, train and station operators to allow the safe and uninterrupted movement of rolling stock (at interfaces and intrafaces), between and on different networks as defined in the relevant national legislation (see foreword) to accomplish the required levels of safety(passengers, freight, public and the environment) and performance for those operations

3.1.13 interface

area, point, or location, either physical or organizational, where the activities or assets of two (or both) or more railway operators or a railway operator and another organization meet, and where the activities or assets interact (or both) or have the potential to affect one another (or both)

3.1.14 intraface

area, point, or location, either physical or organizational, where the activities assets (or both) of two or more functional disciplines within a railway operator meet, and where the activities or assets or both interact or have the potential to affect one another

3.1.15 responsibility

ability to act or decide on one's own and to explain such actions or decisions when asked

3.1.16 safety-critical work

functions and activities directly related to the authorization and control of rolling stock movements, and to the execution of the movement of rolling stock, including the direct supervision of persons undertaking these functions and activities

3.1.17 safety-related work

functions and activities that have an impact on safe railway operations, either directly (safety-critical work) or indirectly, including the certification of systems, subsystems or components for introduction as new or modified technologies for a network, train or station operation (or a combination thereof), or the maintenance of systems, subsystems or components which constitute a network, train or station operation (or a combination thereof), including the direct supervision of persons undertaking these functions and activities

3.1.18 phonetic alphabet

is a set of symbols or codes used to show what a speech sound or letter sounds like.

3.1.19 risk

exposure to the chance of injury or loss expressed in terms of likelihood (probability) and severity

3.1.20 risk management

process of identification of hazards, their quantification in terms of severity and likelihood (probability), the development of a plan/s to tolerate the risk, or transfer the risk, or treat the risk to reduce it to acceptable levels with the necessary controls (ALARP), or terminate the risk, and thereafter to monitor the residual risk to ensure it remains tolerable

3.1.21 railway system

integration of technologies, statutory, environmental and business requirements, and human factors, designed for the safe transportation of people and freight and which is commercially and environmentally sustainable and includes where relevant projects, products, policies, processes, procedures and assets

3.1.22 technology

created capability or capacity (or both) relating to systems (including subsystems and components), processes, and procedures applicable to network, train and station operators, as well as other interested and affected parties in the railway industry

3.1.23 telecommunication system

wired or wireless electronic communication system for either voice or data used directly or in support of a train authorization and control system, or for the provision of information related to train movements

3.1.24 train authorization and control system

system which provides a means to safely regulate the movement of trains on a railway through the use of appropriate technology and appropriate numbers of competent persons in safety related positions

3.1.25 verification

testing and evaluation of the system, subsystem or component to assure compliance with its specification or other requirements

3.2. Abbreviations

ALARP:	As low as reasonably practicable
GOI:	General operating instructions
RSR:	Railway safety regulator
SOP:	Standard operating procedures
SPAD:	Signal passed at danger
TAC&T:	Train authorization and control, and telecommunication
TWR:	Train working rules
VSCC:	Verbal Safety Critical Communication
WG:	Working group

4. Verbal Safety-Critical Communication Requirements

4.1. Risk Management

4.1.1. Operators shall identify all activities that require VSCC under normal, degraded, abnormal and emergency situations.

4.1.2. The operators shall develop processes and procedures to ensure that risks related to VSCC are identified and effective control measures are developed and implemented.

4.1.3. The operator shall ensure that the implementation of control measures shall not result in additional risks which require further mitigation.

4.1.4. When VSCC is used under abnormal or degraded mode of train operations, the railway operators shall ensure that the risks associated with the equipment and tools used in VSCC are adequately identified and mitigated.

4.1.5. The functional tools used and method of working shall be appropriate for the mode of working.

4.1.6. The operator shall develop processes and procedures to **stipulate and manage reasonable time** frames for the use of VSCC under abnormal or degraded mode of train operation.

4.1.7. Operators shall ensure VSCC risk assessments are effective and communicated to all relevant structures within the organization

4.2. Regulatory and Compliance Review

The operator shall develop and implement processes and procedures to identify and ensure compliance with the published regulatory requirements related to VSCC rules and operating requirements.

4.3. Interoperability, interfaces and intrafaces

4.3.1. The operator shall develop and implement processes and procedures to manage VSCC at interfaces and intrafaces in accordance with the applicable requirements of SMS requirements, SANS 3000-2-6 and in line with this standard, including:

4.3.1.1. the implementation of proper VSCC handover processes where two or more operators are interfacing;

4.3.1.2. assurance that the language and equipment supporting or used for VSCC are aligned, interoperable and functional.

4.4. Verbal Safety-Critical Communication Requirements for Railway Safety-Related Personnel

4.4.1. Applicability

4.4.1.1. Safety related personnel include but not limited to:

i) persons involved with the execution of the movement of rolling stock, including the direct supervision of persons undertaking these functions and activities;
ii) persons involved with the authorization and control of rolling stock movements, including the direct supervision of persons undertaking these functions and activities;
iii) persons involved with the declaration of rolling stock as service worthy, including the direct supervision of persons undertaking these functions and activities; and
iv) persons involved in the maintenance of railway infrastructure, when conducting activities that impact safe movement of trains, including the direct supervision of persons undertaking these functions and activities.
v) Persons involved in the construction of railway infrastructure, when conducting activities that impact safe movement of trains, including the direct supervision of persons undertaking these functions and activities

4.4.1.2. Effective VSCC shall take cognisance of the following:

i) availability, functionality and/or effectiveness of the system, tool and/or equipment used;
ii) Train Working Rules and/or General Operating Instructions;
iii) Standard Operating Procedures;
iv) description of the line and the relevant line-side equipment associated with route;
v) timetables or scheduling; and
vi) any other relevant documentation to be developed.

4.5. Competencies requirements to support VSCC in railway operations

4.5.1. Competencies

4.5.1.1. The operator shall establish, develop or adopt, document, implement and maintain policies, processes and procedures to ensure competencies of employees undertaking safety related work in accordance with the applicable requirements of SANS 3000-4, including:

i) education and training of employees undertaking safety related work that involve VSCC;
ii) training and development shall be a dynamic and risk-driven process, focusing on specific communication requirements of a particular job/task/ activity;
iii) requirements of applicable legislation and standards, including those specified in this document;
iv) roles and responsibilities of employees involved in VSCC; and
v) systems, tools and/or equipment used in VSCC.

4.5.2. Supervision

4.5.2.1. The operator shall develop processes and procedures for conducting VSCC supervision in accordance with the applicable requirements of SANS 3000-4, including:

i) task observations with immediate feedback and corrective action in case of any transgressions related to VSCC;
ii) real-time observation and/or listening of VSCC messages and provision of feedback to enhance safe railway performances. Playback of recorded VSCC conversations and corrective action where applicable to monitor compliance; and
iii) provision of positive feedback where it is deserved, to motivate and promote safe railway operations;

Note: Safety briefings and symposiums shall also be utilised to discuss VSCC requirements,

4.5.3. Language Policy

4.5.3.1. The operator shall develop or adopt, document, implement and maintain a formal language policy which shall make provision for VSCC.

4.5.3.2. The language policy shall take into consideration the medium of communication, including written, electronic, verbal (oral), audible or physical (visible) communication in accordance with the applicable requirements of SANS 3000-1, SANS 3000-2-4 and SANS 3000-2-5.

4.5.4. Communication requirements for safe railway operations

4.5.4.1. All the information necessary to ensure VSCC amongst safety critical and safety related personnel shall be set out in appropriate documents, including:

i) the assurance that safety critical messages are stated clearly, unambiguously, structured and in a formalized manner;
ii) the assurance that messages are repeated back and there is common understanding through a process of handshaking;
iii) the authorization, instruction or other information provided shall not be acted upon until the handshaking is complete;
iv) where handshaking cannot be completed, the instruction and/or authorization shall be terminated; and
v) for open system channels, information shall be communicated to all relevant and affected parties.

4.6. Structure and responsibility

4.6.1. The operator shall:

4.6.1.1. Develop and implement processes and procedures to ensure compliance to applicable VSCC standards and processes.

4.6.1.2. Ensure that all safety related personnel take responsibility for how they communicate at work, taking into consideration the following:

i) compliance with the guidance provided in this standard;

ii) adherence to communication standards under normal, abnormal, emergency and any unusual scenarios;
iii) recognition that situations faced under pressure will still require clear and structured communications;
iv) communicating properly under all situations;
v) Note: If good communication practice is well established, it is less likely to collapse under abnormal situations;
vi) allowing reasonable time to think what to say. This will save time even when tempted to speak fast. Slow the communication pace down, speak slowly and clearly to allow more thinking time and analysis;
vii) staying calm and focused on the facts;
viii) listening carefully to what is being communicated;
ix) confirming understanding of the message received, by repeating what has been communicated; and
x) Note: This will clarify any actions that will aid decision-making and help to remember what is required to be done.
xi) ensuring compliance to VSCC continuously for safe railway operations

4.6.1.3. The operator shall ensure that the VSCC has a four-part structure including opening, information, actions and confirmations (refer to the Annexure A). This practice enhances clear communication and aids memory of important elements of a safety-critical conversation.

4.7. Safety emphasis for VSCC communication within railway operations

4.7.1. The employees undertaking VSCC shall ensure the following:

a) messages are clear and unambiguous;
b) VSCC has a common structure and a professional tone;
c) communication is relayed through short, well-structured messages which are easy to understand;
d) communicating by speaking in natural rhythm, using normal tone, dividing message into phases and speaking at a rate slightly slower than used in normal conversation;
e) the recipient repeats back the message to ensure it is clearly understood;
f) give priority to emergency messages, safe working and other railway voice communications;

g) use the correct identification when initiating or acknowledging safety related instruction; and
h) no false, irrelevant messages or information shall be communicated; and
i) standard radio terms are used when operating with radios or telephones;

4.8. VSCC Communication during Emergency Situations

4.8.1. Reporting of emergency situations as detailed in the relevant railway operator processes and procedures shall be reported in accordance with this standard,

4.8.2. An emergency call shall have absolute priority over all other transmissions. Employees using the channel must immediately cease any transmission, which may interfere with the emergency call unless they are also dealing with an emergency.

4.8.3. The employee initiating the call must say the word "EMERGENCY" three times. The call shall be repeated at intervals until an answer is received. The intervals between repetitions of an emergency call must be sufficiently long to allow time for the person, who has received the message, to reply.

4.8.4. As soon as the emergency call is responded to, the employee initiating the call shall identify himself/herself and state exactly where he or the train is, also the nature of distress and the kind of assistance required.

4.8.5. Procedure to be followed in Emergency situations

4.8.6. The following shall apply:

a) To transmit an emergency message :
    i) say “Emergency, Emergency, Emergency”;
    ii) Identify yourself;
    iii) state identification and location;
    iv) state nature of the emergency; then
    v) state type of assistance required.
b) Emergency messages shall:
    i) be given priority over other transmissions; and

ii) be answered immediately.

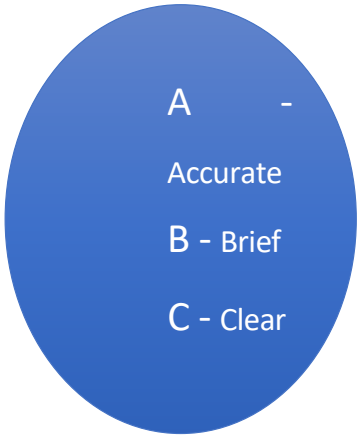
4.9. Recording of safety critical conversations

4.9.1. All verbal radio or telephonic conversations between safety-critical personnel shall be recorded. These recordings assist in:-

- Supervision and monitoring adherence of personnel to communication standards;
- Assessing the quality of conversations in terms of background noise etc;
- Assessing the audibility of conversations;
- Identifying communication training needs; and
- Occurrence investigations

4.10. VSCC Principles

4.10.1. When issuing VSCC, the principle of ABC-P shall be adhered to as described below:



4.10.2. The following shall be applied to achieve the principle of ABC-P:

a) Speak at an acceptable pace, tone and pitch to ensure hearing and understanding by the intended receiver or receivers
b) Not being interrupted by others
c) Be precise in your descriptions (for example: locations, obstructions)
d) Use acceptable language (Do not use slang or informal language)
e) Plan what you are going to say before you say it – think about structure
f) Repeat back what has been said

4.11. The phonetic alphabet

4.11.1. The phonetic alphabet shall be used when transmitting location or equipment identifiers such as the prefix of the signal, points (turnouts) locations, kilometre points, etc. The key words have been carefully chosen so that they clearly represent each letter and don't sound at all like each other **(e.g. proceed to signal RSR 1234 – this should read as follows – proceed to signal Romeo Sierra Romeo 1234).**

4.11.2. Where required, the phonetic alphabet must be used to pronounce any letter to avoid possible confusion. The phonetic alphabet, word used and its pronunciation is as follows:

A	Alpha: AL-fah	N	November No VEM ber
B	Bravo: BRAH-voh	O	Oscar: OSS-cah
C	Charlie: CHAR-lee	*P*	Papa: pah PAH
D	Delta: DELL-tah	Q	Quebec: key-BECK
E	Echo: ECK-oh	R	Romeo: ROW-me-oh
F	Foxtrot: FOX-trot	S	Sierra: see-AIR-RAH
G	Golf: GOLF	T	Tango: TANG-go
H	:hoh-TELL	U	Uniform: YOU-nee-form
I	India: IN-DEE-ah	V	Victor: VIC-tah
J	Juliet: JEW-lee-ETT	W	Whiskey: WISS-key
K	Kilo: KEY-loh	X	X ray: ECHS-RAY
L	Lima: LEE-mah	Y	Yankee: YANK-key
M	Mike: MIKE	Z	Zulu: ZOO-loo

4.12. Numbers

4.12.1. Standard spoken figures shall be pronounced in individual digits when relaying VSCC messages as described in clause 4.11.2 above, to avoid possible confusion. (for example, proceed to signal RSR 01234 – should be relayed as follows – **proceed to signal Romeo Sierra Romeo Zero, ONE, TWO, THREE, FOUR**).

4.12.2. Spoken figures shall be as follows:

0	ZERO
1	ONE
2	TWO
3	THREE
4	FOUR
5	FIVE
6	SIX
7	SEVEN
8	EIGHT
9	NINE
Decimal Point	POINT

Note: The number “0” shall always be pronounced as “Zero”.

4.13. Standard Radio Terms

4.13.1. When using radios or other equipment provided for operational communications, standard radio terms shall be used as follows:

TERM	MEANING
Receiving	- I (called party) acknowledge your call, proceed with message
Message received	- I have received your message and I understand it.
Over	- I have finished speaking and I am waiting for your reply.
Out	- My transmission has been completed.
Correct	- You are correct or what you have transmitted is correct.
Negative	- No, or permission is not granted, or there is an error in your read back

Stand-by	- Wait, I will be back soon
Please repeat	-Repeat all, or the specified part, of this message exactly as youreceived it.
Repeat	- I repeat all, or the specified part, of your last transmission
Say again	- Please repeat your last message
Loud and clear	- every word is understood.

4.13.2. Definitions for shunting movements when using SHUNT RADIOS/WALKIE-TALKIES

Pull forward - to indicate that a hauling movement must be performed.

Push backward - to indicate that a propelling movement must be performed.

Pull slowly forward - to indicate that a hauling movement must be performed slowly.

Push slowly backward - to indicate that a propelling movement must be performed slowly.

Hokaai - to request a driver by means of a radio/walkie-talkie to stop.

Couple - to indicate to the driver to move back cautiously to couple or uncouple wagons.

(The word "stop" must not be used since it can be mistaken for the word "skop".)

4.14. Transmission technique

4.14.1. The efficient use of radios depends on the speech and articulation (the way words are pronounced) of the user. Speak all words plainly and clearly. Avoid any tendency to shout, to accent syllables artificially (in an unnatural way), or talk too rapidly (fast). Keep the rate constant neither fast nor slow. Remember in all cases the person receiving the message must write it down. Preserve the rhythm of ordinary conversation. Separate words that they do not run together.

The following words and phrases shall be used:

REPEAT	-	Let me know that you have received and understood the message.
CORRECT	-	Your version is correct.
OVER	-	My transmission is ended and I expect a response from you.
CONTINUE	-	Proceed with your message.
OVER AND OUT	-	The transmission is ended and no response is expected.

Note:*Slang expressions shall not be used*.

5. General VSCC Communication Requirements

5.1. General

It shall always be remembered that safety critical communication is formal communication and shall not fall into a chatty conversational style. Personnel shall know how to use the communication equipment provided.

5.2. Cell Phones and other wireless (radio) train authorisation systems

5.2.1. The use of cellphones or any wireless (radio) train authorisation systems including open channel radio authorities, shall only be considered, on condition that such systems are safe, taking into account the following:

(i) The use of cell phone shall not be used as the primary means of VSCC and shall be restricted to be a secondary form of communication.

(ii) The cell phones shall be used when the primary mode of mission critical communication has failed.

(iii) The use of conventional cell phones for safety critical communication introduces significant operational risks and shall be avoided or prohibited. Embedded cell phone technology on the other hand may be used where applicable (e.g. train control systems)

5.2.2. Risks associated with use of permitted cellphones shall be considered adequately and mitigated, taking into account the disadvantages of full duplex (FD) audio

transmission (e.g. cell phones) as compared to half duplex (HD) audio transmission (e.g. two-way radios / walkie-talkies),namely;

(i) Concurrent transmission in a single time/frequency channel in the case of FD;

(ii) Use of different time slots and/or frequency subbands in the case of HD;

(iii) Cancellation of possible Self Interference (SI) in the case of FD;

(iv) Minimisation and risk mitigation of End-to-End (E-to-E) delays, especially in the case of HD;

(v) Minimisation and risk mitigation of Link Reliability (LR) in both cases.

5.2.3. the risk factors listed in 5.2.2 above, amongst others, may have a negative impact on effective and seamless VSCC and therefore, VSCC rules shall also apply in the use of cellphones (where such use is permitted).

5.3. Communication skills

5.3.1. Communication skills refers to the underpinning competencies necessary for good communications. These include but not limited to:

(i) Listening and questioning

(ii) Working with people

(iii) Assertiveness

(iv) Challenging

(v) Considering others' needs

6. Communication barriers

6.1. Operators shall ensure that barriers to effective VSCC in the workplace are eliminated and where elimination is not practical or possible, the barriers should be reduced to ALARP.

6.2. Where the barriers are reduced to ALARP, the resultant risks should be identified and adequately mitigated.

6.3. There are various barriers to effective VSCCs. Barriers arise from three main sources: environmental conditions; the nature and quality of the equipment you are using; and the way in which you speak.

6.3.1. Environmental barriers

6.3.1.2 For communication, noise is the key environmental barrier, including the following:

a. Noise from the weather or outdoor environment
b. Background noise either from the interior or exterior

6.3.1.3 Noise not only makes it harder to hear what is being said, it can also lead to:

a. Rushed speech
b. Shouted messages
c. Simply giving up on communicating altogether

6.3.1.4 Personnel shall, If possible, find a dry, quiet location from which to communicate and always make sure they are in a position of safety to follow the communications structure and standards

6.3.2. Equipment barriers

6.3.2.1 Analog and digital communication equipment have a potential to cause barriers due to the gaps in the overall coverage. This can be due to design , theft or vandalism. Both technologies are susceptible to the following:

a. Transmission noise
b. Interference
c. Drop-out
d. Theft and vandalism leading to high outage time.
e. Obsolescence leading to a shortage of spare equipment

6.3.2.2 Digital Migration might lead to operators utilising different communication systems while sharing the same network which would impact safe interoperability at interfaces.

6.3.2.3 Operators sharing the same network shall ensure interoperability between the various communication networks which they use. This will mitigate any barriers

that might arise from incompatible communications systems being used by different operators sharing the same network.

6.3.3. Linguistic barriers

6.3.3.1 Linguistic refers to the way we speak and the language that we use. To communicate clearly, personnel undertaking safety-related and safety critical work shall avoid using:

a. Vague language
b. Jargon

ANNEX A (Informative): VSCC Four-Part Structure

	**Opening**	The opening of a safety critical message should contain the following two pieces of information: This is who I am This is where I am **Who I am** • State your role • It may also be necessary to state your name • This is to ensure the person who you are talking to knows exactly who you are **Where I am** • This should be a simple description of where you are • Identify your exact location that is recognisable to both parties, for example access points, level crossing, station, or platform. • If discussing overhead line equipment, you will need to give the structure number found on the stanchion.
	**Information**	**Information** should always come before any actions are given. This: • provides context • ensures the actions are fresh in everyone's mind • allows the actions to be agreed and then repeated back. The information we provide must be concise and relevant. Where long messages or instructions are being given, it is better to break them down into manageable chunks.
	**Actions**	**Actions** are an essential part of the communication contract. Note: • They can be passed in both directions. • They should be definitive, for example. "You must…" Definitive language in unambiguous and helps event misunderstanding. • The instruction 'Do nothing until…' is a valid action. People are often tempted to 'jump in' before it is safe to do so. This instruction makes it clear that an action should not take place until a certain condition is met, for example: remain at a stand until a Signaller instructs you to move.
	**Confirmation**	To confirm that all parties have the same understanding of the communication, the person with **Lead Responsibility** must ask for a 'repeat back'. This is a crucial step in making sure the arrangements have been fully understood by both parties. It provides the opportunity to identify any misinformation, misunderstandings, or omissions. The process of repeating back a message (saying it out loud and in our own words) also helps us to process the information more deeply. And

		makes it more likely that we will remember what has been said when the communication has ended. A repeat back means: • Repeating back the message we have been given and our understanding of what is required of us, so that any misunderstandings can be corrected. • Asking for a 'repeat back' at the end of a safety critical message if we are the person with Lead Responsibility, and if the other party has not already repeated their understanding of the message back to us.