

## Practice of RC Comms

There is always only 2 persona in the comms dialogue. Control persona and User. The user being also the trainee.

### 1. Control centre persona :

As a coach will always lead the dialogue in each (intended) Practice; weather random or In a specific scenario, such as in seeking entrance for Track Access; **OCC has to also follow though** to provide (after he is satisfied, and ready to grant authorisation):

- TOA number xxxx, and state:
- Time limit (period in minutes, or up to a specific time)
- Method of Track Access Protection (Standing Train Protection, .. etc)
- Lastly, make reminder to TPO to update progress.

**BUT**, these along with the other rules and relevant terminologies will also be captured and applied as the 'Right Habits' and 'Rules' in the **Practice Portion**. This allows the AI Bot to persistently making the voice comms corrections to user:

Examples in the practice portion of the trainer is illustrated ..

Player (TPO)	Chatbot AI (as OCC), resolute and prompts
Unrecognisable chatter [ fails to identify himself ]	Station unknown, Mainline 01 here, <b>please identify/ say call-sign</b> , Over
Mainline 01 . .	Station unknown, Mainline 01 here, <b>please identify/ say call-sign</b> , Over
Mainline 01, TPO 'George '	TPO George, Mainline 01 here, <b>please use proper Voice Protocol, says 'Over 'after you are finish</b> . Over
Mainline 01, TPO 'George', I am at Station 'twenty 'over.	TPO George, Mainline 01 here, <b>please use proper Numerical Phonetics</b> , Over.
Mainline 01, TPO 'George' I need to recognise when to "ANC", over	TPO George, Mainline 01 here, <b>please use proper Phonetics</b> , Over.

For best transmission of conversation trainee has to learn how to speak in the following manner:

- Maintain a natural rhythm
- Keep a constant speed, slightly slower than in normal conversation
- Speak every word clearly, do not let the voice fade away & do not shout.
- Use a higher pitch tone to allow better transmission.

AI will always be instructive, as such if user conversation become uncertain, AI may say:

- User proper call-sign, Over.
- Say intent, Over.
- Repeat location, Over.
- Respond clearly, Over.
- Follow your checklist, Over.

**When user speaks too fast and AI BOT cannot recognise the sentence or words become garbled, AI will say :** "Speak in a regular tone, and clearly", Over.

The AI (RAM) will take on a persona of a **coach** or 'teaching' role of the Trainer in the Control of that "talk-group", and conduct conversation with the user or trainee in such a manner:

1. Parties involved must practice 2-way half-duplex communication; ie. only one party speaks at a time, and pause for 2 sec before the other person speaks.
2. Use of key words and phrases in the accompanying dictionary of intractable terms used and adopted; verbalising and pronouncing them; and their application meaning defined. Only use acronyms as authorised by SBST in the comms manual.
3. Read and pronounce alphabets in phonetics form, using Alpha, Bravo, and Charlie etc, instead of instead of "A", "B", "C". when it comes to critical and non-standard abbreviations.
4. For Numerical Clarity, Numbers should be clearly enunciated individually to avoid confusion. Example: "One", "Three", "Three" instead of "one hundred and thirty three" and individual digits verbalisation for numbers, and standard 4 digits time or hours format.
5. Use only established Operating or talk-groups calls-signs syntax all the time.
6. When using the radio for communications, use standard radio protocol (voice procedure) must be used at all times, and follow strictly the sentence structure and RC comms syntax as layout here.
7. All parties must identify themselves with discrete callsign. When making initial contacts with Control, user has to identify himself (saying his own call-sign), and addressing the receiver or control.
8. All messages must be clear, concise and to the point. Both the recipient and the caller must understand the messages correctly, and if unclear to tell the other party, "say again".
9. All radio voice messages must be conveyed in English and use of expletives is prohibited. Technical jargons and nomenclatures used has to be those established in each talk group.
10. Not to be too apologetic, and try to disband with excessive nicety (such as "please, can you?" "how great if you can ..", etc), Otherwise Control will initiate, 'Over and Out' to terminate recurring counter acknowledgement.
11. Radio comms are performed only on a **need basis**. Particularly for Technical and Operations coordinations, and should not be used for any social matters or arrangements, and therefore each has to state the purpose of call.

... and in a way 'teach' the user to speak in a proper manner and using all the right protocol and adopting all the right habits. Obviously the AI Bot will also adopt the same and similar practice, and always stands to be corrected too.

Specifically within each talk-group, there will be additional practices and rules :

1. Radio check is used as a way of checking in when user first 'enters' a new talk group (switch channel). This is particularly important in situation; example, where a CSO switch over from talk group 3700 to 3701 with mainline intending to communicate with the Traffic Controller, when the train is at the Reception Track.
2. All radio voice messages concerning safety critical work including manual train movement control must include the use of "Read Back" Message.
3. A radio message for an individual manual train movement, must be sent to one addressee only. The Read Back protocol must be applied to ensure that the authorised movement is clearly understood.

4. Staff performing train driving or manning duty shall register his radio number with control by performing a radio check, and establishing radio contact before commencing train operation.

The AI (or RAM) will lead in the conversation base on the selected Practice within the 3x3 matrix below and applied randomness. The variability of content is not intended to be extensive and exhaustive, as it is **ONLY to drive the Practice Intent**.

TALK-GROUPS	Operations	Station	Depot / Engineering	
CONTROL	RAM / AI assumes the role of CONTROL - and the character do not change, although its Call-sign changes. OCC, TCO1, TCO2.	RAM / AI assumes the role of CONTROL - and the character do not change, although its Call-sign changes. CS, SM,	RAM / AI assumes the role of CONTROL - and the character do not change, although its Call-sign changes. Depot 0,	
USERS	User's role changes along with call-sign and takes on that persona, and hence context: CSO, TPO, CAR 01 etc . .	User's role changes along with call-sign and takes on that persona, and hence context: CAR 01, ??	User's role changes along with call-sign and takes on that persona, and hence context: CAR 01, EPIC, ??	
Basic Level	Checking in (identity) and Radio Check Checking out, Clarifying, Repeating, Time Location or Position relevant, and terminologies: • List A1 - Unique Catchphrases in Operations • Use of Common Catchphrases	Checking in (identity) and Radio Check Checking out, Clarifying, Repeating, Time Location or Position relevant, and terminologies: • List A2 - Unique Catchphrases in Station Control • Use of Common Catchphrases	Checking in (identity) and Radio Check Checking out, Clarifying, Repeating, Time Location or Position relevant, and terminologies: • List A3 - Unique Catchphrases in Depot/Engineering • Use of Common Catchphrases	Conversation Types:  Basic conversation level
Intermediate	Routine procedural sequences titled and details of step provided to AI: • Obtaining TOA • Track entry • Surrendering TOA Use of acronyms and terminologies applicable to talk groups List B1	Routine procedural sequences titled and details of step provided to AI: • ???? Use of acronyms and terminologies applicable to talk groups List B2	Routine procedural sequences titled and details of step provided to AI: • ??? Use of acronyms and terminologies applicable to talk groups List B3	Procedural conversation driven by fixed sequence & routines
Advance	Multiple scenarios and incidents storyboard provided to AI as a guide, with • Additional rules (guides conversation) • Information References for each	Multiple scenarios and incidents storyboard provided to AI as a guide, with • Additional rules (guides conversation) • Information References for each	Multiple scenarios and incidents storyboard provided to AI as a guide, with • Additional rules (guides conversation) • Information References for each	Characterised by nature of incidents or event scenarios

## 2. Rules, Basic Syntax and Sentence structure :

A) **Making a Group Call (only by control centre, not individuals)**, Sender start by saying:

<Receiver's Call Sign> this is <Sender's Call Sign>, <Message . . >, over  
<Car 45> this is <Mainline 01>, <Message . . >, over

B) **Individuals establishing a Call**

Receiver's Radio call alert sounded, Receiver respond just by saying:

<Receiver's Call Sign>, send, over  
<Car 45>, send, over

C) **Subsequent Radio messages** between the receiver and sender should just start with your own call sign; and finally ending the last with 'out'.

<Your own Call Sign> < ...Your Message... >, over  
<Car 45>, <Message . . >, over

D) **Leaving Radio comms** b sender should just ending with 'over and out'.

<Your own Call Sign> < ...Your Message... >, over  
<Car 45>, <Message . . >, over and out.

**Conduct Half-Duplex conversation** (as oppose to full duplex), only one person can talk, Parties will also need to practice 2 sec pause, and speaks only the other party ends with, "over".

Hence, it is important to say OVER or OUT after parties have finished talking so that other radio users in the Talk-Group can start their own radio conversation.

- OVER means you had completed your message transmission and now your counterparty can start his message transmission to you.
- OUT in a Group Call setting (Open Channel) means you had completed your radio conversation with your intended counterparty, now other radio users in this Talk Group can use it to made radio call to others in the same Talk Group.
- OUT in an Individual Call setting means you had completed your message transmission to your intended counterparty, the radio conversation is completed no further reply is required, radio conversation had ended.

**'Read Back Message' practice** is specifically practiced to ensure that a message has been correctly understood and received, and has to be applied in all these situations (requirements are quite specific to each scenario):

1. Safety situation
2. Protection arrangements
3. Possession & worksite boundaries
4. Change of vehicle operation modes; between AM, CM or RM
5. Movements of vehicles
6. Position of switch eg: Normal or Reverse
7. OCS status ON/OFF

**Alphabet Phonetics as applied instead of A, B, or C etc..**

- A. Alpha
- B. Bravo
- C. Charlie
- D. Delta
- E. Echo
- F. Foxtrot
- G. Golf
- H. Hotel
- I. India
- J. Juliet
- K. Kilo
- L. Lima
- M. Mike
- N. November
- O. Oscar
- P. Papa
- Q. Quebec
- R. Romeo
- S. Sierra
- T. Tango
- U. Uniform
- V. Victor
- W. Whiskey
- X. X-ray
- Y. Yankee
- Z. Zulu

### 3. Common Catch Phrases:

1. "Roger" : To indicate that a message has been received message and understood.
2. "Correct" or "Positive": To indicate that a message has been correctly received.
3. "Say Again": When used by receiver, to request the sender to repeat the message ("Say again last message") or when used by the sender to repeat / emphasise the message ("I Say again")
4. "Wilco" (short for "Will Comply"): To indicate that a message has been received, understood, and will be acted upon (short form of "will comply")
5. "Wait": To indicate a pause in a message
6. "Difficult" To indicate that the signal received is weak during radio check
7. "All stations": A To indicate that a collective call is being made to all radio stations in the same talk group
8. "Emergency, Emergency" : To indicate an emergency message
9. "Figure" : To preface figures to be announced individually

10. “\_\_ \_\_ \_\_ hrs”: 24 hours time format
11. “Message”: To indicate that a message is to be sent
12. “Okay” : To indicate that the signal received is okay during radio check
13. “Out” : To indicate at the end of a message, that a reply is not required, and signifies the end of a call
14. “Over” : To indicate at the end of the message and that a reply is required
15. “Radio check” : To signify the intention to check the quality of radio message transmitted and received
16. “Read back message” : Caller uses this to indicate that a message must be repeated by the receiver to ensure it has been received
17. “Send” : To indicate readiness to receive a message
18. “I Spell” : To preface the words to be spelt in Phonetic Alphabet
19. “Wrong” : (or Negative) To indicate that a message has been incorrectly received
20. “Decimal” : To indicate ‘.’ within a string of digits

### **Words and catch phrases specific to each talk-group type activities:**

List A1 commonly adopted in Operations. These standardised phrases help ensure clear uniformity, clarity in communication, especially in high-pressure or emergency situations.

1. "Line Clear": A message given to the Traffic Controller confirming that it is safe for traction current to be switched on and/or train services to restart after engineering work has been carried out on a section of the Main Line, or after an operating incident where staff or passengers have been on the track.
2. "Proceed with Caution": Used to advise train operators to move forward carefully, typically in situations where there may be hazards or reduced visibility.
3. "Track Occupation Authority" (TOA): A document that contains all the details including electrical isolations, given by the Traffic Controller to a Track Protection Officer or a Possession Controller for accessing the track.
4. "Track Circuit Failure": Indicates a malfunction in the track circuitry system, which can affect signalling and track occupancy detection.
5. Track access: Accessing into an area which is on or near the track.
6. Line Clear message: A message given to the Traffic Controller confirming that it is safe for traction current to be switched on and/or train services to restart after engineering work has been carried out on a section of the Main Line, or after an operating incident where staff or passengers have been on the track.
7. Point machine detection: Electro-mechanical process by which points are proved in the direction set.
8. Surrender TOA: Completion of work and ready to give line clear message.
9. Call-back time - The latest time by which the Track Protection Officer or the Possession Controller must call back the OCC/DCC to surrender his Track

Occupation Authority when working on or near the mainline track in Non-Traffic hours.

10. Request to access - refer to track access

There will be A2 and also A3 to capture some of the unique and common to some talk-groups:

Trade specific and standard terminologies (example List A2 for Stations) :  
Situations: Train disruption, trespassing, intrusions, SPAD, inclement weather, equipment malfunction, track damage etc..  
Make relevant reminders specific to the scenario (example List A3) :  
Proceed with caution and PPE.  
Notify once operation/work is complete.

#### 4. Abbreviations Locations, Terms and Technical nomenclatures :

##### LIST B1

1. TETRA - Terrestrial Trunked Radio System, generally refer to the handheld units
2. DTC - Depot Traffic Controller
3. SM - Station Manager
4. ATO - Automatic Train Operation
5. TC - Traffic Controller
6. PC - Possession Controller
7. IO - Incident Officer
8. OCC - Operations Control Centre
9. EIC - Engineering in-chargeEngineer In-Charge
10. OCS - Overhead Catenary System
11. AM, - Automatic Mode
12. CM, - Coded Mode or Coded Manual
13. RM - Restricted Mode or Restricted Manual
14. RMF - Restricted Manual Forward
15. RMR - Restricted Manual Reverse
16. SPKS - Staff Protection Key Switch
17. PSD - Platform Screen Door
18. TOA - Track Occupation Authority

## Intermediate level Training

The voice comms habits and practices in the 'Basic Level' will be snowballed to this phase as well. But the 'practice', again divided into the 3 talk-groups will be listed and ordered by the selection of different SOPs, and / randomised standardised processes and work sequences as below. There are also arranged in the 3 principal talk-groups for the purpose of this Training.

### Operations

- Seeking permission for Track Access (during traffic hours)
- Seeking permission for Track Access (during traffic hours)
- Moving Locomotive onto tracks

### Station Control

- Validating Authorisation for Access
- Arrangements for Visits
- Closure of stations / entrances
- etc..

### Depot / Engineering

- P-way maintenance
- etc..

*An example of Intermediate Level Practices:*

**Specific Sequences of Comms with OCC (Track Access)** : Sequence of events (varies and depends on Track protection methods) :  
[after obtaining TOA]

- Move to platform, and board the right assigned train,
- Make way to enter restricted area,
- Entering track,
- Report start of work (provide regular update)
- Report work complete
- Report leaving track
- Report giving up (surrendering) TOA

**If User is not clear or too vague in his conversation context (at Intermediate level Practice) , AI may pick up such instances and prompt :**

**Purpose of call** (example - "Asking / Request" for permission for entering track), AI BOT will ask for you to "state your intent"

Example of clear purpose:

- Doing maintenance, repair, search for item
- Respond to rescue a train
- Following orders or instruction (with authority from ..)

**Or incomplete details** for normal deployment, AI agent taking on Control Centre persona, will prompt user :

- When? .. specific time, or minutes from present time
- Where ? Present location ?
- Number of personnel?
- Reason for ..





## Advance level Training

This level of practice incorporates situation relevancy. And these are incorporated through storyboards provided for each incident scenarios. These written scenarios will be uploaded into the AI Model for guiding the sequence of response being led by the AI Bot.

Example of :

### Operations Situations:

SPAD,  
Inclement weather,  
etc ..

### Station Control Situations:

Train disruption,  
Trespassing,  
Intrusions,  
etc ..

### Depot / Engineering Situations:

Track damage.  
Point machine malfunction,  
etc ..

These includes also other matters involving work practices arrangements tied to each incidents or events that will drive the play-out of the different scenarios.

### WORK PRACTICES Order:

#### Take note :

Each Tetra device has an individual device code, a four digit ID, and  
Each Comms Group has an individual Comms Group four digit ID.

Although there is Group Call function, in the respective channel ID groups. Group call function ("Open Channel" communication) on 3701 and 3702 should only be used for broadcasting and by the OCC for:

- the release of the Last Train by stations
- managing an event or delay

In the event of an incident, one Control Centre in a talk group (eg. OCC) may instruct parties directly involved in handling the incident to switch to another talk group, such as the Incident Management channel 3703 or 3704 for radio communications during the Initial Response and Evacuation phase.

This Incident Management channel is also to be used by the EIC / AEIC and staff from the respective Engineering disciplines during the Investigation and Recovery phase for communications between themselves and the IO.

批注 [ZX1]: Do not understand.

During the incident management, all personnel should minimise use of the radio to avoid overloading the radio network. Whenever possible, the PABX network is to be used.

### 3. User Personas :

TPO - Track Protection Officer (TPO), you would have a crucial role in ensuring the safety and smooth operation of railway tracks in the situation you have been deployed, by being alert and staying vigilant and practice effective communication with the Control Centre and other personnel, emergency response preparedness, and adherence to safety protocols and regulations.

1. Vigilance in Track Safety: Staying on top of the tracks activities, to identify any matters within the sectors which you are deployed, should any matter pose a safety risk.
2. Risk Assessment: Assessing potential risks to track safety, such as weather conditions, nearby construction work, or potential trespassing incidents.
3. Communications with Operations Control Centre: Effective communication with the Operations Control Centre is essential. You would need to relay important information regarding track conditions, any incidents or emergencies, and any planned maintenance or repairs.
4. Coordination with Other Personnel: Collaborating with other MRT station staff and OCC, maintenance crews, and signalling personnel, to ensure coordinated efforts in track protection and maintenance.
5. Emergency Response: Being prepared to respond to emergencies or incidents on the tracks, such as accidents, or unauthorised intrusions onto the track area.
6. Implementing Safety Protocols: Enforcing safety protocols and procedures to prevent accidents and ensure the safe passage of trains.
7. Training and Education: Staying updated on safety regulations, facilitating training sessions to educate other staff on track safety practices.
8. Documentation: Keep detailed records of track inspections, incidents, and maintenance activities.
9. Reporting: any malfunctioning of track protection equipment, such as signals, barriers, and warning signs.
10. Communication: Conduct emergency communication protocols to quickly and effectively communicate with the Operations Control Centre in any urgent situations and emergencies.

CSO - Train Driver, your main responsibilities, besides driving the train when instructed, is to also to:

1. Provide advice and assistance to passengers in response to enquiries, covering for example:
  2. journey routes and times
  3. fare and ticketing issues
  4. travel on other modes of transport
  5. travel directions and the use of travel interchanges.
1. Assist passengers with special needs in boarding/alighting the trains safely.
2. Observe and take appropriate action against any failure of equipment and irregularities whilst at stations, including requesting assistance from other railway staff.

3. Ensure that all passengers comply with the Rapid Transit Systems (RTS) Regulations.
4. Attend to OCC instructions via the portable radio equipment.
5. Communicate with OCC and passengers as necessary via the train communications equipment.
6. Monitor the performance of the train whilst travelling and take appropriate action against any irregularities, including requesting assistance from other railway staff.
7. Deal with train defects in the most safe, effective and efficient manner in accordance with the relevant working manuals and procedures.
8. Maintain validity of track access qualification and comply with competency assessment.
9. Deal with incidents such as Passenger Emergency Communication device being activated, fire on train, detrainment, etc., in the most safe, effective and efficient manner in accordance with the relevant working manuals and procedures.
10. Perform the duties of Emergency Train Operator in the most safe, effective and efficient manner in accordance with the relevant working manuals and procedures.

## Established Call-signs

1. **Chief Controller** - Chief Controller
2. **Main Line Zero One** - Traffic Controller 1
3. **Main Line zZero Two** - Traffic Controller 2
4. **Depot Zero** - Depot Traffic Controller
5. **PFR** - Power Facility Regulator
6. **SDS** - Senior Depot Supervisor
7. **<Job Title><Name>** - Customer Service Officer (non-driving duty)
8. **Car No.** - Customer Service Officer (Driving duty)
9. **Engineer's Train n (n is Train Number)** - Engineer's Train Driver
10. **Job Title and Name** – Other Staff Member
11. **Job Title and Name** - TPO (Track Protection Officer)
12. PC (Possession controller),
13. OSM (Operation Staff Member)
14. **Incident Officer and Name** – Incident Officer
15. **Job Title>< and Name>** - - Management
16. **Full station name + job title + staff name e.g. Outram Park, + SM, + Goh** - Stations
17. Current Practise at OCC:-
18. Mainline01-HBF-BNK
19. Mainline02-PTP-PGL

## 11. **SAMPLE** RADIO TRANSCRIPTS

Transcripts (to be used for AI context and learning):

#1 User radio check with OCC

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TPO Tan conducts Radio Check with Traffic Controller using Individual Call. ( TPO Tan activates the TETRA radio number of TC.....)

TPO Tan: " ...\*\*//.. unrecognised chatter "  
ML 01: "Main Line Zero One, Send over"  
TPO Tan: "TPO Tan, Radio Check, over."  
ML 01: "Main Line Zero One, Radio Check loud and clear, over."  
TPO Tan: "TPO Tan, Radio Check OK, out."

#2 User radio check with one another person (one another)  
TPO Tan conducts Radio Check with his Partner, Mr Rajoo using Group Call. ( TPO Tan selects the appropriate Group Channel, press the PTT button .....)

TPO Tan: "Rajoo, this is TPO Tan message, over."  
Rajoo: "Rajoo, send, over."  
TPO Tan: "TPO Tan, Radio Check, over."  
Rajoo: "Rajoo, Radio Check OK, over."  
TPO Tan: "TPO Tan, Radio Check OK. out."

#3 User request for Track Access from TC  
TPO Kevin calls TC to request for Track Access using Individual Calls ( TC responded on Main Line Zero Two); and in this case request is denied, as OCS is still live.

ML 02: "Main Line Zero Two, Send, over"  
TPO Kevin: "TPO Kevin, Can I access the tracks, over"  
ML 02: "Main Line Zero Two, Negative. OCS is still live, over"  
TPO Kevin: "TPO Kevin, Wilco, out"

#4 User request for Access to Depot Wash Plant Track.  
TPO Loh calls Depot TC to request for Track Access ( TPO Loh activates the TETRA radio number of DTC.....)

Depot 0: "Depot Zero, Send, over"  
TPO Loh: "TPO Loh, request access to Daily Wash Track, over"  
Depot 0: "Depot Zero, Negative. There is a train at that track. Do not access. Read Back Message, over"  
TPO Loh: "TPO Loh, I Read Back your Message, there is a train at the Daily Wash track. I am not allowed to access, over"  
Depot 0: "Depot Zero, correct, over"  
TPO Loh: "TPO Loh, Roger, out"

#5 User receiving TOA from TC  
TC calls TPO Ali to issue TOA Number. ( TC activates the TETRA radio number of TPO ALI.....)

TPO Ali: "TPO Ali, is TOA ready?send, over"  
ML 02: "Main Line Zero Two, are you ready for your TOA, over"

TPO Ali: "TPO Ali, I am ready for my TOA, over"  
ML 02: "Main Line Zero Two, your TOA number is 2008-00256, over"

TPO Ali: "TPO Ali, my TOA number is 2008-00256, over"  
ML 02: "Main Line Zero Two, that is correct. TOA issued time is 0115. Call Back time is 0415 hrs over"  
TPO Ali: "TPO Ali, I read back, TOA issued time is 0115 hrs. And Call Back time is 0415 hrs, over"  
ML 02: "Main Line Zero Two, positive, you may proceed with your work, over"  
TPO Ali: "TPO Ali, Roger out"

#6 TPO calls TC to surrender his TOA.

[TPO Ho calls TC to surrender his TOA after completion of work. \(Non Traffic Hours Track Access and TPO Ho activates the TETRA radio number of TC.....\)](#)

ML 02: "Main Line Zero Two, Send, over"  
TPO Ho: "TPO Ho, I have completed my work and want to surrender my TOA, over"  
ML 02: "Main Line Zero Two, please proceed with your Line Clear message, over"  
TPO Ho: "TPO Ho, All staff, material and equipment are off the track and tunnel and it is safe for train to run. I surrender my TOA 2020-00257, over"  
ML 02: "Main Line Zero Two, Line Clear Message Acknowledged, TOA 2020-00257 surrendered at 0415 hrs, over"  
TPO Ho: "TPO Ho, TOA surrendered at 0415 hrs, over"  
ML 02: "Main Line Zero Two, that is correct, out"

#7 Radio calls to TC to report fault.

[PGL\(station\) SM \(Station Manager\) calls TC to report PSD fault using Individual Call. \(PGL ASM activates the TETRA radio number of TC.....\)](#)

ML 02: "Main Line Zero Two, Send over"  
PGL : "PGL SM Goh, South Bound Platform PSD number four is observed closing very slowly, over"  
ML 02: "Main Line Zero Two, please confirm SouthBound Platform PSD number four is closing very slowly, over"  
PGL : "PGL SM Goh, that is correct over"  
ML 02: "Main Line Zero Two, monitor PSD operation for the next two trains and feedback situation over"  
PGL : "PGL SM Goh, Wilco, out"

#8 Signal Technician calls TC to Confirm Point Position on GWS signalling system.

[Signal Technician, TPO Ong, calls TC to confirm Point Machine Detection on GWS after Point Machine repair. \( TPO Ong activates the TETRA radio number of TC.....\)](#)

ML 01: "Mainline Zero One, send over."  
TPO Ong: "TPO Ong, please confirm the position of Point 701 on your GWS over"  
ML 01: "Mainline Zero One, Point 701 is at Normal position on my GWS. over"  
TPO Ong: "TPO Ong, Point 701 is at Reverse position on your GWS over"  
ML 01: "Mainline Zero One, Negative. I Say Again. Point 701 is at Normal position on my GWS over"  
TPO Ong: "TPO Ong, Point 701 is at Normal position on your GWS over"  
ML 01: "Mainline Zero One, that is correct, over"  
TPO Ong: "TPO Ong, I request to set Point 701 to Manual Mode, over"  
ML 01: "Mainline Zero One, you are authorised to set Point 701 to Manual mode, over"  
TPO Ong: "TPO Ong, Point 701 set to Manual Mode now. Nothing further, out"

#9 Depot TC Calls to inform SPKS Removal

Depot TC calls TPO Ng to inform SPKS has been removed. ( DTC activates the TETRA radio number of TPO Ng....)

TPO Ng: "TPO Ng, send over"

Depot 0: "Depot Zero, SPKS Zone Three is removed at 1001hours, over"

TPO Ng: "TPO Ng, I read back, SPKS Zone Three is removed at 1001 hours, over"

Depot 0: "Depot Zero, that is correct. You may proceed with your work, over"

TPO Ng: "TPO Ng, Roger, out"

#10 TPO Calls TC before Removing SPKS SP401 (at PTP North Bound Head Wall)

P-Way Technician, TPO Zul, calls TC for authorisation to operate SPKS before accessing onto the tracks.( TPO Zul activates the TETRA radio number of TC....)

ML 01: "Mainline Zero One, send over."

TPO Zul: "TPO Zul, I am at PTP North Bound Head Wall. May I remove SPKS SP 401, over?"

ML 01: "Mainline Zero One, You may proceed to remove SPKS SP 401 now, over"

TPO Zul: "TPO Zul, SPKS SP 401 removed, can you confirm SPKS SP 401 removal on your GWS, over"

ML 01: "Mainline Zero One, confirmed SPKS SP 401 removed at 1400 hrs TOA number 2008-00259, Time TOA issued 1402 hrs, over"

TPO Zul: "TPO Zul, SPKS SP 401 removed at 1400 hrs TOA number 2008-00259, Time TOA issued 1402 hrs, over"

ML 01: "Mainline Zero One, positive, you may proceed with your work, over"

TPO Zul: "TPO Zul, Roger out"

#11 TC talk to CSO to impose 20 kph for Tunnel Walkway Procedure

Traffic Controller (ML 02) imposed 20 kph for tunnel walkway procedure, call CSO Ali (Car 37) to verify Target Speed. ML 02 key in Car 37 Tetra Radio ID and depress PTT, CSO Ali Tetra radio alert sounded ....

Car 37: "Car 37, send over"

ML 02: "Main Line Zero Two, Please proceed to the front DT Driving Console, over"

Car 37: "Car 37, Proceeding now to front DT, over"

ML 02: "Main Line Zero Two, Once you reach the front DT you are authorised to open the Console Cover, over"

Car 37: "Car 37, Roger, over"

ML 02: "Main Line 02, nothing further, out"

...[ 15 seconds later ]...CSO Ali call Traffic Controller 2 ... Traffic Controller 2 radio alert sounded.....

ML 02: "Main Line Zero Two, send over"

Car 37: "Car 37, I am now at the front DT, driving console cover opened, over"

ML 02: "Main Line Zero Two, Confirm the Target Speed, over"

Car 37: "Car 37, The Target Speed is 20 kph, over"

ML 02: "Main Line Zero Two, Now you can close the driving console cover, over"

Car 37: "Car 37, Wilco, out"

#12 Train (Car 45) overrun China Town Station in AM mode, CSO request permission to be authorised to set-back train doors to PSD.

Train (Car 45) overrun china town station in AM, CSO onboard call Traffic Controller 1 ....  
CSO key in TC Tetra ID and depress PTT... Traffic Controller 1 radio alert sounded.....

ML 01: "Main Line Zero One, Send, over"

Car 45: "Car 45, Overrun CNT South Bound Platform, over"

ML 01: "Main Line Zero One, Confirm that the train did not overrun the set-back limit, marker board, over"

Car 45: "Car 45, Train did not overrun the set-back limit, over"

ML 01: "Main Line Zero One, Read Back Message, open the driving console, and you are authorise to change to RMR Romeo Mike Romeo set-back to align train doors with the PSD, over"

Car 45: "Car 45, I Read Back, Authorised to open driving console cover, change to RMR Romeo Mike Romeo and set-back to align train doors with PSD, over"

ML 01: "Main Line Zero One, Positive, over"

Car 45: "Car 45, Roger, out"

**Additional transcripts illustrate typical exchanges** between various roles and the Operations Control Centre (OCC). Effective communication ensures that everyone involved is aware of the ongoing activities and that safety protocols are followed to prevent any incidents. Here are a few transcripts based on different scenarios:

### 1. Regular Track Protection Task:

ML 02: Mainline Zero Two, send, over.

TPO George: TPO George, we're deployed for track inspection on the northbound track between Sengkang station and Punggol station, over.

ML 02: Mainline Zero Two, noted between that you are carrying out track inspection on the northbound track between Sengkang station and Punggol station. Are you in position, over.

TPO George: TPO George, positive, currently at Sengkang station, over.

ML 02: Mainline Zero Two, roger that, are you ready for your TOA, over.

TPO George: TPO George, positive, I am ready for my TOA, over.

ML 02: Mainline Zero Two, your TOA number is 2145 – 00398, time issued is 0120hrs and call back time is 0415hrs, over.

TPO George: TPO George, my TOA number is 2145 – 00398, time issued is 0120hrs and call back time is 0415hrs, over.

ML 02: Mainline Zero Two, that is correct, you may proceed with your track access, over.

TPO George: TPO George, roger out.

### 2. Emergency Situation:

Car 09: Emergency, Emergency, Depot Zero, this is Car Zero Nine at track Sierra One East. Rail crack spotted near point Eight Three Three, over.

Depot 0: Depot Zero, read back message, stop your train immediately and standby for further instructions, over.



Car 09: Car Zero Nine, I read back message, train stopped, standing by for further instructions, over.

Depot 0: Depot Zero, roger, wait out.

### **3. Passenger on board train requires medical assistance:**

CNT ASM Lee: Chinatown ASM Lee, send over.

ML 01: Mainline Zero One, passenger onboard Car One Five approaching your northbound platform PSD Two Four requires assistance, over.

CNT ASM Lee: Chinatown ASM Lee, proceeding to my northbound platform PSD Two Four, over.

ML 01: Mainline Zero One, roger out.

### **4. Train Movement:**

Depot 0: Depot Zero, send over.

Car 57: Car Five Seven, ready for movement, over.

Depot 0: Depot Zero, roger, read back message, route has been set from Sierra Nine west to Hotel Five, over.

Car 57: Car Five Seven, I read back message, route has been set from Sierra Nine west to Hotel Five, over.

Depot 0: Depot Zero, correct, read back message, you are to stop short before change of end marker at Hotel Five, over.

Car 57: Car Five Seven, I read back message, I am to stop short before change of end marker at Hotel Five, over.

Depot 0: Depot Zero, correct, read back message, you are now authorised to put your mode selector to Charlie Mike, over.

Car 57: Car Five Seven, I read back message, I am now authorised to put my mode selector to Charlie Mike, over.

Depot 0: Depot Zero, correct, you may now proceed with your movement in Charlie Mike, over.

Car 57: Car Five Seven, wilco out.

### **5. Clarification of message:**

ML 02: Mainline Zero Two, send over.

HGN SM Devi: Hougang SM Devi, requesting for am.....(message distorted), over.

ML 02: Mainline Zero Two, difficult, say again your last message, over.

HGN SM Devi: Hougang SM Devi, I say again, requesting for ambulance assistance, over.

ML 02: Mainline Zero Two, roger, will activate ambulance to your location, over.

HGN SM Devi: Hougang SM Devi, roger out.

**6. TPO requesting for point detection test:**

Depot 0: Depot Zero, send, over.

TPO Jess: TPO Jess, requesting point detection test for point Papa Eight Zero Two, over.

Depot 0: Depot Zero, roger, all personnel to stand clear away from point, over.

TPO Jess: TPO Jess, roger, all personnel are standing clear away from point, over.

Depot 0: Depot Zero, roger, throwing point Papa Eight Zero Two to Normal position now, over.

TPO Jess: TPO Jess, point Papa Eight Zero Two now at Normal position, over.

Depot 0: Depot Zero, roger, throwing point Papa Eight Zero Two to Reverse position now, over.

TPO Jess: TPO Jess, point Papa Eight Zero Two now at Reverse position, over.

Depot 0: Depot Zero, roger, final throw, throwing point Papa Eight Zero Two to Normal position, over.

TPO Jess: TPO Jess, point Papa Eight Zero Two now at Normal position, over.

Depot 0: Depot Zero, roger, control of point Papa Eight Zero Two handed over back to me at 1350hrs, over.

TPO Jess: TPO Jess, control of point Papa Eight Zero Two handed over back to you at 1350hrs, over.

Depot 0: Depot Zero, positive, nothing further, out.

Acronym	Definition
A.C.	Alternating Current
ACB	Air Circuit Breaker
ACM	Asbestos Containing Material
AEIC	Assistant Engineer In Charge
AFC	Automatic Fare Collection
ALARP	As Low As Reasonably Practicable
AM	Automatic Mode
AMS	Access Management System
ASM	Assistant Station Manager
ATAS	Automatic Train Announcement System
ATC	Automatic Train Control
ATO	Automatic Train Operation
ATP	Automatic Train Protection
ATR	Automatic Train Regulation
ATS	Automatic Train Supervision
BB	Bukit Panjang Bound
BCL	Bencoolen Station
BDM	Bendeemer Station
BDN	Bedok North Station
BDR	Bedok Reservoir Station
BFI	Brake Fault Indicator
BFT	Bay Front Station
BGK	Buangkok Station
BGS	Bugis Station
BKP	Bukit Panjang Station
BLBS	Brake Loop By-pass Switch
BMS	Building Management System
BNK	Boon Keng Station
BP	Block Processor
BTN	Botanic Gardens Station
BTW	Beauty World Station
C&S	Communications & Systems
CB	Circuit Breaker
CBI	Computer Based Interlocking
CBN	Communication Backbone Network
CBTC	Communications Based Train Control
CC	Chief Controller
CC(S)	Chief Controller (Station)
CC(T)	Chief Controller (Train)
CCL	Circle Line
CCTV	Closed-circuit Television
CDI	Close Door Indication
CEPAS	Specification for Contactless e-Purse Application - an electronic money smart card
CERm	Communication Equipment Room
CM	Corrective Maintenance
CM	Coded Manual Mode
CMG	Crisis Management Group
CM	Coded Manual Mode
CMS	Central Management System
CNT	China Town Station
COP	Code Of Practice

COC	Communication Controller
COS	Call On Switch
CPU	Central Processor Unit
CQY	Clarke Quay Station
CSC	Contactless Smart Card
CSW	Cashew Station
CSO	Customer Service Officer
CTC	Console to Console (or Cab to Cab) Communication
CTCS	Conventional Train Control System
CW	Civil Work
DBG	Dhoby Ghaut station
DBS	DataBase Server
D.C.	Direct Current
DCC	Depot Control Centre
DCH	Driving Control Handle
DCL	Door Control Loop
DCPB	Door Closing Push Button
DCS	Depot Control System
DCU	Door Control Unit
DE(L)	Door Enable (Left)
DE(R)	Door Enable (Right)
DFB	DC Feeder Bukit Panjang bound
DFX	DC Feeder Expo bound
DIR	Door Interlock Relay
DLBS	Door Loop Bypass Switch
DLP	Defect Liability Period
DLS	Door Lock Switch
DLTS	Direct Line Telephone System
DM	Driving Motor
DMS	Data Management System
DOM	Duty Operations Manager
DOPB	Door Opening Push Button
DOT	Direction of Travel
DRMD	Dynamic Route Map Display
DSM	Depot Shift Manager
DT	Driving Trailer
DTB	DC Tie breaker Bukit Panjang bound
DTC	Depot Traffic Controller
DTL	Downtown Line
DTMF	Dual Tone Multi Frequency
DTN	Downtown Station
DTX	DC Tie breaker Xpo bound
DVA	Digital Voice Announcer
E&M	Electrical & Mechanical
EAD	Emergency Access Device
EBI	Emergency Brake Indicator
ECID	East Coast Integrated Depot
ECS	Environmental Control System
EDD	End Detrainment Door
EED	Emergency Egress Device
EHS	Emergency Handle Switch
EIC	Engineer In Charge

ELC	Electric Line Circuit
EOA	End of Authority
EPAX	Electronic Private Automatic Exchange
EPIC	Engineer's Person-In-Charge
ERD	End Return Door
ESA	Emergency Stop Area
ESS	Emergency Stop Switch
ESP	Emergency Stop Plunger
ETS	Emergency Trip Station
ETSS	Emergency Traction Tripping System
EVR	Event Recorder
FAT	Factory Acceptance Test
FBSS	Fall Back Signalling System
FCN	Fort Canning Station
FM	Facility Management
FMP	Feedback Management Portal
FPS	Fire Protection System
FRP	Farrer Park Station
GAMA	Geographic Automatic Mode Authorisation
GBD	Gali Batu Depot
GGAMA	Global Geographic Automatic Mode Authorisation
GIS	Gas Insulated Switchgear
GLB	Geylang Bahru Station
GND	Ground
GPS	Global Positioning System
GS	General Specification
GST	Goods and Services Tax
GTM	General Ticketing Machine
GWS	Generic Work Station
HAZOP	Hazard & Operability Analysis
HBF	Harbour Front Station
HGN	Hougang Station
HOD	Head of Department
HUM	Hume Station
HV	High Voltage
HVW	Hillview Station
HW	Headwall
ICP	Incident Control Post
ID	Identification / Identity
IMP	Incident Management Plan
IMTE	Inspection, Measuring and Testing Equipment
INF	Infrastructure
IO	Incident Officer
IRJ	Insulated Rail Joint
ISCS	Integrated Supervisory & Control System
ISDN	Integrated Services Digital Network
ISO	International Organisation for Standardisation
IT	Information Technology
ITAMA	Individual Train Automatic Mode Authorisation
ITESS	Illuminated Tunnel Evacuation Signage System
JIMP	Joint Incident Management Plan
JLB	Jalan Besar Station

JMIMC	Joint Major Incident Management Committee
KAP	King Albert Park Station
KCD	Kim Chuan Depot
KCO	Key Contact Officer
KKB	Kaki Bukit Station
kph	Kilometres Per Hour
KV	KiloVolt
KVN	Kovan Station
LAN	Local Area Network
LCX	Leaky Coaxial Cable
LED	Light Emitting Diode
LEW	Licensed Electrical Worker
LMT	Local Management Terminal (PIS related)
LOA	License & Operating Agreement
LRT	Light Rapid Transit
LRV	Light Rail Vehicle
LTA	Land Transport Authority
LTOC	Land Transport Operations Centre
LTl	Little India Station
LV	Low Voltage
MAP	Main Alarm Panel
MCB	Miniature Circuit Breaker
MCCB	Moulded Case Circuit Breaker
MCKS	Manual Control Key Switch
MCO	Maintenance Control Operator
McVOR	Multi-channel Voice Recording
MDT	Mean Downtime
MEWP	Mobile Elevating Work Platform
MFI	Major Fault Indicator
MFT	Multi-Function Terminal
MFV	Multi-Function Vehicle
MI	Motor vehicle Intermediate
MMP	Maintenance Management Plan
MMS	Maintenance Management System
MP	Motor vehicle Pantograph
MPS	MacPherson Station
MR	Mobile Radio
MRB	Modification Review Board
MRT	Mass Rapid Transit
MS	Mode Selector
MTIB	Moving Train Initialisation Beacon
MTR	Mattar Station
NiAP	Non-identified Automatic Protection
NB	North Bound
NEL	North East Line
NEW	Newton Station
NMS	Network Management System
O&M	Operations & Maintenance
OSHA	Operating & Support Hazard Analysis
OCC	Operations Control Centre
OCS	Overhead Catenary System
ODS	Overview Display System

OEM	Original Equipment Manufacturer
OTP	Outram Park Station
PA	Public Address
PABX	Private Automatic Branch Exchange
PBPB	Parking Brake Push Button
PC	Possession Controller
P&C	Planning and Coordination
PCP	Platform Communication Point
PDU	Passenger Display Unit
PEC	Passenger Emergency Communication
PEDC	Platform Edge Door Controller
PFR	Power Facility Regulator
PGL	Punggol Station
PIS	Passenger Information System
PLC	Programmable Logic Controller
PM	Preventive Maintenance
PMN	Promenade Station
PMS	Plant Management System
PPE	Personal Protective Equipment
PS	Particular Specification
PSC	Passenger Service Centre
PSD	Platform Screen Door
PSIL	Public Area PSD Summary Indicator Lamp
PSM	Passenger Service Machine
PTI	Positive Train Identification
PTP	Potong Pasir Station
PTW	Permit-to-Work
Pway	Permanent Way
PWD	Public Works Department
PWM	Pulse Wave Modulation
RB	Re-localisation Beacon
RCCB	Residual Current Circuit Breaker
RCMS	Rail Corrective Maintenance System
RCR	Rochor Station
RGV	Rail Grinding Vehicle
RIMP	Rail Incident Management Plan
RM	Restricted Manual Mode
RRBC	Rail Relay Bonding Cable
RRT	Rapid Response Team
RRS	Road/Rail Shunter
RST	Rolling Stock
RT	Reception Track
SAV	Sixth Avenue Station
SB	South Bound
SCD	Short Circuiting Device
SCDF	Singapore Civil Defence Force
SCO	Station Controller
SDS	Senior Depot Supervisor
SER	Signalling Equipment Room <b>(DTL)</b>
SER	Serangoon Station <b>(NEL)</b>
SERm	Signalling Equipment Room <b>(NEL)</b>
SFI	Stamford Intake

SFT	Sanction-for-Test
SGB	Sungei Bedok Station
SIG	Signalling
SIM	Safety Inhibited Mode
SingTel	Singapore Telecommunications Limited
SIR	Safety Interlock Relay
SKG	Sengkang Station
SKLRT	Sengkang Light Rapid Transit
SM	Station Manager
SMS	Safety Management System
SMRT	Singapore Mass Rapid Transit
SPF	Singapore Police Force
SPKS	Staff Protection Key Switch
SPLRT	Sengkang and Punggol Light Rapid Transit
SSEP	Safety, Security & Emergency Planning Department
STA	Section Traction Authorisation
STIB	Stationary Train Initialisation Beacon
STIS	Station Travel Information System
STV	Stevens Station
SVS	Service Support
SWC	System Wide Contractors
T/C	Track Circuit
TAM	Tampines Station
TAR	Track Access Request
TB	Traffic Bulletin
TC	Traffic Controller
TCC	Track Circuit Clip
TDMS	Train Data Management System
TDS	Train Descriptor System
TER	Telecommunication Equipment Room <b>(DTL)</b>
TERm	Telecommunication Equipment Room <b>(NEL)</b>
TETRA	Terrestrial Trunk Radio System
TIMS	Train Integrated Management System
TKK	Tan Kah Kee Station
TLA	Telok Ayer Station
TMC	Train Movement Controller
TMC (MF)	Train Movement Controller (Maintenance Fleet)
TOA	Track Occupation Authority
TORR	Train Operated Route Release
TPE	Tampines East Station
TPO	Track Protection Officer
TPO (D)	Track Protection Officer Depot
TPO (T)	Track Protection Officer Traffic Hours
TPO (NT)	Track Protection Officer Non Traffic Hours
TPW	Tampines West Station
TransCom	Police Transportation Command
TSFB	Tai Seng Facility Building
TSIL	Trackside Summary Indicator Lamp
TSR	Temporary Speed Restriction
TT	Test Track
TTC	Test Track Controller
TTCR	Test Track Control Room



TTIS	Train borne Travel Information System
TTP	Track Trained Person
TVF	Tunnel Ventilation Fan
TVSS	Train borne Video Surveillance System
TW	Tailwall
TX	Transformer
UBI	Ubi Station
UPC	Upper Changi Station
UPS	Uninterruptable power supply system
VMS	Visitor Management System
VPIS	Visual Passenger Information System
VSS	Video Surveillance System
WC	Works Coordinator
WLH	Woodleigh Station
WO	Work Order
WUPB	Wake Up Push Button
XB	Expo Bound
XLN	Xilin Station
XPESS	Cross Passage Evacuation Signage System
XPO	Expo Station

Words	Meaning
Access Management System	An electronic security system that controls the access of personnel to various rooms or areas in stations, depot or other railway premises.
Accident	An event or occurrence which has resulted in death or injury to person, e.g. people falling while on escalator, work injury, etc.
Assistant Station Manager	A member of the Operations staff on duty at a station assisting the Station Manager in the operation of the station. During the absence of the Station Manager, the duty Assistant Station Manager will assume the role of the Station Manager of the station.
Authorised Person	A Competent Person having written approval from the Licensed Electrical Worker / Technical Head or Head of Engineering to perform his work.
Authorised Personnel	Any individual trained through management to be permitted to perform assigned duties in a safe and effective manner
Automatic Coupler	Other than for a mechanical coupling, an automatic coupler may enable pneumatic and/or electrical connections to be made and secured in one operation.
Automatic Fare Collection	System and associated equipment for the collection of fares, the issue, examination and collection of tickets.
Automatic Mode	Mode of operation of a train where acceleration, coasting, braking, and door operation is controlled by the ATO system.
Automatic Train Control	Automatic system that comprises of Automatic Train Operation and Automatic Train Protection.
Automatic Train Operation	Automatic system that controls acceleration, braking, station stopping, coasting and door operation of a train.
Automatic Train Protection	Automatic system that transmits continuous coded signals from the track to the train. The system compares the actual train speed with target safety speed for that section of track and ensures that there is always sufficient unoccupied track in event of an emergency brake application for the train to stop clear of any other train or obstruction.
Auxiliary Reservoir	Pressure vessel that stores compressed air to operate brake cylinders on locomotives and miscellaneous vehicles.

Auxiliary Supply	System for providing power for vehicle or train lighting, air conditioning, passenger facilities and emergency battery systems.
Baseplate	Steel or cast-iron plate for supporting rails on concrete sleepers, or on concrete slab tracks.

Words	Meaning
Block Back	A term used to denote a queue of trains detained behind a delayed train or other obstruction.
Bogie	Pivoted part of a vehicle that includes wheel-pairs.
Bonding Cable	Length of cable that is used as an electrical connection to ensure equipotential e.g. in a running rail, cable or pipe.
Braking Distance	Distance required for a train to stop under normal braking conditions, taking into account the: <ul style="list-style-type: none"> <li>Track gradient</li> <li>Weight of the train</li> <li>Speed of the train.</li> </ul>
Breakaway	A term denoting an accidental breakage of coupling that results in a Train becoming divided.
Buffer Stop	A fixed or friction sliding device at the end of a siding or overrun to prevent a Train from running beyond.
Busbar	Single heavy-duty electrical conductors from which several lower current feeds are taken.
Bypass Isolator	An isolator normally in the Open position located at the trackside of a traction substation for connecting adjacent overhead line power sections.
Cab Signal	Automatic Train Protection codes displayed as target speeds on the dual gauge speedometer on the driving consoles of Passenger Trains and Locomotives.
Call On Light	The indication shown by a standing train to the driver of a rescue train that he may proceed at caution speed to couple.
Call-Back Time	The latest time by which the Track Protection Officer or the Possession Controller must call back the OCC/DCC to surrender his Track Occupation Authority when working on or near the mainline track in Non-Traffic hours.
Cant	Degree by which one rail is raised above the other.
Catenary Wire	The wire forming part of the overhead traction current supply system, which distributes electrical power from Substations to Electric Trains through the pantographs.
Caution Notice	A notice in approved form attached adjacent to control handles or equipment indicating that persons are working on the circuit or apparatus that must not be made live or used.
Caution Speed	The speed at which a train is operated in manual modes so that the Train Driver can stop the train short of any obstruction within the line of sight.
Change Ends	The process of a Train Driver leaving the original driving position and proceeding to the other end of the Train for driving.
Check Rail	Additional rail placed within the track gauge parallel with the running rail adjacent to common or obtuse crossings to guide the wheels passing the crossing nose.

Words	Meaning
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Cherry Picker	A mobile working platform on an extendable arm for carrying out work at height.
Chief Controller	A member of the Operations staff on duty at the OCC responsible for the working of the OCC in the monitoring and control of the operation of the Railway.
Circuit Breaker	A switch designed to open and interrupt the load and fault current flowing in a circuit.
Circuit Main Earth	An earthing arrangement applied prior to the issue of a Permit-To-Work.
Clearance	The distance between structure and track or Vehicle, or between Vehicles.
Coast	Action of running train without power being fed to the traction motors.
Coded Manual Mode	Mode of operation in which a Train is driven manually, but remains subject to the maximum speed determined by Automatic Train Protection codes.
Collector Shoe	Part of train which engages with the Third Rail and draws power from the Third Rail. Located at the 2 DM cars.
Competent Person	A person who is physically fit for a particular task, has the necessary skills and knowledge, and has been so trained, assessed, qualified and certificated.
Confined Space	Any chamber, tank, pit, pipe, flue including other similar space in which dangerous substances are liable to be present to such an extent as to involve risk of: <ul style="list-style-type: none"> <li>• Fire or explosion occurring</li> <li>• Injury to the health of persons through exposure to toxic substances</li> <li>• Persons being asphyxiated due to inadequate supply of air.</li> </ul>
Consist	Single vehicle or a group of vehicles that are not separated during normal operation.
Control Room	A control room is any of the following: <ul style="list-style-type: none"> <li>• Operations Control Centre (OCC)</li> <li>• Depot Control Centre (DCC)</li> <li>• Passenger Service Centre (PSC)</li> <li>• Test Track Control Room (TTCR)</li> <li>• Senior Depot Supervisor (SDS) Office.</li> </ul>
Coupler	A mechanical device by which two Vehicles are joined together.
Crossover	Combination of points and crossings that permits trains to cross from one track to another.
Cross-Passage	An opening between 2 running tunnels to enable transfer of detained passengers from one tunnel to another.
Cross-Passage Door	Door at cross passage, which prevents smoke getting from one tunnel to another.
Customer Service Officer	A member of the Operations staff rendering assistance to passengers, station staff and acting as Train Drivers.

Words	Meaning
Danger Notice	A notice in approved form attached to apparatus that is live or in use for maintenance purposes, calling attention to the danger of approaching or interfering with such apparatus.
Deadman Safety Device	A device used during manual mode of driving. Release of the device causes an automatic emergency brake application.
Degraded Mode	A back up operation mode deviating from the Normal Mode of operation.
Depot	For stabling and maintenance of Trains
Depot Driver	A member of Rolling Stock qualified to drive a Train, Locomotive or miscellaneous Vehicles within Depot Limits.

Depot Limits	The limits of depot under the control of Depot Traffic Controller and Mainline Traffic Controller.
Depot Traffic Controller	A member of the Operations staff on duty at the DCC responsible for the control of train movements within the Depot Limits.
Designated Hot Work Area	An area demarcated by the Landlord of a premise for the purpose of carrying out hot work safely. The Landlord shall ensure that no incompatible works is allowed within the same area.
Detrainment	Process of having all passengers alight from a Train.
Dispatching	A term referring to the act of putting a Train into service from a Siding, Station or Depot.
Electric Train Driver	A member of the Operations staff qualified to drive Electric Trains in manual modes in the Main Line, Depot and Test Track.
Emergency	A situation which is life threatening, may cause damage on to any transit facility, Permanent Way, Vehicle or is likely to cause a delay to passenger services of more than 15 mins.
Empty Train	An Electric Train not in passenger service.
Engineer	Head, Rail Engineering or his delegate.
Engineer's Person-In-Charge	A person trained and qualified by SBS TRANSIT and is appointed to be fully responsible on site for the safe and correct execution of engineering work such as installation, modification, testing or maintenance anywhere on the Railway. Engineer's Person-In-Charge can be an employee of SBS TRANSIT, LTA or a contractor.
Engineer's Train	Any Train by design for the purpose of engineering or recovery work.
Engineer's Train Driver	A member of the Engineering Department qualified to drive Engineer's Trains in manual modes in the Main Line, Depot and Test Track.
Engineer-In-Charge	A member of the Engineering staff who manages technical aspects of a major incident on site.
Environmental Control System	System of air-conditioning and ventilation of tunnels, stations, etc.
Entry Pass	A security pass issued to staff and Long Term Contractors to authorise them to enter the railway premise
Facing Points	The location at which a diverging movement may be made in the direction of travel.
Facility	Any building or structure within the railway premise
Fail-Safe	A design feature that ensures the system remains safe; or in the event of a failure, causes the system to revert to a state that will not result in an unsafe situation.
Fall Protection System	A fall protection system provides protection against the hazard of falling from heights.
Fish bolt	Bolts used with fishplates for joining rail lengths.
Fishplate	Steel plate, used in pairs, for joining rail lengths together.
Fixed Signal	A colour light signals meant for Restricted Manual Mode movement, physically mounted on or near the track.
Flat Wagon	A non-passenger Vehicle that has a level floor, or no sides.
Fouling Point	The limiting point between two converging tracks beyond which trains on both tracks may collide.
G Clamp	A clamping device to secure joining rail using fishplate, usually 4 clamps per joint
Gradient	The slope of a line uphill or downhill measured according to a level datum, usually quoted in a percentage.
Group Station Manager	The Station Manager on duty at SKG or PGL station.

Handbrake	A mechanical brake that is operated manually.
Hand lamp	An electric or other approved portable lamp which, when switched on, is capable of displaying various aspects.
Haul Out	A method of rescuing a failed train by using the preceding train or locomotive to haul it to a depot or siding.
Hazardous Material	Any substance that, due to its chemical, physical, or biological nature, causes safety, public health, or environmental concerns that would require an elevated level of effort to manage.
Headwall	A location at the platform end door, adjacent to the front of an Electric Train at its normal stopping position in the normal direction of travel.
Headway	The time interval between trains.
High Voltage	A voltage (subject to permissible variations): <ul style="list-style-type: none"> <li>• <del>Between conductors exceeding 1000 volts A.C.</del></li> <li>• <del>Between any conductor and earth exceeding 600 volts A.C.</del></li> </ul>
Incident	An event or occurrence which may result in property damage or affect safety but has not resulted in death or injury e.g. train passed signal at danger, rail break, etc.
Incident Officer	A member of staff appointed by the CC to take charge of the control of a major incident declared by the CC.
Instruction	A detailed description of actions required to undertake a task, or to operate or maintain a piece of equipment.
Integrated Supervisory & Control System	A system that integrates the monitoring and control of various railway systems into one system that presents the operator with a common user interface.
Interchange	A station where passengers may alight from one train and board another on a different route.
Island Platform	A single station platform with a track on either side.
Isolate	Disconnect from all sources of electrical or pneumatic supply.
Isolator	A non load-making or non load-breaking switch used to isolate a part of the electrical system.
Landlord	A Landlord is a member of staff entrusted with the overall supervision and safe keeping of the railway premises or infrastructure assigned to him.
Level Crossing	Place at which a road crosses a railway track on the same level.
Life Cycle	All phases of the system's life including design, research, development, test and evaluation, production, deployment (inventory), operations and support, and disposal.
Line Clear	A message given to the Traffic Controller confirming that it is safe for traction current to be switched on and/or train services to restart after engineering work has been carried out on a section of the Main Line, or after an operating incident where staff or passengers have been on the track.
Local Control	The assumption of control of systems at a station or depot, e.g., Signalling, Environmental Control or Power Supply System.
Locomotive	A Vehicle capable of self-propulsion and of providing tractive and braking effort for moving other Vehicles.
Low Voltage	A voltage (subject to permissible variations): <ul style="list-style-type: none"> <li>• Exceeding 50 volts A.C. or 120 volts D.C. between conductors or to earth, and</li> <li>• Not exceeding</li> <li>• 1000 volts A.C. or 1500 volts D.C. between conductors, or</li> <li>• 600 volts A.C. or 900 volts D.C. between conductors and earth.</li> </ul>
Main Line	The track demarcated to serve both Traffic and Non-Traffic Hours.
Manual Isolator	An isolator that can be operated manually by means of a handle.

Motorised Isolator	A power-operated isolator that can be operated remotely.
Movement Joint	Joint that allows for expansion or contraction of a structure according to the prevailing ambient temperature.
Non-Automatic Area	The area of the Depot within which the working of trains is not governed by the Automatic Train Protection (ATP) system.
Non-identified Automatic Protection	A protected area automatically set up by the signalling system when a non-signalling equipped or mute train occupies a track circuit.
Non-passenger Train	Train composed entirely of non-passenger carrying Vehicles and any Engineer's Train, regardless of its consist.
Non-stop	The action of not calling at a station or stations.
Non-Traffic Hours	The period between the time traction current is actually switched off at close of traffic and the time of switching on traction current published in the Working Timetable or the Traffic Bulletin or the Emergency Notice or a declaration of emergency.
Normal	The customary position of points.
Normal Mode	All equipment and systems on the Railway performing in accordance with the intended design.
On Call Official	A member of staff who may be activated at short notice to respond to an incident. This includes but is not limited to EIC, AEIC or duty officer of a department
On/Near the Track	A distance within 2 meters of any rail of the track, unless there is fixed barrier between the staff and the track, or any distance within 1 meter of the platform edge on station platform with Platform Screen Doors open is considered as being on or near the track.
On-Track Machine	The Rail Crane or the Rail Grinder or the Multi-Function Vehicle each of which is capable of self-propulsion.
Operations Control Centre	A control room located in the Depot that is equipped with facilities to control train service, power supply and environmental control systems.
Operations Staff Member	A member of Operations who is <ul style="list-style-type: none"> <li>Competent to take himself and small parties onto the track under protection arrangements in Non-Traffic Hours for training or inspection purposes, and</li> <li>Competent to set up safe arrangements on or near the Main Line track to deal with operating incidents in Traffic Hours.</li> </ul>
Operations Staff Member (Customer Service)	A member of Operations who is <ul style="list-style-type: none"> <li>Competent to set up safe arrangements on or near the Main Line track to deal with operating incidents in Traffic Hours.</li> </ul>
Overhead Catenary System	An arrangement of wires suspended over the track for supplying traction current to trains.
Overhead Line Jumper	A flexible conductor located in the overhead line circuit.
Overrun Track	A section of track beyond a terminal station, acting as a buffer zone for a train that overruns the setback marker at the platform.
Pantograph	A retractable frame mounted on insulators on the roof of Electric Trains and electric locomotives that presses against the underside of the catenary wire, and through which traction current is collected.
Parking Brake	Mechanical brake applied automatically in the event of loss of main air pressure.
Passenger Service Centre	A control room on the station concourse where: <ul style="list-style-type: none"> <li>The sales of tickets, exchange, refund and validation takes place</li> <li>General customer enquiries are dealt with</li> <li>The station's control equipment is located.</li> </ul>
Passenger Train	An electric train in passenger service.
Permanent Way	The railway track including rails, fastenings and rail supports.

Permit to Access	A form of declaration signed and issued by an Authorised Person, to a Person-In-Charge of work in the proximity of "LIVE" equipment for the purpose of warning persons of the danger of working near the "LIVE" equipment.
Permit-To-Work (Electrical)	A form of declaration signed and given by an Authorized Person to an EPIC of the work to be carried out on any earthed apparatus. Its purpose is to make known to such person exactly which apparatus: <ul style="list-style-type: none"><li>• Is isolated from all live conductors</li><li>• Has been discharged</li><li>• Is connected to earth, and</li><li>• Is safe to work on.</li></ul>
Permit-To-Work (Mechanical)	A form signed and given by an Authorized Person to an EPIC of the work to be carried out on certain mechanical plant. Its purpose is to make known to such person exactly which apparatus is safe to work on or near.
Personnel	Any person working in SBS Transit (Rail) Railway Premises
Platform End Doors	Doors located at both ends of a platform to enable authorised persons to gain access to the track, some plant rooms and some fire emergency exits.
Platform Screen Doors	Doors fitted at the platform edge which control boarding and alighting from train. These doors operate in unison with train doors.
Pneumatic brake	A brake that is operated by compressed air.
Points	The moveable rail sections by which Vehicles are directed from one track to another.
Point Clamp	Device for securing points at either Normal or Reverse position, capable of being locked by padlock.
Point Detection	Electro-mechanical process by which points are proved in the direction set.
Point Machine (Point Motor)	The power equipment capable of moving points to the required position.
Point Number Plate	A plate fixed adjacent to a set of points denoting the identification number and normal position of the points.
Point Of Safety	Point Of Safety is a location into which an individual can stand back safely from the work he is doing, with no part of his body, tools or equipment in contact or in the path of the train movement. This is illustrated in figures 1, 2, & 3. <ul style="list-style-type: none"><li>• Figure 1 – At the Platform</li><li>• Figure 2 – At least 2 arm lengths from the nearest running rail</li><li>• Figure 3 – For location less than 2 arm lengths from the nearest running rail – the person must lean against the face of the column perpendicular to train movement</li></ul>
Possession	A clearly defined section of a track or tracks under the direct control of a Possession Controller, for the purpose of carrying tasks within that section.
Possession Controller	A person who has been trained and certificated by SBS Transit (Rail) to take and supervise possessions.
Possession Controller Main Line (No Trains)	A person who has been trained and certificated by SBS Transit (Rail) to take and supervise possessions on the Main Line which do not have Engineer's Train, Consist or Vehicle operating within the possession.
Possession Controller Main Line (Trains)	A person who has been trained and certificated by SBS Transit (Rail) as a Possession Controller Main Line and who has been further qualified to take and supervise a possession on the Main Line which has Engineer's Train, Consist or Vehicle working within it.
Possession Controller Depot (No Trains)	A person who has been trained and certificated by SBS Transit (Rail) to take and supervise possessions in the Depot which do not have Engineer's Train, Consist or Vehicle operating within the possession.
Possession Controller Depot (Trains)	A person who has been trained and certificated by SBS Transit (Rail) as a Possession Controller Depot and who has been further qualified to take and supervise a possession in the Depot which has Engineer's Train, Consist or Vehicle working within it.

Possession Limits	The Possession Limits of a possession are the published or declared limits of a possession.
Power Facility Regulator	A member of the Engineering staff on duty at the OCC responsible for the monitoring and controlling the power supply and Environmental Control System equipment of the Railway.
Power Rail	Consists of positive and negative rails which supply DC traction power to the electric vehicle transmitted through positive rail and negative traction power returns to the station through negative rail.
Power Section	A length of Overhead Catenary System, 3 <sup>rd</sup> Rail or Power Rail equipment between Substations, or a specific length of track.
Pressure Vessel	A compressed air receiver or a pressurized steam receiver.
Procedure	A description of responsibilities and actions of personnel to deal with a specific situation or to perform a specific task in accordance with the rules.
Process	Any activity or operation that receives inputs and converts them to outputs.
Protection	Method by which: <ul style="list-style-type: none"> <li>• A person or persons on or near the track are safeguarded from potential train movements, or</li> <li>• A Train is safeguarded from other train movements or obstacles</li> <li>• Persons or equipment are safeguarded from electrical current.</li> </ul>
Protection Limits	The Protection Limits of a possession are defined as the points at which the possession is protected from persons or trains approaching the possession.
Push Out	A method of rescuing a failed Train by using the following Train or Locomotive to push it to a Depot or siding.
Rail Relay Bonding Cable	A length of cable provided with clips or clamps that is used as a temporary electrical connection to bridge a gap in a running rail.
Railway Premises	Infrastructure and land in use for Railway and ancillary purposes where these are the responsibility of SBS Transit.
Railway Boundary	A perimeter wall or fence delineating the Railway from the outside.
Railway Publication	Any document published by the SBS Transit concerning the operation of the Railway.
Reception Track	A track connecting the depot to the mainline. It is divided into 2 parts. One part is under the signalling control of the depot while the other part is under the signalling control of the mainline.
Rectifier	Apparatus for the conversion of alternating current into direct current.
Red Flashing Light	An approved electrical flashing device applied at the boundaries of a possession or worksite as a means of protection arrangement.
Residual Risk	The remaining risk that exists after the agreed mitigation measures are implemented.
Restricted Manual Mode	Mode of operation of a train where the train is driven manually subject to a maximum speed of 18 kph. Movements in Restricted Manual mode may only be authorised, by the Traffic Controller for the main line or Depot Train Controller within the ATO area of the depot.
Revenue Hours	Revenue hours is when revenue is collected.
Reverse	The position of points opposite to Normal.
Risk	An expression of the impact and possibility of a hazard in terms of potential severity and probability of occurrence.
Rule	A principle or directive established by SBS Transit (Rail) to ensure safety at work and efficiency of operations.
Running Track	A track outside Depot Limits or sidings on which Trains operate for passenger service.



Safe System of Work	A considered method of working that takes proper account of the potential hazards to workers and provides a formal framework to ensure that all necessary steps for safe working have been anticipated and implemented. A safe system of work may include one or a combination of the following: Permit-To-Work, TOA, Work Instructions, provision of PPE, safety precautions, safe work practices, etc.
Safety	Freedom from those conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment.
Safety Critical	A term applied to any condition, event, operation, process, or item whose proper recognition, control, performance, or tolerance is essential to safe system operation and support, e.g., safety critical function, safety critical path, or safety critical component.
Safety Critical Work	Work activity that has the potential to significantly affect the safe operation of the transit system if an error is made which is not detected or corrected.
Safety Management System	A workable framework to manage safety in a systematic, proactive and consistent manner. By following its safety philosophy and the supporting mechanism, personnel can effectively implement the safety strategies as set out in the SBS Transit Safety Policy.
Section Insulator	Device included in the Overhead Catenary System equipment that allows free passage of a pantograph from one section to another without interrupting the supply to the train whilst isolating electrically the sections.
Section Isolator	A device for electrically sub-dividing an overhead catenary equipment section.
Securing of Points	To manually set and fix the movable rail sections of a set of Points in one position for safe running of train.
Semi Permanent Coupling	Coupling between Vehicles to form a train with fixed consist. The coupling consists of a bar linked by pins, bolt and nuts, to the adjacent Vehicle.
Senior Depot Supervisor	A member of the Rolling Stock Department who is in charge of the depot operation during his work shift.
Service Number	Train working in a numbered timetable path.
Short Circuiting Device	An appliance that connects the Overhead Catenary System to the rail, 3 <sup>rd</sup> Rail or Power Rail to the earth as a safeguard after traction current is switched off.
Siding	A length of track that branches out from the running or Reception Tracks on which rolling stock can be stabled.
Signal Aspect	The indication displayed by a signal.
Slab Track	Rails that are laid on a base of solid concrete.
Sleeper	Horizontal member laid at right angles to the rails to support and hold the rails to gauge.
Soleplate	Metal plate under the tips of points that holds the rails rigid to gauge, and on to which point control equipment for operation and detection may be fitted.
Staff	Employees of SBS Transit (Rail).
Staff ID Card	The personal CEPAS card issued to all SBS Transit staff by HR Dept for the purpose of travelling on public transport. It is also used for allowing access into AMS protected areas and rooms
Stalled	The stopping of a train due to a defect either on the Train itself or the one ahead, or due to a failure or incident.
Station Manager	A member of the Operations staff on duty at a station responsible for the operation of the station.
Store	Storing shall mean leaving something, either outside Track Occupation Authorisation duration in tunnel or guideway or in non-track area with storage permit.
Stretch Bar	Steel rod that holds the moveable rails of a set of points in their correct relative positions.
Structure Gauge	The cross-section outline inside which no part of any fixed structure may extend, except those infringements that have been accepted by the SBS Transit.

Substation	A building or compound containing electrical equipment for the reception of high voltage A.C. and for transforming it. Also see "traction substation".
Sweep Train	An Empty Train designated to carry out inspection over the track.
Switch Room	A room containing electrical equipment for the reception of low voltage A.C.
System Safety	The application of engineering and management principles, criteria, and techniques to achieve acceptable mishap risk, within the constraints of operational effectiveness and suitability, time, and cost, throughout all phases of the system life cycle.
Tail wall	The location at the platform end doors, adjacent to the rear of an Electric Train at its normal stopping position in the normal direction of travel.
Target Disc	A disc displayed on the driving console of a Vehicle to warn against movement of the Vehicle or Train.
Temporary Earth	An additional earth which is applied after the issue of a Permit-To-Work which must be removed prior to the cancellation of the Permit-To-Work.
Test Track Controller	A person qualified to Track Protection Officer (Depot) level who is the sole person to control train movements on the Depot Test Track when control has been transferred from the Depot Control Centre to the Test Track Control Room.
Third Rail	Supplies 750v DC power to the trains.
Ticket	A valid authority to travel on the railway.
Track	Track is defined as rails or guideway that a train or LRV respectively travels along.
Track Access Request	A document within the Maintenance Management System which gives all the details of a piece of work that a party wishes to do in an area which is on or near the track.
Track Circuit	An electrical circuit installed in the running rails that detects the presence of a train.
Track Current	The electricity required by an Electric Train or Locomotive for movement.
Track Gauge	The distance between the running edges of rails on the same track. The standard dimension is 1435 mm.
Track Occupation Authority	A document that contains all the details including electrical isolations, given by the Traffic Controller to a Track Protection Officer or a Possession Controller for accessing the track.
Track Protection Officer (Traffic Hours)	A person competent to set up a safe system of work on or near the track for a work team in Traffic Hours.
Track Protection Officer (Non Traffic Hours)	A person competent to set up a safe system of work on or near the track for a work team in Non-Traffic Hours.
Track Protection Officer Depot	A person competent to set up a safe system of work on or near the track for a work team in the Depot.
Track Trained Person	A person competent to be on or near the track under the protection and control of a Track Protection Officer or Possession Controller.
Traction Power System	Overhead Catenary System or 3 <sup>rd</sup> Rail and Power Rail including its associated Rectifiers, Inverters, cables and DC HSCB.
Traction Substation	A Substation with facilities for rectifying the transformed A.C. to D.C.
Traction Voltage	The nominal voltage (subject to permissible variations) at which the Overhead Catenary System, 3 <sup>rd</sup> Rail and Power Rail equipment is normally fed, i.e. 1500 volts D.C. and 750 volts D.C respectively.
Traffic Bulletin	A weekly notice published by Operations Planning & Support Department listing special items / activities for the week, including special traction current switching arrangement, special events, alterations to timetables, engineering activities, and notices, etc.
Traffic Controller	A member of the Operations staff on duty at the OCC responsible for the monitoring and control of the working of trains on the Main Line.

Traffic Hours	The period between the time traction current is switched on and the time it is switched off for the Main Line.
Trailing Load	The gross weight of all the Vehicles being hauled by a Locomotive, excluding the weight of the Locomotive.
Trailing Points	The location at which a converging movement may be made in the direction of travel for the track concerned.
Train	A group of Vehicles, mechanically coupled together, or a LRV, and permitted to operate under the protection of signalling system.
Train EPIC	An EPIC who has undergone further training by the SBS TRANSIT Rolling Stock Department on the responsibilities involved in taking charge of work on a train.
Train Movement Controller (Maintenance Fleet)	A person qualified to Track Protection Officer (Non-Traffic Hours) and Track Protection Officer (Depot) level who is the sole person to: <ul style="list-style-type: none"> <li>• Give instructions to a driver of a Maintenance Fleet vehicle to move a train within a Possession.</li> <li>• Manage Maintenance Fleet coupling and uncoupling operations in a Possession and in Engineer's sidings.</li> </ul>
Train Number	A unique identity number for each Electric Train set.
Transformer	Static apparatus for supplying an alternating current at one voltage when fed with alternating current at a different voltage.
Untrained Person	A person authorised to be on or near the track only when Trains or Vehicle movement has been stopped, and only during the Non-Traffic Hours or in a possession or in a Non-Automatic Area. An Untrained Person must be under the protection and control of a Track Protection Officer or Possession Controller.
Vehicle	Common term for a Locomotive, Wagon, any individual carriage of an Electric Train, MFV, RGV, MWV or on track Machine.
Voltage Tester	An approved device used in traction voltage system to test if the circuit is live or not.
Wagon	A Vehicle incapable of self propulsion, used for engineering works.
Well Wagon	A non-passenger Vehicle that has a lowered central body for the transportation of large objects.
Working Team	Persons under the direct supervision of an EPIC.
Working Limits	The Working Limits of a possession define the extremities beyond which people or trains working inside the possession are not permitted to pass.
Works Co-ordinator	A member of Rolling Stock staff reporting to the CC who: <ul style="list-style-type: none"> <li>• Provides engineering advice to the OCC staff</li> <li>• Co-ordinates the incident recovery in conjunction with the Engineer-In-Charge during a major incident declared by the CC.</li> </ul>