

ANSY 502

Train Order System

Applicability

NSW

SMS

Publication Requirement

External Only

Document Status

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3.1	13 December 2021

Purpose

To prescribe the rules for using the Train Management and Control System (TMACS) *Train Order system of Safeworking* in the *Australian Rail Track Corporation (ARTC) NSW Network*.

System Principle

The Train Order system:

- prevents *rail traffic* entries into occupied *blocks*, and
- is a *bidirectional* system used only on single lines outside *Rail Vehicle Detection territory*.

In *Train Order territory*, Train Orders are the only normal authorities for:

- a *through-movement* only, or
- *shunting* at a *location* (Shunt Order), or
- a through-movement with *shunt access* at a location.

In Train Order territory, Train Orders *may* be used to authorise a:

- *Special Proceed Authority (SPA)*, or
- *work train movement (Work Train Order)* in a *Track Occupancy Authority (TOA)*.

If the Train Order system of Safeworking fails, a method of *special working* may be introduced.

Computerised Train Order Working

Network Controllers compile Train Orders, Special Proceed Authorities, Work Train Orders, *Local Possession Authorities (LPAs)* and *Track Occupancy Authorities (TOAs)* in computerised workstations.

The computerised workstation allows for the transmission of Train Orders to *Rail Traffic Crews* using In Cab Equipment.

The system maintains *blocking facilities* against *issue* of Train Orders and authorities for conflicting movements and *occupancies*.

For each reporting location, the system generates a *security code* (security number).

Entry of the relevant security code into a workstation:

- removes a blocking facility, and
- releases the affected block.

For each Shunt Order at a Siding location the system generates a *supplementary security code*.

Manual Train Order Working

If the computerised system fails, manual Train Order working without security codes is introduced.

Network Controllers *must*:

- compile Train Orders, Special Proceed Authorities, Work Train Orders, LPAs and TOAs manually, and
- not issue authorities for conflicting movements and occupancies.

System Description

Network Controllers *must*:

- provide Train Orders, Special Proceed Authorities, Work Train Orders, LPAs or TOAs and security codes to Rail Traffic Crews, *Possession Protection Officers*, *Protection Officers*, or *Competent Workers* directing shunting, and
- make sure that Train Orders, Special Proceed Authorities, Work Train Orders, LPAs, TOAs and movements are recorded, in *permanent form*, on a *Train Control diagram*, and
- only issue an authority for track under their control.

Where provided, Rail Traffic Crews must confirm authorities using the In-Cab Equipment.

If the electronic transmission of authorities fails or is not available, Competent Workers receiving authorities *must*:

- compile them on a Train Order form (ANRF 009), and
- confirm authorities and security codes by reading them back to the Network Controller.

Details of the Train Order for a journey and Work Train Orders must be progressively reported, *fulfilled* and confirmed at the locations specified in the authority. Special Proceed Authorities must be fulfilled and confirmed at the locations specified in the authority.



Special Proceed Authorities must not be progressively reported.

LPAs must be issued:

- in accordance with Rule ANWT 302 Local Possession Authority, and
- on an LPA form (ANRF 001), or
- where provided, using the *Electronic application*.

TOAs must be issued:

- in accordance with Rule ANWT 304 Track Occupancy Authority, and
- on a TOA form (ANRF 002), or
- where provided, using the Electronic application.

Security codes

Network Controllers must:

- provide security codes to Competent Workers together with the relevant Train Order, and
- not write down security codes.

If a Train Order, Special Proceed Authority, Work Train Order, LPA or a TOA is partly fulfilled, fulfilled or *cancelled*, Network Controllers must not enter security codes into the system:

- before the location of rail traffic has been confirmed, and
- before reporting Competent Workers have dictated back relevant security codes, or
- where provided, by electronic transmission using the In-Cab Equipment, or
- where provided, using the Electronic application.

Proceed Authority

Authority to enter a block is given by a valid authority.

Train Orders must specify:

- departure and fulfilment locations, and
- if necessary, reporting, *crossing* and shunting locations, and
- any special instructions for the movement, and
- conditions affecting the network in accordance with Rule *ANGE 206 Reporting and responding to a Condition Affecting the Network (CAN)*.

Rail traffic must pass indicators at STOP only in accordance with Rule *ANSG 610 Passing indicators at STOP*.

Issuing a Proceed Authority

Limit of authority

The *limit of authority* for a Train Order must be:

- an entry-end YARD LIMIT sign, or
- the departure-end clearance point of a crossing location, or
- the departure end SHUNT LIMIT sign of a siding location, or
- the END TRAIN ORDER WORKING sign at a signalled location, or
- the END TRAIN ORDER WORKING sign at a Non-Train Order location, or
- the END NETWORK CONTROL sign at a Network Control boundary location.

The limit of authority for a Shunt Order must be:

- a SHUNT LIMIT sign for a location, or
- in locations where SHUNT LIMIT signs are not provided, the YARD LIMIT signs.

Train Orders must not *authorise* rail traffic to proceed:

- through signalled locations, or
- beyond Network Control boundary locations, or
- beyond intended crossing locations.

Special Proceed Authority

A Special Proceed Authority authorises unidirectional or bidirectional rail traffic movements in Train Order territory where a Train Order cannot be issued.

A Special Proceed Authority may direct rail traffic to travel in either direction:

- between two specific points, or
- to provide assistance to disabled rail traffic.

A Special Proceed Authority is issued in accordance with Rule *ANSY 514 Special Proceed Authority*.

Rail Traffic Crew receiving a Special Proceed Authority must:

- compile the authority on a Train Order form (ANRF 009), and
- confirm all details of the authority by reading them back to the Network Controller, or
- receive the authority by electronic transmission using the In-Cab Equipment where provided, and
- confirm all details of the authority using the In-Cab Equipment.



On TMACS Train Order territory, a Special Proceed Authority is compiled on a Train Order form (ANRF 009) where electronic transmission is not available.

Work Train Order

A Work Train Order authorises a work train to enter the limits of a Track Occupancy Authority.

Network Controllers may issue a Work Train Order to permit entry to the limits of a Track Occupancy Authority after the Rail Traffic Crew:

- make agreed arrangements with the holder of the Track Occupancy Authority, and
- obtain a *supplementary security code* from the holder of the TOA, and
- provide the supplementary security code to the Network Controller.

Once the supplementary security code is processed by the Network Controller, the Work Train Order may be issued to the Rail Traffic Crew of the work train.

Rail Traffic Crew receiving a Work Train Order must:

- compile the authority on a Train Order form (ANRF 009), and
- confirm all details of the authority by reading them back to the Network Controller, or
- receive the authority by electronic transmission using the In-Cab Equipment where provided, and
- confirm all details of the authority using the In-Cab Equipment.



On TMACS Train Order territory, a Work Train Order is compiled on a Train Order form (ANRF 009) where electronic transmission is not available.

Moving trains

Rail Traffic Crews may confirm authorities using the In-Cab Equipment on moving trains.

If the electronic transmission of authorities fails or is not available, authorities:

- may be transmitted to the Rail Traffic Crews of moving *trains* by radio, or other form of on-board communications, and
- must not be compiled or confirmed by Rail Traffic Crew members who are operating the controls of moving trains.

Transfer of Authorities

Rail Traffic Crews must:

- confirm the Authority details at crew change locations, and
- tell the Network Controller:
 - about the change of crew, and
 - their understanding of the limits of the Authority, and
 - any special instructions.

Crossing and Passing Trains

Crossing and *passing* movements may be authorised at crossing and *siding* locations.

The Network Controller must:

- determine the order of movement for a crossing, and
- tell Rail Traffic Crews which *routes* to use.

One train in the movement must be able to stand:

- wholly between clearance points at the location, or
- clear of the *main line*.

The first train to arrive within *yard limits* must:

- come to a stand, and
- the Rail Traffic Crew must report arrival to the Network Controller.

The Network Controller must not authorise the second train to enter the yard limits before the first train is stationary:

- wholly between clearance points at a crossing location, or
- at a departure end clearance point, or
- clear of the main line in a siding.

If there is a Shunt Order current at a siding location, the Network Controller may authorise a Train Order to other rail traffic:

- standing at the YARD LIMIT sign, or
- within shunt limits.

To obtain a Train Order for a location where a Shunt Order is current, the Rail Traffic Crew must:

- consult with the holder of the Shunt Order to confirm the intended route is clear, and
- if the route is confirmed clear, obtained the supplementary security code from the holder of the Shunt Order, and
- provide the supplementary security code to the Network Controller.

The holder of a Shunt Order must not provide the supplementary security code to the Network Controller.

Variation of Train Orders

The Network Controller must arrange to cancel a Train Order, and issue a new one, if the Train Order:

- needs to be varied, or
- cannot be fulfilled.

Before a Train Order may be cancelled, the affected rail traffic must be stationary at:

- a crossing or siding location, or
- a *block location* or signalled location, or
- a Network Control boundary location, or
- a location a Special Proceed Authority will be issued to or from.

Where a Work Train Order has been issued, the Work Train Order may only be cancelled when all affected Competent Workers have been told the Work Train Order will be cancelled.



Rail traffic that has a Train Order for a section in advance of the current authority ('next order') and is closely approaching the limit of the current authority must be brought to a stand before the next order is cancelled.

Loss of paper or electronic Train Order information

Competent Workers must report the loss of a current Train Order to the Network Controller as soon as possible.

If a Train Order is lost before rail traffic departs from a location, the rail traffic must not depart.

If a Train Order is lost after rail traffic departs from a location, the rail traffic must not pass the entry-end YARD LIMIT sign at the next location.

The Network Controller must:

- obtain a Superintendent's security code to cancel or fulfil the lost Train Order, and
- if *travel* is to continue, issue a new Train Order.

Reporting

Departure

Rail Traffic Crews must report departure to the Network Controller verbally or by electronic transmission using the In-Cab Equipment:

- from departure locations, and
- from reporting locations.

Departure must be reported only after the rearmost vehicle has cleared:

- a BEGIN TRAIN ORDER WORKING sign, or
- a BEGIN NETWORK CONTROL sign, or
- the YARD LIMIT sign at the departure-end of a location specified in the Train Order.

The *Train Order location* immediately preceding the limit of a Train Order must be specified as a reporting location.

If the electronic transmission fails or is not available, Network Controllers must confirm with Rail Traffic Crews:

- *train numbers*, and
- *lead locomotive numbers or track vehicle numbers*, and
- *departure times*, and
- the limit of authority for the current Train Order.

Arrival

If a Train Order has shunt access, Rail Traffic Crews must report arrival at the shunting locations to the Network Controller verbally or by electronic transmission using the In-Cab Equipment when the rail traffic:

- is between SHUNT LIMIT signs, or
- where SHUNT LIMIT signs are not provided, between YARD LIMIT signs.

Fulfilment at crossing locations

At crossing locations, Rail Traffic Crews must fulfil the Train Order only if the rail traffic is:

- stationary between clearance points, or
- clear of the main line or loop.

If rail traffic is over-length, Rail Traffic Crews must fulfil the Train Order only if the rail traffic is stationary at the departure-end clearance point.

Fulfilment at siding locations

At siding locations, Rail Traffic Crews must fulfil the Train Order only if the rail traffic is:

- stationary between SHUNT LIMIT signs, or
- clear of the main line.

If rail traffic is over-length, Rail Traffic Crews must fulfil the Train Order only if the rail traffic is stationary at the departure-end SHUNT LIMIT sign.

Fulfilment at signalled locations

At signalled locations, Rail Traffic Crews must fulfil the Train Order only if the rail traffic has completely passed the END TRAIN ORDER WORKING sign.

Fulfilment at Network Control boundary locations

At Network Control boundary locations, Rail Traffic Crews must fulfil the Train Order only if the rail traffic has completely passed the END NETWORK CONTROL sign.

Fulfilling a Work Train Order

Rail Traffic Crews must fulfil the Work Train Order only if the rail traffic is:

- stationary clear of the Track Occupancy Authority limits, or
- stationary at the limit of the Track Occupancy Authority, and
- all affected Competent Workers have been told the Work Train Order will be fulfilled.

Confirming the location of rail traffic

The system confirms the location of rail traffic.

If the electronic transmission fails or is not available, Network Controllers must confirm the location of rail traffic from:

- the train radio workstation, or
- Rail Traffic Crew.

Communications failure

If primary communications in rail traffic fails, Rail Traffic Crews must:

- report departure from a reporting location at the first available location, and
- if possible, report at the location immediately preceding the limit of the Train Order.

The Network Controller may delegate Competent Workers *certified* in Train Order working to relay information between *Network Control* and Rail Traffic Crews without communications.

Oposing rail traffic with failed primary communications must not be authorised to approach a location simultaneously.

Related ARTC Network Procedures

ANPR 710	Piloting Trains and Track Vehicles
ANPR 719	Operating groundframes
ANPR 721	Spoken and written communication

Effective Date

13 December 2021