



AUSTRALIAN RAIL TRACK CORPORATION LTD

Discipline: Engineering (Signalling)

Category: Standard

Maintenance and Sighting of Semaphore Signals and Train Authority Indicators

ESM-04-01

Applicability

ARTC Network Wide	✓	CRIA (NSW CRN)	✓
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Primary Source

SMP 31

Document Status

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1.3	13 August 2010	Standards	Manager Standards	Exec Manager SS&P 25/06/2010	CEO

Amendment Record

Version	Date Reviewed	Clause	Description of Amendment
1.0	15 May 08		First issue. Supersedes NSW Standard SMP 31 v1.2
1.1	07 Oct 09		Disclaimer updated as per Risk & Safety Committee 14/09/2009
1.2	25 June 2010		Residual NSW standard SMP 31 retained. ESM-04-01 partially supersedes SMP 31.
1.3	13 August 2010	All	Issued as final.

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1 General

It is essential that signals give an unmistakable indication to train drivers and that running signals display the optimal indication and that the applicable driver's view of the indication is as long and continuous as practical.

Signals shall be inspected by Signalling Maintainers as part of their normal duties when visiting sites or walking through the section on regular maintenance visits.

The Signalling Maintainer is responsible for the maintenance of signals and shall ensure that any defect or damage to the signal that effects or potentially affects the visibility and correct observation of the signal is attended to immediately and promptly rectified.

Any growth of trees or shrubs or new construction or any change of background or lighting conditions (whether on or off ARTC property) which may effect the sighting of signals must be reported and acted on promptly.

In all cases, broken and damaged lens units shall be attended to as soon as possible and shall be replaced within 24 hours.

Where other faults of a less serious nature are found, steps shall be taken to remedy the situation as soon as practical.

1.1 Sighting Check

When in the vicinity of signals, Signalling Maintainers are to note the visibility of the signal lights, signal arms and be vigilant for any condition that could be detrimental to signal sighting by train drivers. All running signals shall be checked annually from the drivers cab by the Maintenance Supervisor or nominated representative.

2 Semaphore Signal – Motor Worked

Check upper and lower quadrant signal motors to see that the holding clutch pawl has sufficient clearance 0.8mm from the toothed disc when the holding coils are de-energised. Carefully clean the pole faces and armature to prevent any accumulation of foreign matter and closely observe the armature to see that it drops away promptly when the coils are de-energised.

Where upper quadrant signals are provided with moving lower spectacles, lubricate these fittings and ensure that the connecting rod from the arm spectacle to the lower spectacle works freely, so as not to impede the free working of the arm.

Check the locking dog operation to ensure the end of the signal arm cannot be lifted by hand from the horizontal position more than approximately 230mm. Do not attempt to lift the arm when a train is approaching the signal. Check the arm spindle to ensure that wear is not taking place causing excessive end play. Specific attention shall be given each maintenance visit to ensure the arm spindle is adequately lubricated.

Observe the operation of the brake pad to ensure that excessive over run of the motor and gear train does not occur when the signal arm returns to the stop position.

Maintenance/installation shall be carried out in accordance with the Technical Maintenance Plan, associated Service Schedules and Equipment Maintenance Manuals.

3 Mechanical Signals

Signal lamps are to be focused for the driver's view. If when adjusting the focus, an obstruction is observed it is to be removed and, if this is not practical, the facts must be report to the Senior Signalling Representative for the area.

When the back light is seen from the Signal Box, the back light and back spectacles are to be adjusted for the signal operators view. The back spectacle must be so adjusted as to obscure the light when the arm is lowered a few degrees below the horizontal.

Signal arms, particularly the enamelled type, must be kept clean and bright. Any grime should be removed as necessary by the application of a cleaning compound and water. Signal arm lenses shall be cleaned regularly. Since some lenses are made of plastic, soap or mild detergent and water only shall be used as a cleaning agent. Products which contain abrasives or caustic materials or chemicals that may react with plastics must never be used.

Signal Maintainers are to observe the working of any electrical repeater if fitted to the signal. Attention is to be given to the free movement of the repeater spindle and correct adjustment of the repeater contacts.

4 Train Authority Indicators

4.1 General

Train Authority Working includes the provision of Point Indicator and Mechanical Point Indicators. These are mechanical indicators that are connected to the points by mechanical linkages. These are required to be maintained in a similar manner to semaphore signals.

4.2 Point Indicator

The Point Indicator (Point Setting Indicator in NSW) is an indicator of the position of the points. It is mechanically linked to the point lever or the points. The indicator surfaces have retro-reflective material.

Maintenance and inspection shall confirm that the operation of the indicator is correctly reacting to the position of the points and that the indicator will be visible to the approaching train. Maintenance inspection tasks include:

- Check operation of indicator;
- Check no slack in linkages and lubricate all bearing point and pivot points;
- Check all hold down bolts are tight;
- Clean all surfaces of indicator and check that the retro-reflective surface has not deteriorated.

4.3 Mechanical Points Indicator

The Mechanical Point Indicator is an indicator that the points are locked. It is mechanically linked to the point lever or the points. The indicator surfaces have retro-reflective material.

Maintenance and inspection shall confirm that the operation of the indicator is correctly reacting to the position of the points and that the indicator will be visible to the approaching train. Maintenance inspection tasks include:

- Check operation of indicator;
- Check no slack in linkages and lubricate all bearing point and pivot points;
- Check all hold down bolts are tight;
- Clean all surfaces of indicator and check that the retro-reflective surface has not deteriorated.

5 Defects

The signalling maintainer shall identify any defects in the equipment or in the operation of the equipment. This shall also be recorded into the Defect Management System or other nominated system to record the issue and request for rectification work. The priority or time to correct should also be recorded.