



AUSTRALIAN RAIL TRACK CORPORATION LTD

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Signalling

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Glossary of Terms

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About This Standard

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Accreditation

Accreditation is the process by which a person's qualifications, experience and competence are assessed in order to certify that person to perform specific inspection and testing duties

Alterations

Alterations refer to modifications and like for like renewals and are essentially works associated with a maintenance activity except when included as part of New and Altered Works

Analysis

This is an inspection of items of equipment for conformance of component type, rating, indexing, labelling, and allocation to the documentation details of the design plans, diagrams, analysis sheets and specification. In this document the analysis inspection is embodied in the expression "GENERAL APPARATUS INSPECTION".

Apparatus

Apparatus shall refer to the signalling equipment system as a whole or as separate items of signalling control and operating equipment, signalling materials, and structures housing signalling equipment.

Apparatus Function Test

see " Apparatus" and "Function Test" Generally refers to function tests of an item of installed equipment, particularly trackside apparatus when set to work from the local controls.

Aspect Sequence Test

An aspect sequence test is the verification of the signals aspect and aspect sequence in accordance with the design drawings and any special aspect sequence charts drawn up specifically for this test.

Bell Continuity Test

This is the process whereby the wiring is checked to see that it is in conformity with the wiring diagrams and that all wires are continuous from termination point to termination point.

This test is generally carried out simultaneously with a wire count (see separate definition), and insulation test.

Certification

Certification is the signing of certification documents by qualified, competent persons attesting that the design, product or installation is in accordance with the specification requirements as verified by appropriate inspections and/or tests.

Circuit Function Test To Wiring Diagram

This is the energisation of each circuit, or part of a circuit, and verifying by operation or disconnection that each and every control device, fuse and link is effective in controlling the circuit function in accordance with the circuit diagram. The specific contacts on control devices such as relays are not verified.

Circuit Strap And Function Test To Wiring Diagram

This is a more in-depth circuit function test. It is the energisation of each circuit, or part of circuit, and verifying by operation or disconnection that each and every control contact, fuse and link is effective in controlling the circuit function in accordance with the circuit diagram.

As each control contact is operated to open the circuit, a strap is applied across the contact and re-energisation of the circuit is verified by observation of the voltmeter and circuit function.

Contact Proving Test

This is an apparatus inspection and apparatus function test to prove that equipment contacts are the correct type, are correctly adjusted and electrically open and close when the equipment is operated.

Correspondence Test

This is a through test to verify that a function is in correspondence with its respective controlling equipment and/or indicating equipment. It includes an out of correspondence test to prove that if the function does not fully respond this is detected.

Design Integrity Test

This is a system interlocking and control function test similar to the Function Test to the Control Tables but working from the operational requirements and signalling principles, not directly from Interlocking and Control Tables or Aspect Sequence Charts.

Fail-Safe Design

Signalling fail-safe systems are designed on the closed loop principle where input energy is necessary to retain a permissive output.

In vital circuit design, a normally energised electric circuit, on being opened or de-energised, will cause the controlled function to assume its most restrictive state. (The opening of any common return conductor will not cause two or more functions to operate in series).

Fail-Safe Equipment

Items of equipment are fail-safe where they are particularly specified, designed, manufactured, installed, inspected, tested and maintained such that the chance of an unsafe side failure is very low. Component parts are robust, electrical leakage distances are long, operating characteristics have large margin, etc.

Function Test

This is a test in which a function is operated by power through its controls to test that it achieves its specified purpose and includes testing that it will assume a safe state when the power is removed.

Function Test To Control Tables

This is the operation of the equipment from the control panel, keyboard, levers, switches, or VDU (Visual Display Unit) to verify that the system operates safely in accordance with the electrical interlocking and controls incorporated in the design drawings, namely the Control Tables.

Insulation Test

This is a test of the resistance of the insulation between an electrical circuit conductor and 'earth' or directly between the conductors of two separate electrical circuits. The test is made at a specified voltage which is high compared to the circuit voltage.

Irregularity

A signalling failure is termed an irregularity when vital signalling equipment or circuits do not fail-safe or do not function correctly in accordance with their design specifications to provide the intended protection.

Level Crossing Test

This is an operational test of level crossing control circuits to check for adequate protection time, time of operation, etc. The checks are made by comparison with Track Plans, Control Tables etc.

Mechanical Interlocking Test

This is a test of mechanical interlocking in interlocking frames, releasing keys/annett locks, half pilot staff locks, staff instruments, mechanical detectors, etc to Locking Tables, Locking Diagrams and Working Sketches.

New And Altered Works

New and Altered Works comprises new work and any alterations involved with new work interfacing with existing signalling. It is essentially work associated with a construction project.

Non-Vital

Signalling and train control equipment and circuits are considered non-vital where failure to function correctly would not cause an unsafe outcome. Non vital equipment and circuits do not affect safety.

Null Count

This is a check against the circuit book analysis sheets that there are no wires terminated on spare contacts of relays and other operating mechanisms, nor on spare fuses, links, terminals, and all other spare termination points.

On-Site Test

These are tests using signalling power supplies of equipment and circuits installed in signalling structures with the track side equipment connected.

Points Correspondence Test

This is a test to ensure that the position of a set of points is in agreement with that required by the interlocking.

Pre-Site Test

These are tests of manufactured equipment and circuits using temporary power supplies prior to site installation. These are not certification tests, but rather quality control tests.

Safety

Safety is a circumstance in which the risk is less than the boundary risk. The boundary risk is the greatest acceptable system-related risk of a particular technical process or state, usually limited by the safety-related stipulations made according to the predominant opinion of experts and in compliance with the protective intentions of legislation.

Set To Work Test

This is not a certification test but part of the process of setting the equipment to work correctly. It is the initial powering up of the signalling circuitry and local apparatus at a relay room or location case to test that it is able to carry out its function correctly.

Signalling System

A railway signalling system is a system employing technical equipment to economically provide safe and efficient control of the movement of a stated quantity of rail traffic over a given network of track.

Through Function Test

This is a circuit function test of a circuit or series of related circuits running between locations, eg signal boxes, relay rooms, etc to ensure the fuses, links and control devices effectively control the final output.

Vital

Signalling equipment and circuits are considered vital where failure to function correctly could cause an unsafe outcome either directly or together with another signalling equipment or circuit failure. Vital equipment and circuits affect safety.

Wire Count

This is a count of the number of conductors terminated on each wire termination point and at every wire termination point. The count is certified against the circuit wiring diagrams and cross checked against the analysis sheets.

Wrong Side Failure

A signalling irregularity is termed a wrong side failure where a signal shows a less restrictive indication for a train than conditions allow, or a set of points are released under traffic conditions when they should be locked, or where automatic level crossing protection fails to operate for a train, that is, irregularities which could directly endanger the safe running of trains in the particular circumstances pertaining.