



AUSTRALIAN RAIL TRACK CORPORATION LTD

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## Engineering Practices Manual Civil Engineering

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# Field Welding – Removal of Alignment Defects in New Field Welds

## RAP 5393

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Issue 1, Revision 1

16 January 2009

### 1. Purpose

This document details the Weld Alignment Failure form and the Standing Orders for removal of alignment defects in new field welds.

### 2. Reason and nature of change

Reference to superseded RAP 5374 removed.

### 3. Weld Alignment Failure form

All new field welds are to be tested for geometric alignment in accordance with ARTC Standard ETM-01-01. When an alignment defect is detected, a Weld Alignment Failure form is to be completed and forwarded to the Team Manager. A copy of the form is included as Appendix 1.

The following procedure is to be followed to complete the form.

- (1) The Rail Flaw Detection Operator or Team Manager (whoever finds the defect)
  - (i) Fills in Items 1 to 9
  - (ii) Forwards all copies to the Team Manager
- (2) Team Manager
  - (i) Complete items 10 to 15
  - (ii) Forward copy to person instructed to remove tolerance exceedent
  - (iii) Forward a copy to the manager in charge of the welder if not under Team Manager's control
- (3) Person instructed to remove tolerance exceedent

- (i) Rectify the defective weld
  - (ii) Complete item 16
  - (iii) Return copy to Team Manager
- (4) Team Manager
- (i) Complete item 17
  - (ii) Retain completed form for management of welders' performance.

#### 4. Standing Orders

The remedial action shown in the table below is required for all new field weld alignment defects whether found by Rail Flaw Detection Operators or by other inspections. The rectification time for Class 1 Lines is shown in the table. For other classes of lines the rectification time may be doubled.

Defect type	Defect size	Rectify Class 1 Lines within
<b>DIP WELDS (WTD)</b>		
Small (WTDS)	Dip is greater than zero but less than 0.5 mm	90 days
Medium (WTDM)	Dip is equal to or greater than 0.5 mm but less than 1.0 mm	30 days
Large (WRDL)	Dip is equal to greater than 1.0 mm	14 days
<b>PEAK WELDS (WTP)</b>		
Small (WTPS)	Peak is greater than 0.5 mm but less than 1 mm	90 days
Medium (WTPM)	Peak is equal to or greater than 1 mm but less than 2 mm	30 days
Large (WTPL)	Peak is equal to or greater than 2 mm	14 days
<b>VERTICAL DEVIATION IN RUNNING SURFACE</b>		
Small	7 to 12 milliradians over 50 mm base	90 days
Medium	13 to 18 milliradians over 50 mm base	30 days
Large	19 milliradians or greater over 50 mm base	14 days
<b>GAUGE NARROW (WTGN) OR GAUGE WIDE (WTGW)</b>		
Small (WTGNS) or (WTGWS)	Narrowing or widening is greater than 0.5 mm but less than 1 mm	90 days
Medium (WTGNM) or (WTGWN)	Narrowing or widening is equal to or greater than 1 mm but less than 2 mm	30 days
Large (WTGNL) or (WTGWL)	Narrowing or widening is equal to or greater than 2 mm	14 days

**Appendix 1**

**Weld Alignment Failure Form**

1	Date Exceedent Found .....	<input type="text"/> <input type="text"/> <input type="text"/>
2	Track Base Code .....	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
3	..... Line, Between ..... and .....	
4	Kilometrage .....km .....m	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> . <input type="text"/> <input type="text"/>
5	<b>Road</b> [1] Main Single      [4] Single Line Crossing Loop      [7] Siding or Refuge [2] Up Main            [5] Up Local, Relief or Coal [3] Down Main        [6] Down Local, Relief or Coal	<input type="checkbox"/>
6	<b>Rail</b> [1] Up Rail High        [4] Down Rail Low        [7] Rail in Turnout/Catchpoint [2] Up Rail Low        [5] Up Rail High        [8] Switch [3] Down Rail High    [6] Down Rail Low        [9] Crossing	<input type="checkbox"/>
7	<b>Method of finding Defect</b> [1] Ultrasonic Inspector [2] Visual                [3] Misalignment/Mishap [4] Other (.....)	<input type="checkbox"/>
8	<b>Defect type and size</b> [WTP] Weld Tolerance Peak      [WTGN] Weld Tolerance Gauge Narrow [WTD] Weld Tolerance Dip        [WTGW] Weld Tolerance Gauge Wide [S] Small      [M] Medium      [L] Large	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="checkbox"/> Suggested Method of Removal    CLOSURE/GRINDING
9	Rail Section .....kg/m	<input type="text"/> <input type="text"/>
10	<b>Radius</b> [1] 160 - 300            [4] 801 - 1600            [7] Straight [2] 301 - 600            [5] 1601 - 3000 [3] 601 - 800            [6] Over 3000	<input type="checkbox"/>
11	<b>Sleeper Type</b> [1] Untreated Timber    [3] Concrete            [5] Sleeper on Concrete [2] Treated Timber      [4] Steel                [6] No Sleeper (Slab)	<input type="checkbox"/>
12	<b>Fastenings</b> [1] Dogspikes, Plates & Lockspikes      [4] Pandrol Clips [2] Dogspikes, Plates & No Lockspikes    [5] Other Resilient Fastenings [3] Dogspikes, No Plates	<input type="checkbox"/>
13	Estimate of age of weld ..... Years	<input type="text"/> <input type="text"/>
14	<b>Last Tolerance Test</b> [1] < 1 Month      [2] 1 – 6 Months      [3] 7 – 12 Months	<input type="checkbox"/>
<i>TO BE COMPLETED BY TEAM MANAGER</i>		
15	..... (Name) instructed to remove Weld exceedent By ...../...../..... using CLOSURE/GRINDING (delete whichever is not applicable) Signed ..... Team Manager      Date ...../...../.....	
<i>TO BE COMPLETED BY PERSON REMOVING DEFECT</i>		
16	Date removed from track ...../...../.....	Signed: .....
17	<b>Team Manager</b> Signed .....	Date ...../...../.....