



NEW EQUIPMENT & SYSTEM APPROVAL PROFORMA

Ref: 11/74427

Note: the prompts given below are only a guide to the information required for approval. Dependent on the type of equipment or system that requires approval delete any section that is not applicable or include additional information if necessary. Mandatory fields are marked with an asterisk (*).

• **Equipment or System to be approved ***

Wide gap Head Hardened Aluminothermic welding process - Part number: 75800021. Description of the new Weld Kit: 60kg WG68 CJ Grade HH

• **Originator ***

Name: Tony Paroz

Company: Railtech Australia Limited

• **Introduction ***

The head hardened wide gap one shot weld is a variation to the already existing standard carbon wide gap weld. The head hardened wide gap one shot is used to install Aluminothermic welds in head hardened rail.

• **Determination of Need ***

Advantages:

- Only one head hardened wide gap weld needs to be installed when removing a defect, instead of having to install a closure rail and two additional welds.
- Presently when a wide gap weld needs to be installed within a turnout on head hardened rail only the standard carbon wide gap weld is available. Permission is required for the standard carbon weld to be installed in head hardened rail and SC weld leaves a "soft spot" – until it work hardens.
- Once permission is granted to install a standard carbon weld in head hardened rail, the performance of the weld needs to be monitored. The weld metal hardness of the head hardened weld will be the same as the rail which will eliminate the need to monitor the weld.

• **Significant Change or Not ***

This change in equipment or system is assessed as MINOR

• **Review Panel ***

- John Furness, Manager Standards
- Gunaratnam Jayakumar, Senior Delivery Engineer, Hunter
- Ben Leske, Infrastructure Manager East/West
- Tim Calver, Standards and Technical Services Engineer

• **Safety**

As this welding system has been thoroughly tested to AS 1085.20, Safety levels should be the same as those already existing for Aluminothermic welding.

• **Performance and Suitability**

Reports numbered TR014 & RAL-08/10-010 have been submitted for approval. The testing required is outlined in AS1085.20-2006, Table N6 – Testing Required for Limited Changes.

(i) **Use in other rail networks**

Attached are acceptance letters from Railcorp for 60kg PLK CJ Head Hardened & 60kg Wide Gap CJ welds. The new process is a combination of the two.

(ii) **Use in the ARTC network**

Not yet used in ARTC Network

(iii) **Issues arising from usage of the equipment/system**

Any welders using their process will have to demonstrate that they have complete training approved by Railtech Australia for a wide gap process – not necessarily a head hardened process as it is so similar to the SC process.

(iv) **Changes required to infrastructure or systems for use of the equipment**

All existing welding hardware currently used for standard carbon wide gap can be used for head hardened wide gap. There is no additional equipment to be purchased.

• **Reliability**

As the wide gap welding system has been tested previously to AS 1085.20, reliability levels should be the same or better than as those already existing for Aluminothermic welding.

If installation procedures are closely adhered to the life of the weld can be indefinite.

For the purposes of AS 1085.20 this is classed as a limited change.



• **Maintainability**

Railtech *WGW68 CJ OXY-LPG PRODUCT INSTRUCTION PI022 REV2 2209-2010* is attached. No further training should be required as installation procedures will remain unchanged from the current wide gap process.

The service life of the weld is heavily reliant on welders closely adhering to installation procedures. Railtech can supply training of welders to Railtech specifications, technical support and weld analysis as required by ARTC. Attached is a sample of a training report conducted by Railtech for ARTC.

The wide gap standard carbon and PLK CJ head hardened weld process have been used by ARTC since its inception and on all other railway networks in Australia.

The wide gap head hardened process will require the same level of maintenance regimes as currently employed for existing welds.

• **Approval ***

Wide gap Head Hardened Aluminothermic welding process - Part number: 75800021. Description of the new Weld Kit: 60kg WGW68 CJ Grade HH

• **Conditions of Approval ***

Only to be installed by welders who are currently qualified in Railtech Australia wide gap welding procedures

• **Does the Originator accept the additional Conditions of Approval as set by the Review Panel:**

Yes No N/A

• **Sign off**

ARTC office use only

Review Panel:

John Furness

Date: 20/9/2011

Gunaratnam Jayakumar

Date: 31/8/2011

Ben Leske

Date: 16/9/11

Tim Calver

Date: 31/8/11

Attachments:

- Submission to ARTC - Qualification testing of wide gap HH process. June 2011
- Railtech *WGW68 CJ OXY-LPG PRODUCT INSTRUCTION PI022 REV2 2209-2010*
- RailCorp approval letters for wide gap welds - 29 May 2001 and 13 April 2005
- Railtech training verification for ARTC dated 3 April 2009
- Railtech responses to questions about the testing dated 29 June 2011.