Alpha Resources, Inc.
Certificate Of Analysis

AR 546
HYDROGEN IN STEEL
LOT # 114A

TOTAL HYDROGEN (melted/fused)
MEAN VALUE = 0.80 (ug/g) (0.000080 wt. %)
ONE NORMAL STANDARD DEVIATION = +/- 0.00001 wt. %
EXPANDED UNCERTAINTY = +/- 0.00002 wt. %
(Expanded uncertainty k=2, 95% confidence, n=70)

Method of Analysis:
LECO RH-404, ELTRA ONH 2000 Inert Gas Fusion, TC Detection
Diffusible Hydrogen (non-melted sample) = 0.00004 wt. % (reference only by vacuum hot extraction)

Standard reference materials used for certification:
JSS CRM **GS-1d**
BAM **Stahl –H1**

Notes:

Due to the extreme low hydrogen value, this standard is valued at or below the reportable limit of most instrumentation. This is reflected in the high standard deviation. The precision values represent the one normal standard deviation and two-sigma expanded uncertainty (k=2, 95% confidence). This standard was produced in accordance to ISO Guide 31 and ISO Guide 34.

The material used in production of this standard was identified in accordance with ARI 032. The samples for round robin testing were selected in accordance with ARI 014. The above values relate only to the material used to produce this standard. This certificate cannot be reproduced except in full. The statistical analysis, overall direction, and coordination of the analytical measurements leading to certification were performed by K. E. Dyer at Alpha Resources Inc. This bottle contains 100, 1g pins (nominal), to be used directly from the bottle. This standard has an indefinite shelf life, kept sealed and stored under normal laboratory conditions.

Remedies for any claimed defect in this product will be limited to product replacement or refund of the purchase price. In no event shall Alpha Resources be liable for incidental or consequential damages.

This is a Certified Reference Material (Working Standard), and is traceable to the above-mentioned standards. For good laboratory practice it is recommended that all standards be verified prior to use.

Certified September 24, 2015

Technical Manager