Kent and East Sussex Railway.

Grooving of boiler plates.

Experience with NDT defect assessment.

Presented by Chris Greatley
WATERSPACE SECTIONS AT FOUNDATION RING FOR LOCOMOTIVE AND CRANE BOILERS

(SHOWING LIKELY LOCATIONS OF GROOVING)

FOOTNOTE:

LOCO BOILER

VERTICAL BOILER

FOR CRANE

NOT TO SCALE

C.J.G.

21/1/18
TYPICAL GROOVING AT LAP SEAMS
MPI Shows short radial cracks

Loco 25
ULTRASONIC INVESTIGATION LOCO25 KESR
BY NDT INSPECTION SPECIALIST 2014

GROOVING/CRACKING DEFECTS
IDENTIFIED 2 TO 6MM DEEP

OUTER FIREBOX

0°

60° TO

GROOVING/CRACKING

FOUNDATION RING
LOC 25 PLAN VIEW OF FOUNDATION RING
SHOWS AREAS AFFECTED BY GROOVING 2" to 6" M A DEEP
LENGTH OF STRAIGHT PLATE AFFECTED 160 to 300 MM
Defective Plate removed.
Loco 25
SUMMARY

- Visual examination identified grooving, however assessment of depth and extent of defects was subject to limitations.
- Exploration by grinding established the presence of cracking.
- NDT was used to support visual examination and gave a more detailed assessment of the defects.
- A high level of competence and diligence is needed both in the NDT survey and its interpretation.
- Optimising water chemistry and boiler laying up procedure has potential to reduce corrosion rates in the long term.
Heaps of Scale in the Boiler of 4253
No evidence of water treatment... (from British Rail days in 1963)
Photo courtesy of 4253 locomotive company Ltd.