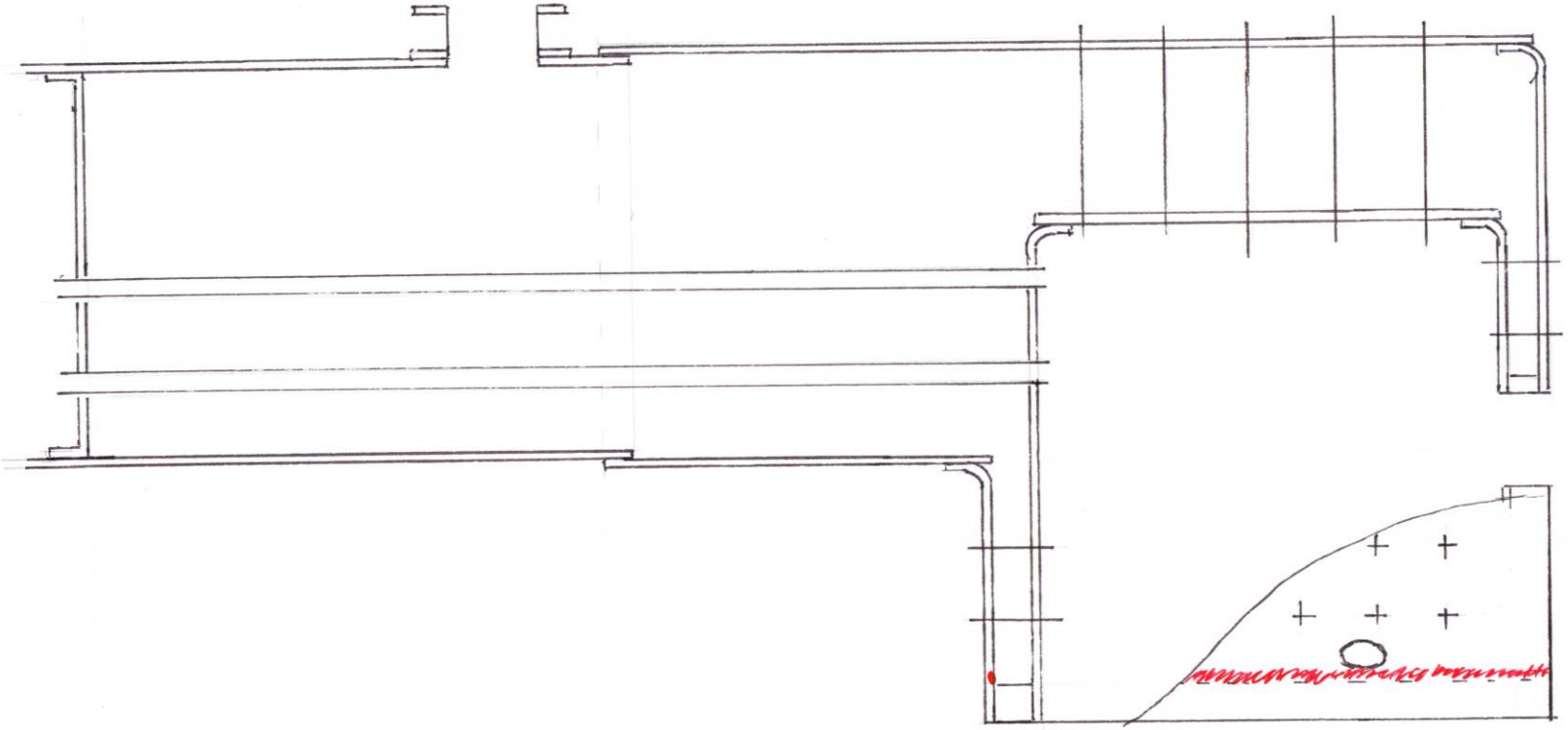
Kent and East Sussex Railway.

Grooving of boiler plates.

Experience with NDT defect assessment.

Presented by Chris Greatley



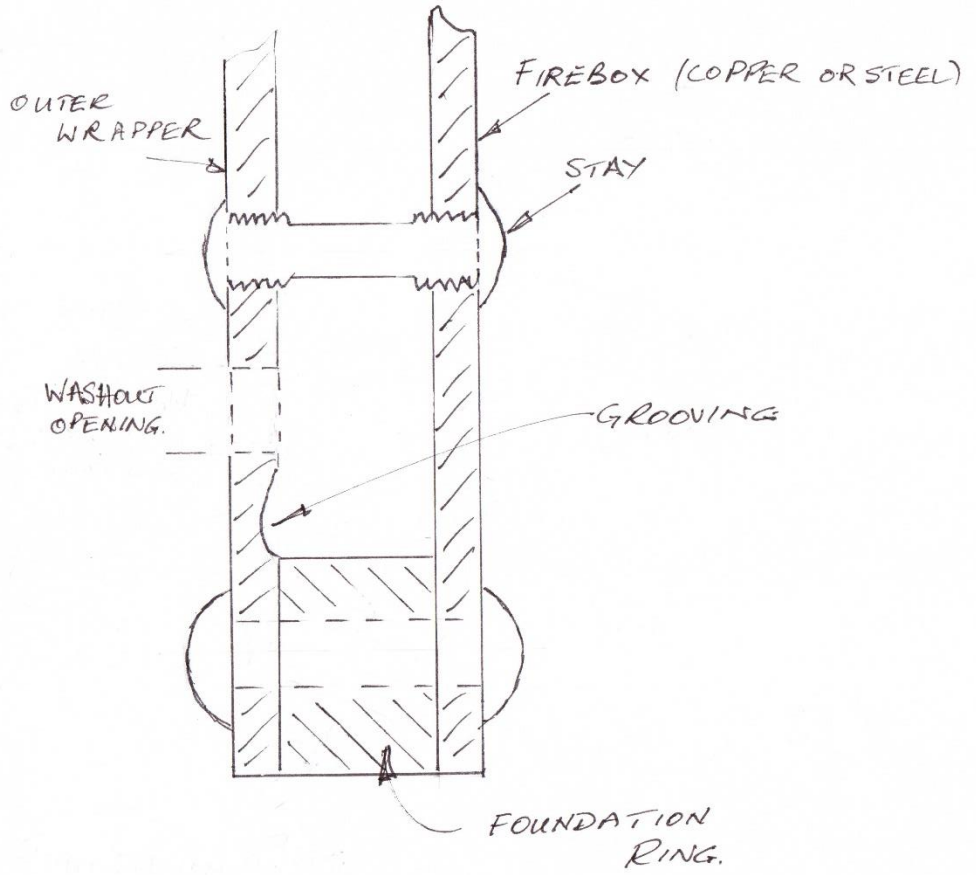
SCHEMATIC OF LOCO BOILER
SHOWING LOCATION OF GROOVING
LOCO 25 KESR

NTS

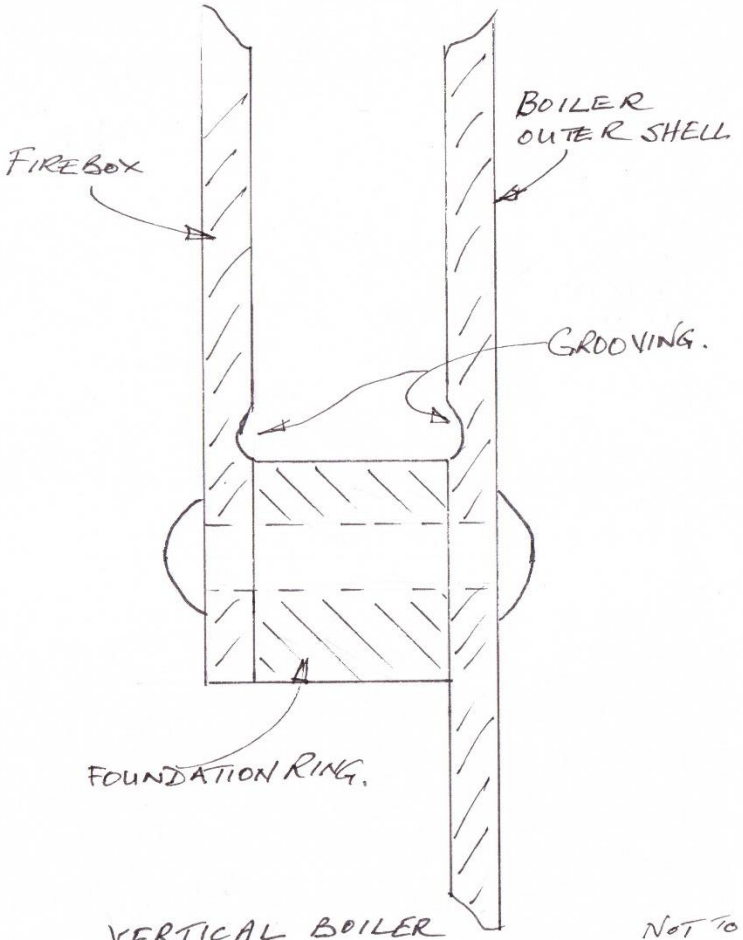
CJG
21/1/18

WATER SPACE SECTIONS AT FOUNDATION RING FOR LOCOMOTIVE AND CRANE BOILERS

(SHOWING LIKELY LOCATIONS OF GROOVING)



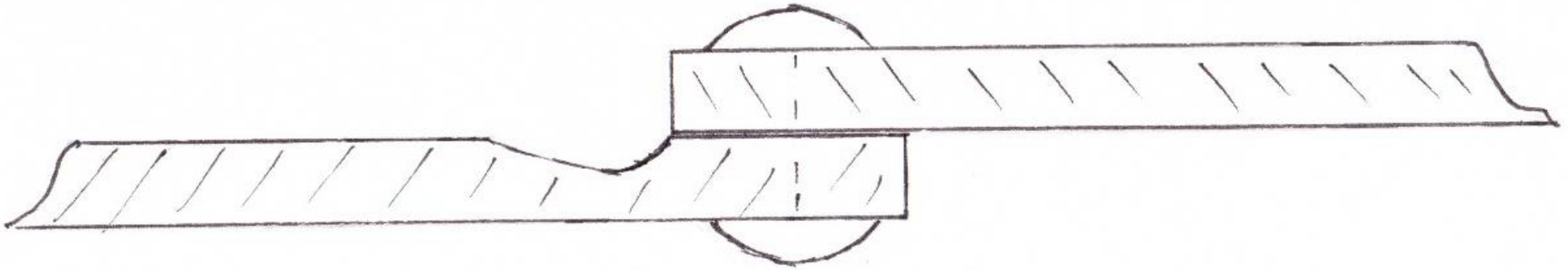
LOCO BOILER



VERTICAL BOILER FOR CRANE

NOT TO SCALE

CJG.
21.1.18



TYPICAL GROOVING AT LAP SEAMS

NTS.
CJG
23·1·18


Loco 14

Loco 14

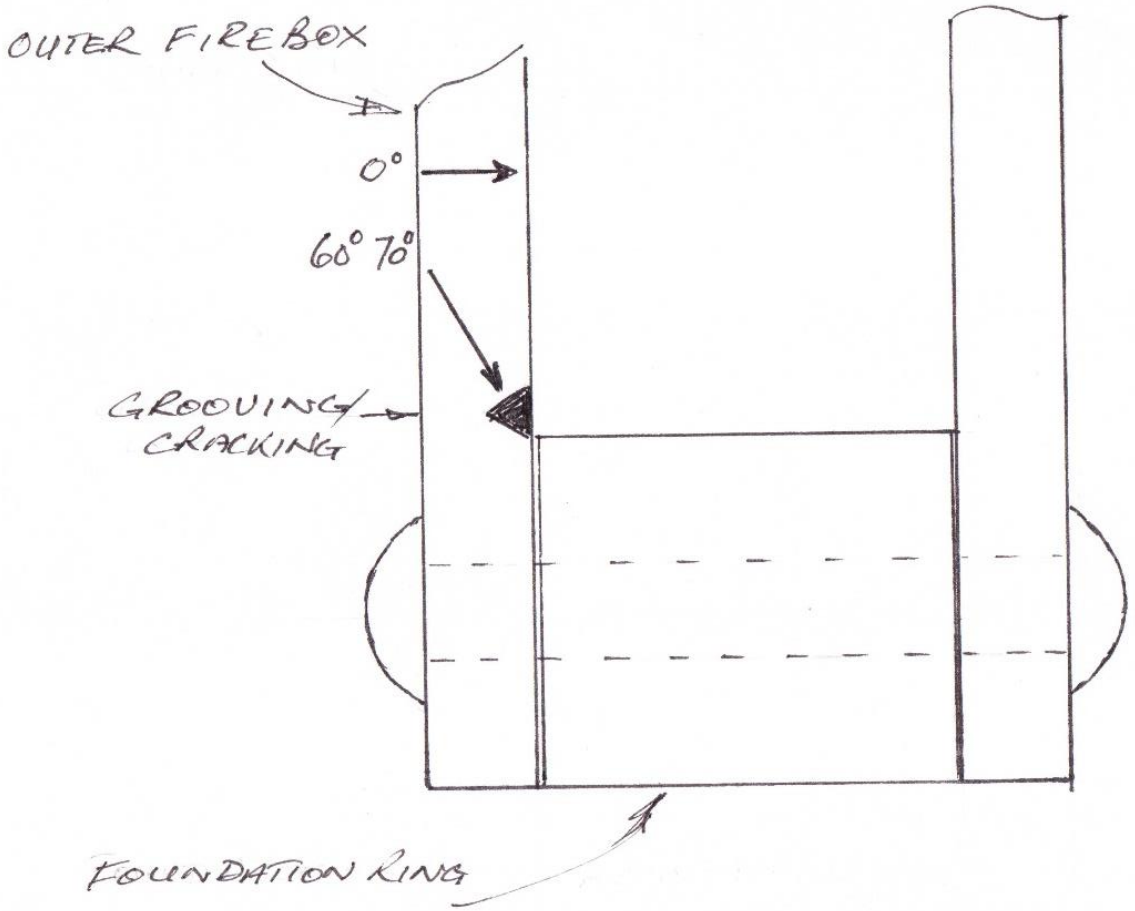
Loco 25

Loco 25

Loco 25

MPI Shows short radial cracks

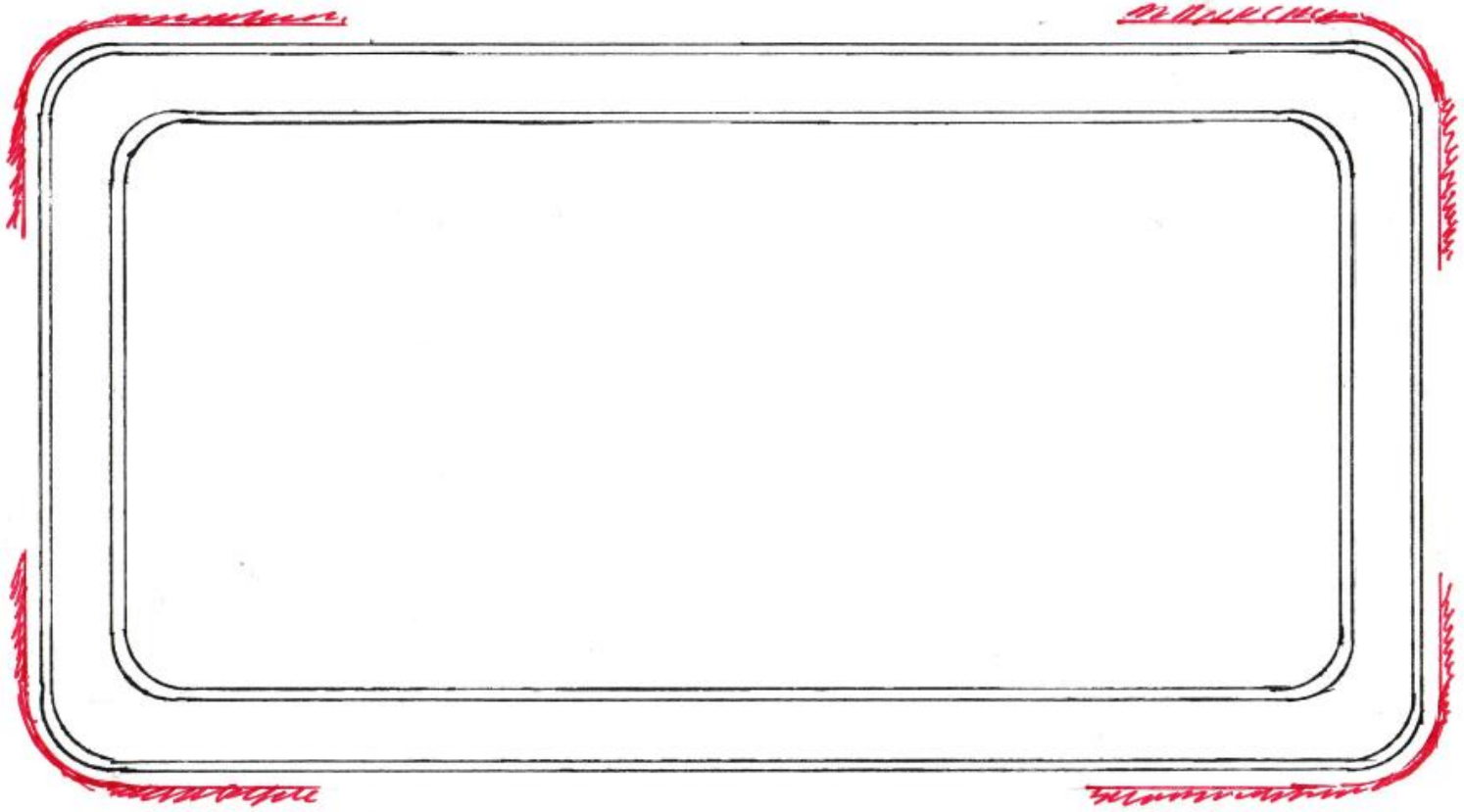
Loco 25



GROOVING/CRACKING DEFECTS
IDENTIFIED 2 to 6MM DEEP

ULTRASONIC INVESTIGATION LOCO 25 KESR
BY NDT INSPECTION SPECIALIST 2014

NTS
CJG.
23·1·18



LOCO 25 PLAN VIEW OF FOUNDATION RING
SHOWS AREAS AFFECTED BY GROOVING 2 to 6MM DEEP
LENGTH OF STRAIGHT PLATE AFFECTED 160 to 300 MM

NTS
CJG
31/1/18

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.