

## REPORT ON BOILERS.

No. 99657

31 JUL 1941

Date of writing Report

19

When handed in at Local Office

14/7/1941

Port of

Received at London Office

NEWCASTLE-ON-TYNE

No. in  
Reg. Book.

Survey held at

Newcastle on Tyne

Date, First Survey

11/12/39

Last Survey

3/7/

1941

on the

S/S ENNERDALE

(Number of Visits)

Tons { Gross 8219  
Net 4719

Master

Built at

Newcastle

By whom built

Swan, Hunter and  
Wigham Richardson & Co

Yard No. 1656

When built 1940-

Engines made at

Newcastle

By whom made

ditto

Engine No. 1656

When made 1941-

Boilers made at

do

By whom made

ditto

Boiler No. 1656

When made 1941-

Nominal Horse Power

Owners

Port belonging to LONDON.

MULTITUBULAR BOILERS—MAIN, ~~AUXILIARY~~, OR ~~DONKEY~~.

Manufacturers of Steel The Steel Coy. of Scotland, and Colvilles &amp; Co.

Total Heating Surface of Boilers 9555

Is forced draught fitted Yes

(Letter for Record S.)

Coal or Oil fired oil fired

No. and Description of Boilers

Three Single Ended

Working Pressure 220 lbs

Tested by hydraulic pressure to 380 lbs

Date of test 26/2/41

No. of Certificate 883 + 884

Can each boiler be worked separately Yes

Area of Firegrate in each Boiler

oil fired

No. and Description of safety valves to each boiler Two of 2 1/2" dia. Cockburn Imp'd High Lift.

Area of each set of valves per boiler

{ per Rule 8.47 sq ft  
as fitted 9.8 "

Pressure to which they are adjusted 220 lbs

Are they fitted with easing gear Yes

In case of donkey boilers, state whether steam from main boilers can enter the donkey boiler

Smallest distance between boilers or uptakes and bunkers or woodwork 12"

Is oil fuel carried in the double bottom under boilers Yes

Smallest distance between shell of boiler and tank top plating 2'-2"

Is the bottom of the boiler insulated Yes

Largest internal dia. of boilers 16'-2 31/32"

Length 11'-9" mean

Shell plates: Material

Steel

Tensile strength 30 &amp; 34 tons

Thickness 1 33/64"

Are the shell plates welded or flanged No

Description of riveting: circ. seams { end D.R. overlap  
inter. none

long. seams

T.R. dble butt straps

Diameter of rivet holes in { circ. seams 1 9/16"  
long. seams 1 7/16"Pitch of rivets { 4.60"  
10 1/2" (Rule max 10.72")Percentage of strength of circ. end seams { plate 66.03  
rivets 42.17Percentage of strength of circ. intermediate seam { plate  
rivets } nonePercentage of strength of longitudinal joint { plate 85.11  
rivets 86.60  
combined 87.55

Working pressure of shell by Rules 221 lbs.

Thickness of butt straps { outer 1 5/32"  
inner 1 9/32"

No. and Description of Furnaces in each Boiler

Three Deighton corrugated

Material Steel

Tensile strength 26 to 30 tons

Smallest outside diameter 4'-1 1/8"

Length of plain part { top at 4 1/2"  
bottom 2'-7 1/2" at bottomThickness of plates { crown 3/4"  
bottom 3/4"

Description of longitudinal joint fire welded

Dimensions of stiffening rings on furnace or c.c. bottom none

Working pressure of furnace by Rules 224 lbs

End plates in steam space: Material Steel

Tensile strength 26 &amp; 30 tons

Thickness 1 1/32"

Pitch of stays 15" x 19 1/2"

How are stays secured

Nuts inside + outside.

Working pressure by Rules 228 lbs.

Tube plates: Material { front Steel  
back Steel

Tensile strength 26 &amp; 30 tons

Thickness 1"  
27/32"

Mean pitch of stay tubes in nests 10 5/8"

Pitch across wide water spaces 14"

Working pressure { front 257 lbs  
back 226 lbs

Girders to combustion chamber tops: Material Steel

Tensile strength 28 &amp; 32 tons

Depth and thickness of girder

at centre 9 7/8" x 3/4" x 1/2"

Length as per Rule 2'-9 15/16"

Distance apart 8 3/4"

No. and pitch of stays

in each 3 @ 8"

Working pressure by Rules 225 lbs.

Combustion chamber plates: Material Steel

Tensile strength 26 to 30 tons

Thickness: Sides 23/32"

Back 23/32"

Top 23/32"

Bottom 7/8"

Pitch of stays to ditto: Sides 10" x 8"

Back 9 1/4" x 8 1/2"

Top 8 3/4" x 8"

Are stays fitted with nuts or riveted over with nuts

Working pressure by Rules 221 lbs. min.

Front plate at bottom: Material Steel

Tensile strength 26 &amp; 30 tons

Thickness 1"

Lower back plate: Material Steel

Tensile strength 26 to 30 tons

Thickness 1 1/16"

Pitch of stays at wide water space 17 1/4" x 8 1/4" max.

Are stays fitted with nuts or riveted over with nuts.

Working Pressure 256 lbs min.

Main stays: Material Steel

Tensile strength 28 &amp; 32 tons

Diameter { At body of stay, 3" dia  
Over threads

No. of threads per inch 6.

Area supported by each stay 286 sq in

Working pressure by Rules 234 lbs.

Screw stays: Material Steel

Tensile strength 26 to 30 tons

Diameter { At turned-off part, 1 3/4" + 1 5/8"  
Over threads

No. of threads per inch 9

Area supported by each stay for 1 3/4" dia. - 78 sq in  
for 1 5/8" - 68 "



Working pressure by Rules  $(\frac{13}{8}) = 232 \text{ lb}$  Are the stays drilled at the outer ends No Margin stays: Diameter  $\left\{ \begin{array}{l} \text{At turned off part,} \\ \text{Over threads} \end{array} \right. 2''$   
No. of threads per inch 9 Area supported by each stay 105 sq ins Working pressure by Rules 234 lb.  
Tubes: Material S.D. Steel External diameter  $\left\{ \begin{array}{l} \text{Plain} \\ \text{Stay} \end{array} \right. 3''$  Thickness  $\left\{ \begin{array}{l} \text{No 8 W.G.} \\ \text{5/16 \& 3/8"} \end{array} \right.$  No. of threads per inch 9  
Pitch of tubes 4 1/4" x 4 1/4" Working pressure by Rules 224 lb. Manhole compensation: Size of opening in  
shell plate 20" x 16" on 7/8" Blr only. Section of compensating ring 10 7/8" x 1 3/4" x 2 1/2" No. of rivets and diameter of rivet holes 32 9/16"  
Outer row rivet pitch at ends 12" Depth of flange if manhole flanged 3" Steam Dome: Material                       
Tensile strength                      Thickness of shell                      Description of longitudinal joint                       
Diameter of rivet holes                      Pitch of rivets                      Percentage of strength of joint  $\left\{ \begin{array}{l} \text{Plate} \\ \text{Rivets} \end{array} \right.$   
Internal diameter                      Working pressure by Rules                      Thickness of crown                      No. and diameter of  
stays                      Inner radius of crown                      Working pressure by Rules                       
How connected to shell                      Size of doubling plate under dome                      Diameter of rivet holes and pitch  
of rivets in outer row in dome connection to shell                     

Type of Superheater North Eastern Smoke tube type Manufacturers of                     

Tubes Jalbot Stead Co.  
Steel forgings Frodingham Steel Co.  
Steel castings                     

Number of elements 204 Material of tubes Steel (Solid drawn) Internal diameter and thickness of tubes 15 1/4" bore, 2 1/2" thick.  
Material of headers J. Steel Tensile strength 26 to 30 tons Thickness 1 7/8" Can the superheater be shut off and  
the boiler be worked separately Yes Is a safety valve fitted to every part of the superheater which can be shut off from the boiler Yes  
Area of each safety valve 3.97 sq ins (2 1/2 dia). Are the safety valves fitted with easing gear Yes Working pressure as per  
Rules 220 lb Pressure to which the safety valves are adjusted 225 lb. Hydraulic test pressure:  
tubes 1500 lb forgings and castings 660 lb and after assembly in place 440 lb. Are drain cocks or  
valves fitted to free the superheater from water where necessary Yes

Have all the requirements of Sections 14 to 22 inclusive for boilers been complied with Yes

SWAN, HUNTER, & WIGHAM RICHARDSON, LTD.

The foregoing is a correct description,

G. J. J. J. J.  
DIRECTOR

Manufacturer.

Dates of Survey  $\left\{ \begin{array}{l} \text{During progress of} \\ \text{work in shops - -} \\ \text{while} \\ \text{building} \end{array} \right. \left\{ \begin{array}{l} \text{During erection on} \\ \text{board vessel - - -} \end{array} \right.$

See Machinery Report

Are the approved plans of boiler and superheater forwarded herewith 31/10/39.  
(If not state date of approval.)

Total No. of visits                     

Is this Boiler a duplicate of a previous case No If so, state Vessel's name and Report No.                     

GENERAL REMARKS (State quality of workmanship, opinions as to class, &c.)

These Boilers have been constructed under special survey in accordance with the approved plans and the Society's Rules, and the materials & workmanship are good.

The Boilers have been satisfactorily fitted on board the vessel and tested under steam under working conditions.

See also Machinery Report.

Survey Fee £ See Machinery Report  
Travelling Expenses (if any) £

When applied for, 19  
When received, 19

A. Watt

Engineer Surveyor to Lloyd's Register of Shipping.

Committee's Minute                     

TUE. 26 AUG 1941

Assigned                     

See Nav. No. 78 99657



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