

REPORT ON OIL ENGINE MACHINERY.

No. 43701

WFO. 11 JUN. 1924

Received at London Office

Date of writing Report 30th May 1924 When handed in at Local Office 2.6.1924 Port of Glasgow.

No. in Survey held at Glasgow

Date, First Survey 26th Oct 1923 Last Survey 29th May 1924

Reg. Book.

Number of Visits 60

on the ^{Single} Twin } Screw vessel "INVERBANK"
^{Triple}Tons { Gross 5149
Net 3158

Master Built at Glasgow By whom built Harland & Wolff Ltd. Yard No. 6439 When built 1924

Engines made at Glasgow By whom made Harland & Wolff Ltd. Engine No. 613 When made 1924

Donkey Boilers made at Belfast By whom made Harland & Wolff Ltd. Boiler No. 834 When made 1924

Brake Horse Power 2300 Owners Messrs Andrew Wain & Co (Bank Line Ltd) Port belonging to

Nom. Horse Power as per Rule 567 Is Refrigerating Machinery fitted for cargo purposes No Is Electric Light fitted Yes

OIL ENGINES, &c.—Type of Engines DIESEL 2 or 4 stroke cycle 4 Single or double acting SINGLE

Maximum pressure in cylinders 500 lbs/sq. in. No. of cylinders 12 No. of cranks 12 Diameter of cylinders 630 mm

Length of stroke 960 mm Revolutions per minute 125 Means of ignition COMPRESSION Kind of fuel used ABOVE 150°F.

Is there a bearing between each crank YES Span of bearings (Page 92, Section 2, par. 7 of Rules) 872 mm

Distance between centres of main bearings 1300 mm Is a flywheel fitted YES Diameter of crank shaft journals as per Rule 376 mm as fitted 384 mm

Diameter of crank pins 384 mm Breadth of crank webs as per Rule 500 mm as fitted 650 mm Thickness of ditto as per Rule 236 mm as fitted 250 mm

Diameter of flywheel shaft as per Rule 376 mm as fitted 384 mm Diameter of tunnel shaft as per Rule 9 3/4" as fitted 10" Diameter of thrust shaft as per Rule 10 1/4" as fitted 11 1/8"

Diameter of screw shaft as per Rule 10 1/4" as fitted 11" Is the screw shaft fitted with a continuous liner the whole length of the stern tube YES

Is the after end of the liner made watertight in the propeller boss YES If the liner is in more than one length are the joints burned YES

If the liner does not fit tightly at the part between the bearings in the stern tube, is the space charged with a plastic material insoluble in water and non-corrosive YES

If two liners are fitted, is the shaft lapped or protected between the liners YES If without liners, is the shaft arranged to run in oil YES

Type of outer gland fitted to stern tube WOOD LINED. No O.G. Length of stern bush 4'-2" Diameter of propeller 11'-9"

Pitch of propeller 10'-6" MEN 9'-9" TO 11'-3" No. of blades 3 EACH state whether moveable YES Total surface 84 square feet

Method of reversing AIR Is a governor or other arrangement fitted to prevent racing of the engine when disconnected YES Thickness of cylinder liners 70 5/8 mm

Are the cylinders fitted with safety valves YES Means of lubrication FORCED & SIGHT FEED Are the exhaust pipes and silencers water cooled or lagged with non-conducting material YES

If the exhaust is led overboard near the waterline, what means are arranged to prevent water from being syphoned back to the engine YES

No. of cooling water pumps 2 Is the sea suction provided with an efficient strainer which can be cleared within the vessel YES

No. of bilge pumps fitted to the main engines YES Diameter of ditto YES Stroke YES

Can one be overhauled while the other is at work YES No. of auxiliary pumps connected to the main bilge lines 3 How driven ELECTRIC MOTOR

SIZES OF PUMPS:—In engine room 30 3/2" x 1-2 1/2" TUNNEL WELL

Is the ballast pump fitted with a direct suction from the engine room bilges YES State size 5" Is a separate auxiliary pump suction fitted in

Engine Room and size 5" ON BILGE MAIN Are all the bilge suction pipes fitted with roses AS PER RULES Are the valves in Engine Room always accessible YES

Are the sluices on Engine Room bulkheads always accessible YES Are all connections with the sea direct on the skin of the ship YES

Are they valves or cocks BOTH Are they fixed sufficiently high on the ship's side to be seen without lifting the floor plates YES

Are the discharge pipes above or below the deep water line BOTH Are they each fitted with a discharge valve always accessible on the plating of the vessel YES

Are all pipes, cocks, valves and pumps in connection with the machinery accessible at all times YES Are the bilge suction pipes, cocks and valves arranged so as to prevent any communication between the sea and the bilges YES

Is the screw shaft tunnel watertight YES Is it fitted with a watertight door YES

worked from SHUTTER DECK If a wood vessel, what means are provided to prevent leakage of either fuel oil or of lubricating oil from saturating the woodwork YES

No. of main air compressors 2 No. of stages 3 (65 1/2"/cm) Diameters 600 x 540 x 148 mm Stroke 350 mm Driven by MAIN ENGINE

No. of auxiliary air compressors 1 No. of stages 2 (25 1/4"/cm) Diameters 400 x 350 mm Stroke 260 mm Driven by ELECTRIC MOTOR

No. of small auxiliary air compressors 1 No. of stages 2 (65 1/4"/cm) Diameters 106 x 34 mm Stroke 80 mm Driven by STEAM

No. of scavenging air pumps 1 Diameter 167 mm Stroke 170 mm Driven by YES

Diameter of auxiliary Diesel Engine crank shafts as per Rule 167 mm as fitted 170 mm Are the air compressors and their coolers made so as to be easy of access YES

AIR RECEIVERS:—No. of high pressure air receivers 7 Internal diameter 295 mm Cubic capacity of each 5 @ 150 LITRES EACH

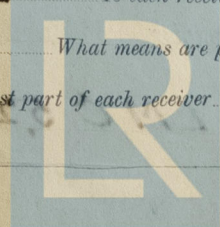
material SOLID DRAWN STEEL Seamless, lap welded or riveted longitudinal joint SEAMLESS Range of tensile strength 28/32 TONS

thickness .56" working pressure by Rules 1325 lbs/sq. in. No. of starting air receivers 2 Internal diameter 6'-0 3/8"

Total cubic capacity 1076 Co. ft. Material STEEL Seamless, lap welded or riveted longitudinal joint T. R. D. B. S.

Range of tensile strength 27/32 TONS thickness SHELL 1 1/32" Working pressure by rules 360 lbs/sq. in. Is each receiver, which can be isolated, fitted with a safety valve as per Rule 1 ON COMMON PIPE Can the internal surfaces of the receivers be examined YES

inner surfaces LOOSE ENDS 7 MAN HOLE DOORS Is there a drain arrangement fitted at the lowest part of each receiver YES



Lloyd's Register Foundation

002923-002928-0026

IS A DONKEY BOILER FITTED? **YES**

If so, is a report now forwarded? **YES**

HYDRAULIC TESTS:—

DESCRIPTION.	DATE OF TEST.	WORKING PRESSURE.	TEST PRESSURE.	STAMPED.	REMARKS.
ENGINE CYLINDERS & JACKETS	16/1/24 to 6/2/24	16 LBS/SQ	50 LBS/SQ	H.M.B.	
COVERS	30/1/24 to 19/2/24	"	"	H.M.B.	
JACKETS	8/1/24 to 18/1/24	"	"	H.M.B.	
PISTON WATER PASSAGES	30/1/24 to 8/2/24	71 LBS/SQ	150 LBS/SQ	H.M.B.	
MAIN COMPRESSORS—1st STAGE	31/1/24 to 7/2/24	220 LBS/SQ	500 LBS/SQ	H.M.B.	
2nd	8/1/24 to 9/1/24	1000 LBS/SQ	2000 LBS/SQ	H.M.B.	
3rd	18/1/24 BELFAST	356 LBS/SQ	585 LBS/SQ	W.B.	
AIR RECEIVERS—STARTING	7/2/24 to 21/2/24	1000 LBS/SQ	2000 LBS/SQ	H.M.B.	
INJECTION	13/2/24 to 12/5/24	356 LBS/SQ	712 LBS/SQ	H.M.B.	
AIR PIPES	2/5/24 to 3/5/24	"	30 LBS/SQ	"	
FUEL PIPES					
FUEL PUMPS					
SILENCER					
WATER JACKET					
SEPARATE FUEL TANKS	21/2/24	✓	10 LBS/SQ	H.M.B.	

PLANS. Are approved plans forwarded herewith for shafting **YES**

Receivers Retained at Belfast Separate Tanks Retained at Glasgow

SPARE GEAR Supplied as per attached list.

The foregoing is a correct description,

FOR HARLAND & WOLFF, LTD.

J. C. Green

Manufacturer.

MANAGER, GLASGOW WORKS

Dates of Survey while building
During progress of work in shops-- 1923 Oct 26 Nov 8 9 16 21 22 27 29 30 Dec 3 4 6 24 26 27 1924 Jan 8 9 11 14 16 17 18 24 25 30 31 Feb 1 4 6 7 8 12 13 14
During erection on board vessel-- 19 21 22 27 Mar 3 4 5 10 11 18 21 26 28 31 Apr 3 8 9 25 May 2 3 8 12 30 31 22 29
Total No. of visits 60

Dates of Examination of principal parts—Cylinders 15/1/24 to 6/2/24 Covers 30/1/24 to 19/2/24 Pistons 8/1/24 to 18/1/24 Rods 18/1/24 Connecting rods 1/2/24
Crank shaft 24/2/23 Thrust shaft 21/2/24 Tunnel shafts 7/12/23 27/12/23 21/2/24 Screw shaft 21/2/24 Propeller 21/2/24 Stern tube 31/1/24 Engine seatings 10/5/24
Engines holding down bolts 26/4/24 Completion of pumping arrangements 22/5/24 Engines tried under working conditions 29/5/24
Completion of fitting sea connections 11/3/24 Stern tubes 27/2/24 7 10/3/24 Screw shaft and propeller 10/3/24

Material of crank shaft S. Identification Mark on Do. 14/2/24 24/2/23 Material of thrust shaft S. Identification Marks on Do. SEE UNDER
Material of tunnel shafts S. Identification Marks on Do. SEE UNDER Material of screw shafts S. Identification Marks on Do. SEE UNDER
SPARE 3389 3383 3384 3385 3386 3387 3388 3389 3390 3391 3392 3393 3394 3395 3396 3397 3398 3399 3400 3401 3402 3403 3404 3405 3406 3407 3408 3409 3410 3411 3412 3413 3414 3415 3416 3417 3418 3419 3420 3421 3422 3423 3424 3425 3426 3427 3428 3429 3430 3431 3432 3433 3434 3435 3436 3437 3438 3439 3440 3441 3442 3443 3444 3445 3446 3447 3448 3449 3450 3451 3452 3453 3454 3455 3456 3457 3458 3459 3460 3461 3462 3463 3464 3465 3466 3467 3468 3469 3470 3471 3472 3473 3474 3475 3476 3477 3478 3479 3480 3481 3482 3483 3484 3485 3486 3487 3488 3489 3490 3491 3492 3493 3494 3495 3496 3497 3498 3499 3500 3501 3502 3503 3504 3505 3506 3507 3508 3509 3510 3511 3512 3513 3514 3515 3516 3517 3518 3519 3520 3521 3522 3523 3524 3525 3526 3527 3528 3529 3530 3531 3532 3533 3534 3535 3536 3537 3538 3539 3540 3541 3542 3543 3544 3545 3546 3547 3548 3549 3550 3551 3552 3553 3554 3555 3556 3557 3558 3559 3560 3561 3562 3563 3564 3565 3566 3567 3568 3569 3570 3571 3572 3573 3574 3575 3576 3577 3578 3579 3580 3581 3582 3583 3584 3585 3586 3587 3588 3589 3590 3591 3592 3593 3594 3595 3596 3597 3598 3599 3600 3601 3602 3603 3604 3605 3606 3607 3608 3609 3610 3611 3612 3613 3614 3615 3616 3617 3618 3619 3620 3621 3622 3623 3624 3625 3626 3627 3628 3629 3630 3631 3632 3633 3634 3635 3636 3637 3638 3639 3640 3641 3642 3643 3644 3645 3646 3647 3648 3649 3650 3651 3652 3653 3654 3655 3656 3657 3658 3659 3660 3661 3662 3663 3664 3665 3666 3667 3668 3669 3670 3671 3672 3673 3674 3675 3676 3677 3678 3679 3680 3681 3682 3683 3684 3685 3686 3687 3688 3689 3690 3691 3692 3693 3694 3695 3696 3697 3698 3699 3700 3701 3702 3703 3704 3705 3706 3707 3708 3709 3710 3711 3712 3713 3714 3715 3716 3717 3718 3719 3720 3721 3722 3723 3724 3725 3726 3727 3728 3729 3730 3731 3732 3733 3734 3735 3736 3737 3738 3739 3740 3741 3742 3743 3744 3745 3746 3747 3748 3749 3750 3751 3752 3753 3754 3755 3756 3757 3758 3759 3760 3761 3762 3763 3764 3765 3766 3767 3768 3769 3770 3771 3772 3773 3774 3775 3776 3777 3778 3779 3780 3781 3782 3783 3784 3785 3786 3787 3788 3789 3790 3791 3792 3793 3794 3795 3796 3797 3798 3799 3800 3801 3802 3803 3804 3805 3806 3807 3808 3809 3810 3811 3812 3813 3814 3815 3816 3817 3818 3819 3820 3821 3822 3823 3824 3825 3826 3827 3828 3829 3830 3831 3832 3833 3834 3835 3836 3837 3838 3839 3840 3841 3842 3843 3844 3845 3846 3847 3848 3849 3850 3851 3852 3853 3854 3855 3856 3857 3858 3859 3860 3861 3862 3863 3864 3865 3866 3867 3868 3869 3870 3871 3872 3873 3874 3875 3876 3877 3878 3879 3880 3881 3882 3883 3884 3885 3886 3887 3888 3889 3890 3891 3892 3893 3894 3895 3896 3897 3898 3899 3900 3901 3902 3903 3904 3905 3906 3907 3908 3909 3910 3911 3912 3913 3914 3915 3916 3917 3918 3919 3920 3921 3922 3923 3924 3925 3926 3927 3928 3929 3930 3931 3932 3933 3934 3935 3936 3937 3938 3939 3940 3941 3942 3943 3944 3945 3946 3947 3948 3949 3950 3951 3952 3953 3954 3955 3956 3957 3958 3959 3960 3961 3962 3963 3964 3965 3966 3967 3968 3969 3970 3971 3972 3973 3974 3975 3976 3977 3978 3979 3980 3981 3982 3983 3984 3985 3986 3987 3988 3989 3990 3991 3992 3993 3994 3995 3996 3997 3998 3999 4000

Is the flash point of the oil to be used over 150° F. **YES**

Is this machinery duplicate of a previous case **No** If so, state name of vessel

General Remarks (State quality of workmanship, opinions as to class, &c.)

TUNNEL SHAFTS:— PORT N°1 3433 3434 3435 3436 3437 3438 3439 3440 3441 3442 3443 3444 3445 3446 3447 3448 3449 3450 3451 3452 3453 3454 3455 3456 3457 3458 3459 3460 3461 3462 3463 3464 3465 3466 3467 3468 3469 3470 3471 3472 3473 3474 3475 3476 3477 3478 3479 3480 3481 3482 3483 3484 3485 3486 3487 3488 3489 3490 3491 3492 3493 3494 3495 3496 3497 3498 3499 3500 3501 3502 3503 3504 3505 3506 3507 3508 3509 3510 3511 3512 3513 3514 3515 3516 3517 3518 3519 3520 3521 3522 3523 3524 3525 3526 3527 3528 3529 3530 3531 3532 3533 3534 3535 3536 3537 3538 3539 3540 3541 3542 3543 3544 3545 3546 3547 3548 3549 3550 3551 3552 3553 3554 3555 3556 3557 3558 3559 3560 3561 3562 3563 3564 3565 3566 3567 3568 3569 3570 3571 3572 3573 3574 3575 3576 3577 3578 3579 3580 3581 3582 3583 3584 3585 3586 3587 3588 3589 3590 3591 3592 3593 3594 3595 3596 3597 3598 3599 3600 3601 3602 3603 3604 3605 3606 3607 3608 3609 3610 3611 3612 3613 3614 3615 3616 3617 3618 3619 3620 3621 3622 3623 3624 3625 3626 3627 3628 3629 3630 3631 3632 3633 3634 3635 3636 3637 3638 3639 3640 3641 3642 3643 3644 3645 3646 3647 3648 3649 3650 3651 3652 3653 3654 3655 3656 3657 3658 3659 3660 3661 3662 3663 3664 3665 3666 3667 3668 3669 3670 3671 3672 3673 3674 3675 3676 3677 3678 3679 3680 3681 3682 3683 3684 3685 3686 3687 3688 3689 3690 3691 3692 3693 3694 3695 3696 3697 3698 3699 3700 3701 3702 3703 3704 3705 3706 3707 3708 3709 3710 3711 3712 3713 3714 3715 3716 3717 3718 3719 3720 3721 3722 3723 3724 3725 3726 3727 3728 3729 3730 3731 3732 3733 3734 3735 3736 3737 3738 3739 3740 3741 3742 3743 3744 3745 3746 3747 3748 3749 3750 3751 3752 3753 3754 3755 3756 3757 3758 3759 3760 3761 3762 3763 3764 3765 3766 3767 3768 3769 3770 3771 3772 3773 3774 3775 3776 3777 3778 3779 3780 3781 3782 3783 3784 3785 3786 3787 3788 3789 3790 3791 3792 3793 3794 3795 3796 3797 3798 3799 3800 3801 3802 3803 3804 3805 3806 3807 3808 3809 3810 3811 3812 3813 3814 3815 3816 3817 3818 3819 3820 3821 3822 3823 3824 3825 3826 3827 3828 3829 3830 3831 3832 3833 3834 3835 3836 3837 3838 3839 3840 3841 3842 3843 3844 3845 3846 3847 3848 3849 3850 3851 3852 3853 3854 3855 3856 3857 3858 3859 3860 3861 3862 3863 3864 3865 3866 3867 3868 3869 3870 3871 3872 3873 3874 3875 3876 3877 3878 3879 3880 3881 3882 3883 3884 3885 3886 3887 3888 3889 3890 3891 3892 3893 3894 3895 3896 3897 3898 3899 3900 3901 3902 3903 3904 3905 3906 3907 3908 3909 3910 3911 3912 3913 3914 3915 3916 3917 3918 3919 3920 3921 3922 3923 3924 3925 3926 3927 3928 3929 3930 3931 3932 3933 3934 3935 3936 3937 3938 3939 3940 3941 3942 3943 3944 3945 3946 3947 3948 3949 3950 3951 3952 3953 3954 3955 3956 3957 3958 3959 3960 3961 3962 3963 3964 3965 3966 3967 3968 3969 3970 3971 3972 3973 3974 3975 3976 3977 3978 3979 3980 3981 3982 3983 3984 3985 3986 3987 3988 3989 3990 3991 3992 3993 3994 3995 3996 3997 3998 3999 4000
STARBOARD N°2 3433 3434 3435 3436 3437 3438 3439 3440 3441 3442 3443 3444 3445 3446 3447 3448 3449 3450 3451 3452 3453 3454 3455 3456 3457 3458 3459 3460 3461 3462 3463 3464 3465 3466 3467 3468 3469 3470 3471 3472 3473 3474 3475 3476 3477 3478 3479 3480 3481 3482 3483 3484 3485 3486 3487 3488 3489 3490 3491 3492 3493 3494 3495 3496 3497 3498 3499 3500 3501 3502 3503 3504 3505 3506 3507 3508 3509 3510 3511 3512 3513 3514 3515 3516 3517 3518 3519 3520 3521 3522 3523 3524 3525 3526 3527 3528 3529 3530 3531 3532 3533 3534 3535 3536 3537 3538 3539 3540 3541 3542 3543 3544 3545 3546 3547 3548 3549 3550 3551 3552 3553 3554 3555 3556 3557 3558 3559 3560 3561 3562 3563 3564 3565 3566 3567 3568 3569 3570 3571 3572 3573 3574 3575 3576 3577 3578 3579 3580 3581 3582 3583 3584 3585 3586 3587 3588 3589 3590 3591 3592 3593 3594 3595 3596 3597 3598 3599 3600 3601 3602 3603 3604 3605 3606 3607 3608 3609 3610 3611 3612 3613 3614 3615 3616 3617 3618 3619 3620 3621 3622 3623 3624 3625 3626 3627 3628 3629 3630 3631 3632 3633 3634 3635 3636 3637 3638 3639 3640 3641 3642 3643 3644 3645 3646 3647 3648 3649 3650 3651 3652 3653 3654 3655 3656 3657 3658 3659 3660 3661 3662 3663 3664 3665 3666 3667 3668 3669 3670 3671 3672 3673 3674 3675 3676 3677 3678 3679 3680 3681 3682 3683 3684 3685 3686 3687 3688 3689 3690 3691 3692 3693 3694 3695 3696 3697 3698 3699 3700 3701 3702 3703 3704 3705 3706 3707 3708 3709 3710 3711 3712 3713 3714 3715 3716 3717 3718 3719 3720 3721 3722 3723 3724 3725 3726 3727 3728 3729 3730 3731 3732 3733 3734 3735 3736 3737 3738 3739 3740 3741 3742 3743 3744 3745 3746 3747 3748 3749 3750 3751 3752 3753 3754 3755 3756 3757 3758 3759 3760 3761 3762 3763 3764 3765 3766 3767 3768 3769 3770 3771 3772 3773 3774 3775 3776 3777 3778 3779 3780 3781 3782 3783 3784 3785 3786 3787 3788 3789 3790 3791 3792 3793 3794 3795 3796 3797 3798 3799 3800 3801 3802 3803 3804 3805 3806 3807 3808 3809 3810 3811 3812 3813 3814 3815 3816 3817 3818 3819 3820 3821 3822 3823 3824 3825 3826 3827 3828 3829 3830 3831 3832 3833 3834 3835 3836 3837 3838 3839 3840 3841 3842 3843 3844 3845 3846 3847 3848 3849 3850 3851 3852 3853 3854 3855 3856 3857 3858 3859 3860 3861 3862 3863 3864 3865 3866 3867 3868 3869 3870 3871 3872 3873 3874 3875 3876 3877 3878 3879 3880 3881 3882 3883 3884 3885 3886 3887 3888 3889 3890 3891 3892 3893 3894 3895 3896 3897 3898 3899 3900 3901 3902 3903 3904 3905 3906 3907 3908 3909 3910 3911 3912 3913 3914 3915 3916 3917 3918 3919 3920 3921 3922 3923 3924 3925 3926 3927 3928 3929 3930 3931 3932 3933 3934 3935 3936 3937 3938 3939 3940 3941 3942 3943 3944 3945 3946 3947 3948 3949 3950 3951 3952 3953 3954 3955 3956 3957 3958 3959 3960 3961 3962 3963 3964 3965 3966 3967 3968 3969 3970 3971 3972 3973 3974 3975 3976 3977 3978 3979 3980 3981 3982 3983 3984 3985 3986 3987 3988 3989 3990 3991 3992 3993 3994 3995 3996 3997 3998 3999 4000
This machinery has been constructed under special survey in accordance with the rules and approved plans. The materials and workmanship are sound and good, it has been fitted on board the vessel in an efficient manner, tried under full power working conditions and everything found satisfactory and is in my opinion eligible to be classed with record of L.M.C 5-24.

The amount of Entry Fee ... £ 6 : 0 :
Special ... £ 103 : 7 :
Donkey Boiler Fee ... £ ✓ :
Travelling Expenses (if any) £ ✓ :
When applied for, 6. 6. 1924
When received, 10. 6. 1924

Committee's Minute GLASGOW 10 JUN 1924

Assigned + LMC 524

CERTIFICATE WRITTEN 5. 8. 24

H. M. CRICK.
Engineer Surveyor to Lloyd's Register of Shipping.