

COMPANHIA NACIONAL DE NAVEGAÇÃO

WORKS SPECIFICATION FOR

- 5th HULL SPECIAL SURVEY
- MACHINERY CONTINUOUS SURVEY
- MAINTENANCE WORKS

of the MV "TIMOR"

Built by BARTRAM & SONS - SUNDERLAND - ENGLAND

YEAR 1951

PASSENGER CARGO SHIP

L.B.P. = 125,26 mts.

B.M.L.D. = 11,98 "

DEPTH 10,33 "

DRAFT { Empty 12' 3 1/4"
Loaded 25' 8"

GROSS TONNAGE = 7,655.95 Tons.

NET " = 4,223.83 "

DEADWEIGHT = 6,655.00 "

CLASS: LLOYD'S REGISTER OF SHIPPING + 100 A1

CONDITIONS OF TENDER

AND GENERAL CLAUSES FOR JOB ORDERS

These General Clauses are part of the agreement between Companhia Nacional de Navegação and the repair yard that has agreed to carry out all works stated in our specification as per tender.

The General Clauses are a supplement to the text of the items in the numbered specification. Tenders are not to be priced for the General Clauses, but the cost of all provisions of the text of the master contract and of the text of these General Clauses are considered to be included in the contractor's bid price of the item to which the provisions may be relevant. Re-iteration of such provision in the item narrative is not essential.

1 - The vessel will be delivered to the repair yard or equal place at the port of repair where she can always lie safely and afloat. All towage, pilotage and boat hire in connection with the ship's arrival and departure from the repair yard will be for owners account.

2 - All towage, pilotage, boat hire, riggers for mooring ship to the drydock and back to quay along repair yard and to place where the ship's main engine can be tested to be for repair yard's account. Drydock and wet dock dues and charges, crantage and all other charges which it may be necessary to incur after delivery of the vessel to the repairers until re-delivery to the owners on completion of the repairs, must be borne by the repairers and included in the price.

3 - The double bottom fuel oil tanks will be cleaned several times with seawater by the owners before ship's arrival at the repair yard, but the repairers must on arrival satisfy themselves that the vessel is thoroughly cleaned and free from all inflammable vapours before work is put in hand. Remaining fuel and diesel oil will be placed in one or two DBT.

4 - All tanks, holds and rooms in accommodation to be cleaned out during and after repairs and finally left dry and clean. On completion of re-

pairs all dirt and refuse to be landed ashore and disposed of by the contractors and the vessel to be left in good condition thoroughly.

5 - All workmanship and material to be of first class thoroughly and equal to be original in size and quality and to conform with the requirements of the Classification Society and of the Underwriters' and owners' Surveyors. All sizes and dimensions given in the specification are believed to be correct, but the owners undertake no responsibility of same. The contractor must satisfy himself as to the accuracy of all such particulars. All material to be delivered by yard, unless specifications state "Delivery by owners".

6 - Removal and re-installation is a responsibility of the contractor.

7 - Supply all fresh water required for sanitary, culinary and boiler feed purpose when interference in the machinery makes it necessary.

8 - Supply steam for heating and other essential purpose during any shut down of the ship's steam boiler occasioned by the contractor's work.

9 - The necessary staging to carry out specified repairs, to be erected and afterwards removed.

10 - Contractor to provide firewatchmen day and night, from the time the vessel is placed in hands of the yard and until the completion of repair, and should be included in contractor's price.

11 - Contractor to arrange for supply of water at adequate pressure to be available at all times for fire-extinguishing. All precautions to avoid fire to be taken and should be included in contractor's price.

12 - Machinery and Boiler Plant to be tested after repairs, completed and delivered to the satisfaction of the owners' representative with classification certificates in order.

13 - Deck and Shell Plating renewals to be water hose tested after repairs.

14 - Painting new and disturbed materials to be painted as original.

All paints to be supplied by owners, unless otherwise stated.

15 - Crane service of the necessary lifting capacities to be furnished by yard alongside drydock and alongside quaywall and all expenses must be included in the tender and work in question. Only crane service for loading and inloading owners' provision will be paid extra.

16 - Electricity for light and power necessary for the yard's people to carry out all work included in the tender and for extra work not included in the tender to be erected and finally disconnected after finishing of all repairs. The installations and removal to be the responsibility of the yard and for the yard's expenses. Also the supply of necessary electric current for light and power to be borne by the yard and included in the tender. Only electric current for the vessel's use will be paid extra, according to consumption and agreed price per KW.

17 - All unused electric motors, generators, etc., to be provided with adequate means of keeping them dry. Upon completion of repairs and prior to vessel's re-delivery to owners, such equipment to be megger-tested and proved good.

18 - Any tools and accessories inadvertently removed from vessel shall be returned.

19 - The Tender must cover and include the work herein specified, and all removals necessary in connection herewith. The removals must be replaced as before but any renewals not detailed in the Specification will be treated as extras excepting renewals of previously sound parts which have been clearly broken or damaged by the Contractor's workmen.

20 - The shipyard is invited to repeat the code numbers mentioned on our specification, on the detailed final invoices and to make as of our shiprepair code on all additional works.

21 - The vessel will be kept insured by the Owners during the currency of the Contract, but this provision is not intended and is not be

construed to release the Contractor from any liability which the Law impose upon him.

22 - Any additional work required to the Hull or Machinery beyond that specified herein or any other extra work whatever to be carried out by the Contractor must be specially ordered in writing or agreed to by a duly authorizes person at a price to be mutually agreed and no extension of time will be allowed unless it is mutually agreed that the extra work cannot be concurrently carried out with the other work. A rebate to be allowed for any work not carried out, or not effected as specified.

23 - Tenders must specify the total number of running days required by the Contractor to complete the repairs itemized in specification. Shipyard is to furnish individual costs in their tender for all items contained in the specification.

24 - The Tender to be a lumpsum, and the time required for repairing and re-delivery, to be stated on basis of running days, and in the event of the time being exceeded, save as provided in Clause 22, the sum of £ 1 800 per day will be deducted from the amount of the tendered price as an agreed sum by any of liquidated damages for such extra time; but in the events of the work being completed in less than the stated time the sum of £ 900 per day will be paid as premium or bonus on the contract price by the Owner to the Contractor.

25 - Any charges for tugs, pilotage, cranage, railway carriage and such like items, or any other cash disbursements made by the Contractor at the request of the Owner or Underwriters, excepting those covered by the tender in accordance with Clause 2 shall be reimbursed to the Contractor with an allowance of 5 per cent, when vouchers are produced.

26 - The work must be carried out in its entirety as specified, and no deviation will be allowed unless mutual agree.

27 - On completion of repairs the vessel to be delivered free of cost to the Owners afloat in the Port where the repairs have been carried out.

28 - Any dispute which any arise under this Contract to be referred to an Arbitrator mutually agreed upon.

29 - The lowest or any tender will not necessarily be accepted.

30 - All scantlings lengths of internals, etc., have been listed he rein in as much detail as possible. Wherecer these may not be complete, repairs or renewals are to be in accordance with the original structural drawings.

31 - All necessary removal for access to be replaced as originally.

32 - The necessary ventilators in way of repairs to be provided afterwards removed.

33 - Any cleaning in way of damage required prior to commencement of repairs.

34 - In addition to quoting for work as specified herein, tenderers are to quote schedule rates for any additional steelwork renewals which may be found necessary during the course of repairs.

35 - The Contractor must guarantee that he has the necessary new material and/or parts in stock or can obtain same without delay as no extension of time will be allowed in this respect.

36 - Payment to account of the total cost of the work will, if desired, be made to the Contractor during the progress of the work, and the balance will, if demanded, be paid on completion of the work.

37 - When any work performed by the Contractor requires the opening of machinery, piping, heat exchanges fittings, etc., each are directly or indirectly connected to a source of possible leakage into the vessel such as sea chests overboard discharges, valves, cross-overs, connections to the shell of the vessel, tanks or pipe lines containing the liquid or any other source of leakage; it shall be the responsability of Shipyard to fit blanks as necessary to eliminate the possibility of leakage into any spa-

ces or equipment of the vessel.

Upon completion of any such repairs, all blanks fitted shall be removed and after reassemble, these items shall be taken as necessary to prevent any damage to the vessel whether she is afloat or in drydock.

38 - Whether specified or not it is to be understood that all repairs to be effected under the specification shall be accomplished to the complete satisfaction of Owner's Representative.

39 - Credits if any must be given according quoted schedule rates and shown to Owner's Representative before vessel's left.

40 - Damages on vessel's or her equipment caused by Shipyard people, during works must be repaired at Shipyard's expenses; these damages being agreed between Yard and Owner's Representative when occurs.

I N D E X

=====

	<u>P A G E</u>
1 - HULL	1
2 - DECKS	10
3 - CARGO SPACES	48
4 - D/BOTTOM, STRUCTURAL TANKS AND COFFERDAMS	65
5 - ACCOMMODATIONS AND COMPARTMENTS	73
6 - MACHINERY	101
7 - MISCELLANEOUS	132
8 - SPECIF. WORK COMPLEMENT	133

1 - HULL SPECIFICATION

DRYDOCK

1.1.0 - Docking the vessel for examination, painting and repairs.

State the number of days required.

For docking services and conditions see general clauses attached.

1.2.0 - Hull Cleaning and treatment

A - Bottom 2 606 sq. mts. area

2 T/O

Arcazol 567/

180R
180S

a - The bottom including rudder, is to be thoroughly washed down with high pressure fresh water. Grease or oil if any to be removed.

1 F/C Antifouling

no. 1 - 450P

b - All marine growth is to be completely removed.

1 F/C - 420P

c - Scrape rust or loose paint areas, touch up with two coats of primer on bare steel (allow approx. 500 sq. mts.).

Antifouling -
superficial
~~180P~~

Apply by airless system one full coat of anticorrosive paint and other full coat of antifouling paint.

B - Bootop 663 sq. mts. area

1 T/O Secant

a - Shot blast to SA 2 1/2 grade (SIS 055900).

5x14P - A

b - Apply one full coat of shop primer paint, to be applied immediately after blasting and dusting.

5x4.9 - B

c - Apply two full coats of primer paint (different colours).

Arcazol 567/ 80P

- Apply two full coats of finish bootop blue paint.

Arcazol 567/ red face 80P

Bootop primer Azul 13P

c - All paints to be applied by airless system.

733 255 - 180P

./

C - Topsides 1 643 sq. mts.

a - Shotblast to SA 2 1/2 grade (SIS 055900). Please consider a great and hard old paint thickness to be removed.

Securit

b - Apply one full coat of shop primer paint immediately blast ing and dusting.

Arcaevol S671

- Apply two full coats of primer paint.

- Apply one full coat of undercoat paint.

- Apply one full coat of finishing paint.

c - All paints to be applied by airless system.

d - Before blasting remove 26 hull rubber gutters fixed with a bar, pins and nuts.

After blasting fit new gutters supplied by ship stores.

Stagging to be included.

Note: Shot blasting, drying time and painting to be according with owner's Superintendent and Jotum's Inspector instructions.

The last coat (bootoping and top sides) to be applied two days before all vessel's repairs completion. All stagging for hull treatment must be included on tender. All water discharge pipes to be plugged with plugs and short pipes to avoid water running down the ship sides.

D - Vessel's name, Hailling Ports, Plimsol and Draft Marks

a - All marks and names to be painted with (2) coats of paint.

./

- b - Check marks for Load Lines Survey by template supplied by Yard according with certificate measures.
- c - Chiesel all marks.

1.3.0 - Shell Grids and Inlet Casings (5)

- a - Finish the necessary staggering and remove all grids to clean.
- b - Examine studpins and renew all defective ones, renew nuts and split pins and rethread the remaining ones.
- c - Scrape and clean all inlet casing surfaces and apply one full coat of anticorrosive paint and one full coat of antifouling.
- d - All grids to be replaced as before.

1.4.0 - Anchors and Cables

Two anchors of 75 CWT each.

One spare anchor stored on forecastle.

One stockless anchor stored on promenade deck near mast.

Twenty one (21) lengths of chain cable 2 1/6" size.

- a - Chain cables to be disconnected from chainlocker and ranged in drydock; disconnect all shackles for survey, take measurements to decide renewals; renew six (6) lengths supplied by ship, shotblast remaining ones, refit, paint with betuminous Jotum Bitumax N supplied by Yard and stow in chainlocker after works.

./

Final measurements of cable links to be taken as per L.R.S. Rules and results reported to owner's representative.

The Chief Mate must be advised when stowing.

- b - Remove from seating the spare and stockless anchors, overhaul all fixing brass and renew iron studs and nuts 7/8" size.
- c - Burn old paint, scrape and repaint spare and stockless anchors.
- d - Make free spare anchor shackle and stock by fire and grease the movements.
Make free stockless anchor shackle, stock ball and closing device.

1.5.0 - Hull Cathodic protection (zinc plates, 30)

- a - Chip and wire brush all anodes, protect them to avoid disturbance by painting.

1.6.0 - Chain Locker

- a - Full cleaning mechanical chipping bottom and bulk-heads one meter from bottom and scrape remaining steel works.
- Apply one full coat of bituminous paint "Jotum Betumax N" supplied by yard.
- b - Overhaul bilge pump and valves, bilge test on completion for L.R.S..

Note: For access remove bottom gratings and replace afterwards.

./

1.7.0 - Rudder

- a - Check pintles and bushes clearances.
Check rudder stock clearances.
Stagging as necessary to be included.
Report results to owner's representative.
- b - Renew rudder stock stuffing box packing.
Note: Packing will be supplied by ship's store.
- c - Remove and refit drain plugs for drainage of rudder.

1.8.0 - Propeller and Tailshaft (2)

- a - Remove propeller, rope guards and draw screw shafts.
Clean, gauge liners diameters in way of wood and glands and report, stow them on the spare shafts place and protect with proper anticorrosive coat for spares.
- b - Remove ashore two spare screw shafts stored in tunnel shaft after.
Clean completely, make free the nuts and adjust the tapers in propellers.
Magnaflux test to the cones and keyways.
- For access remove one wood shelf above the spare shafts (with about 4 x 2 mts.).
Remove wood shelves on tunnel sides as well stored stuff.
Remove round plates bolted to no.3 hold after bulk head in order to carry shafts through bulkhead holes.
- c - Remove and renew after bushes, wood lining.

./

One bush each stern tube with 16 lignum vitae strips
1 780 x 20 mm.

- d - Ream the flanges coupling holes, make and fit new bolts with nuts according new holes diameter.
- e - If necessary ream the stuffing box end to new shafts diameter.
Make free all gland studs and nuts.
- f - Scrape inside stern tube iron works and paint with two full coats of "Bitumax N" supplied by yard.
- g - Refit all material as before and repack the glands with new packing "Beldam's Beavar 301" supplied by Yard.
- h - The old and new shafts are to be examined and marked by L.R.S. surveyor.
- i - Clean the propeller by machine brush and apply one coat of protecting oil.
- j - Stagging as necessary to be included.

1.9.0 - Sea inlet and discharge valves and cocks

6 sea valves
1 sal log valve
22 discharge valves
4 cocks

- a - Open up all valves and cocks, general overhaul.
Scrape and clean internally, machine seats and lids, grind in, renew packing and joints.
Hammer test valve chests studpins, bolts and nuts and renew as found necessary.

./

b - Overhaul (6) steam clearing valves as specified in "a".

1.10.0 - Storm Valves (65) from 2" to 6" sizes

Located in crew accommodations, holds and ballast deep tank. Find the places looking from outside the overboard discharges.

a - Open up all valves and general overhaul.

Chip, paint internally and externally, machine seats and lids, grind in, renew packings, joints and hinged flaps leather or rubber seats.

Hammer test studpins. Renew pins and nuts as necessary. Close after survey with all by work including test with water under working conditions. Stagging where necessary must be included.

1.11.0 - Hull Portlights Ø 14"

Types:

135 normal portlights on upper tweendeck and spaces under forecastle

10 permanent closed portlights on no.1 tweendeck.

a - Overhaul and make free: portlight hinges, thumble screws, nuts and deadlight covers; renew packings. Allow for supplying and renewing 45 portlight glasses. Make hose test for L.R.S. surveyor.

b - Allow for supplying 50 brass nuts as per sample.

1.12.0 - Shell Plating Thickness Determination

- a - As per owner's Superintendent instructions, make about 530 hull thickness checks per ultrasonic system or similar, 10% of them to be by drilling, staggering included. Results reported to owner's representative. Price must be given for each hundred checks.

1.13.0 - Shell Riveting

- a - Renew about 5 000 of 7/8" shell rivets, the most of them in way of holds, as per Superintendent instructions.

Stagging must be included.

Price must be given for each hundred rivets. Hose test on completion.

1.14.0 - Hull damages

1.14.1 - Causes unknow

Existing damage:

- on bottom in way of nr. 6 Port fresh water double bottom tank.

Slight indent on shell plate and floor plate heavily buckled at frame 61.

Works to be carried out:

- unrivet shell plate from angle bar.
- crop, remove and partially renew by welding the floor plate and bottom angle bar. This one riveted to both sides (1 000 x 600 x 10 mm dimensions).
- for access see item nr. 6 DB Tank

1.14.2 - Fixed dale on St. side in way of nr. 4 hold

- Remove fair and refit by welding one dale with approx.
400 x 300 mm.
- Staggering as necessary.

1.15.0 - Shell plating renewals

- a - Crop, remove and renew partially strake "E", bilge, no.5 plate between frames 97 1/2 & 102 new butt shaped plate with 2 133 mm radius.
Welded butts and seams.
Revited to floor plate bottom angle bar
Plate dimensions approx. 4 000 x 1 600 x 15 mm.
- b - Crop, remove and renew four bilge brackets in way of renewed plate.
Bilge bracket 75 mm flanged.
Revited to frames and welded to margin and shell plate.
Bracket thickness 11 mm.
- c - Remove and renew the cement chocks in way of repairs.
- d - For "a" & "b" see Midship Section plan.
- e - Tank access included in items "Tanks".

2 - DECKS

=====

2.1.0 - NAVIGATING BRIDGE TOP DECK

2.1.1 - Top Plan king (Oregon pine 5" x 2 1/2")

- a - Remove and renew one plank 2 500 mm long, before fitting, scrape and paint the deck plate.
- b - Remove all old pay, caulk with two threads of oakum and pay, remove spilling tar total caulking about 880 running meters.
- c - Remove, supply and fit about 100 missing and defective turned dowels.

2.1.2 - Awning beams and stanchions

- a - Remove definitively beams and stanchions
 - Stanchions 400 mm high, fixed to wood deck by two screws, after removals fill wood holes with suitable wood dowels.

2.1.3 - Supply and fit on Port. aft. scupper, one 150 mm diameter brass grid.

2.1.4 - Chip edge plate, 50 mm high all around the deck and paint with two coat of primer and one coat of finishing paint (about 46 mts.).

2.1.5 - Railling - scrape all loose paint, touch up with primer and apply one full coat of finishing paint (about 22 running meters).

./

- 2.1.6 - Wood platform around compass stand, scrape loose paint and apply one full coat of paint.
- 2.1.7 - Scrape and revarnish compass stand.
- 2.1.8 - Scrape and paint one wood meteorologic cabinet.
- 2.1.9 - Paint two radar masts, two VHF serial posts, one signal mast and one anemometer post.
- 2.1.10 - Scrape and paint one ventilation duct with 5 000 x 400 x 250 mm.
- 2.1.11 - Scrape and paint 8 small ventilators (300 mm high).

2.2.0 - NAVIGATING BRIDGE DECK

2.2.1 - Top planking (oregon pine 5" x 2 1/2")

- a - Remove all old pay, caulk with two thread of oakum and pay, remove spilling tar.

Total caulking about 1050 running meters.

- b - Remove, supply and fit about 200 missing and defective turned dowels.

- c - Access for caulking:

remove and replace wood gratings around the giro compass repeaters on two bridge wings. Remove and replace three deck tools wood boxes. Remove and replace two pail stands.

2.2.2 - Awning beams and stanchions

- a - On nine stanchions pipes, as per indication.

Crop, remove and partially renew by inserting and welding pieces of pipe, in way of top wood bulwark rail (250 x Ø 50 mm) each.

./

b - Beams (120 x 60 mm wood)

Remove, supply and fit:

one	length	with	1 200 mm	long
two	"	"	1 500 mm	"
one	"	"	1 800 mm	"
one	"	"	2 000 mm	"
one	"	"	2 400 mm	"
two	"	"	2 700 mm	"
one	"	"	4 100 mm	"
one	"	"	4 300 mm	"
two	"	"	5 000 mm	"
one	"	"	7 400 mm	"

2.2.3 - Wood top railing (about 60 running meters)

a - Remove 20 runnings meters of wood, as per indication, chip and paint with two coats of primer the wood laying top bar and refit the top wood.

b - Total scraping and sanding with fine sandpaper on top wood and apply two coats of varnish supplied by the yard.

2.2.4 - Wood doors and framings

Scrape and sand with sandpaper, revarnish with two coats supplied by yard on both sides, the doors and framings as below:

two	access	doors	to	wheelhouse
one	"	door	to	TSF cabin
one	"	"	"	battery room.

2.2.5 - Crop, remove, supply and fit a new chequered plate step under battery room door (800 x 300 x 5) mm.

./

2.2.6 - Bulkhead repairs

- On starboard and after casing bulkheads in way of 1st radio officer cabin, crop, remove and partially renew by welding three plates with 2 000 x 1 000 x 8 - 2 000 x 500 x 8 - 1 000 x 1 000 x 8 mm.
- Outside access
 - Remove ventilator air duct insulated and covered with galvanized plates (about 3 000 x 900 x 800) and replace afterwards, as before.
- Inside access
 - On 1st radio officer cabin:
 - remove bed, chest-of-drawers, sofa
 - remove bulkhead linning on starboard and after sides
 - supply and renew three window zinc drain boxes, paint behind linning, steel work in way of repairs and replace all material after works
 - remove and renew 3 sq. mts. of floor plastic tilling as well the base composition.

2.2.7 - Scraping and painting

- Bulkheads, bulwarks, railling, ceilings, awning beams and stanchion to be scraped on rusted or loosed paint areas, touched up with primer and paint with a full coat of finishing paint.

2.3.0 - OFFICERS DECK

2.3.1 - Top planking (Oregon pine 5" x 2 1/2")

- a - Remove all old pay, caulk with three threads of oakum and pay, remove spilling tar. Total caulking about 1 350 running meters.

./

- Remove, supply and fit about 350 missing and defective turned dowels.

Access for caulking:

remove and replace two life rafts stands fixed by screws.

2.3.2 - Awning beams and stanchions

- a - On eight stanchion pipes, crop and partially renew by inserting and welding pieces of pipe (250 x Ø 50 each).
- b - Beams (120 x 60 mm wood)
 - remove, supply and fit:
 - two lengths with 1 700 mm long
 - one length " 4 300 mm "

2.3.3 - Wood top railing (about 60 running meters)

- a - Remove 30 running meters of wood, as per indication, crop and renew by welding 10 running meters of wood laying steel bar (100 x 5), chip and paint with 2 coats of primer, the remaining 20 meters. Refit the top wood on completion.
- b - Total scraping and sanding with fine sandpaper on top wood and apply two coats of varnish supplied by the yard.

2.3.4 - Wood doors, framings and ladders

- Scrape, sand with sandpaper and revarnish with two coats supplied by the yard
 - two bridge deck access wood ladders 600 mm width
 - three wood doors and framings
 - two forward wood windows on front casing.

2.3.5 - Natural air exhaust ventilators

a - On port side exhaust ventilator:

crop, remove and renew by new one made by sample, welded galvanized plate of 4 mm with approx. dimensions 600 x 1 000 x 400.

b - On stb. side exhaust ventilator:

crop, remove and renew by welding the front galvanized steel plate 600 x 1 000 x 4.

2.3.6 - Front casing on deck

a - In way of Captain day-room and Captain bedroom at deck level, crop, remove and partially renew by welding the front plate 11 500 x 300 x 7 mm.

- Chip and paint with one coat of betuminous paint supplied by yard all surface of waterway behind the cropped plate and below the windows.

- For access remove and replace after works:

on day-room: one desk and front plywood panels.

on bedroom: one bed, one bed table, one chest-of-drawers and front plywood panels.

All staggering must be included.

2.3.7 - Scraping and painting

- Bulkheads, bulwarks, railing, ceilings, awnings beams and stanchions to be washed down, scraped on rusted or loosed paint areas touch up with primer and paint with a full coat of finishing paint.

2.3.8 - Supply and fit one window glass on port after cabin.

For access, remove and replace the bed and plywood panel.

./

2.4.0 - BOAT DECK

2.4.1 - Top planking (Oregon pine 5" x 2 1/2")

- a - Remove and renew 20 runnings meters of planking distributed by different places as per Superintendent's instructions.
- Chip and paint the plate before replacement of the wood.
- b - Remove all old pay, caulk with two threads of oakum and pay, remove spilling tar.
Total caulking about 3 100 running meters.
- c - Remove, supply and fit about 500 missing and defective turned dowels.
- d - Access for caulking:
remove and replace four life rafts stands fixed to deck by screws
remove and replace two deck tools wood boxes.

2.4.2 - Life boats (8) (six plastic and two steel)

(Two on officer's deck, four on boatdeck and two on promenade deck)

- a - Remove ashore all eight life boats for repairs and replace after works.
- b - Two steel boats to renew by plastic new ones supplied by ship.
- c - Overhaul Fleming propulsion systems on four life boats and test.
- d - Wash with water and detergent internally and externally all eight life boats.

./

2.4.3 - Life boat davits (16) and winches

(Welin MacLaghlan Davits)

- a - Unrig all wire cables for inspection.
- b - Chip completely all davits, winch boxes internally and externally, winch motors, brakes, etc., paint with two full coats of primer, one full undercoat and another top coat.
- c - Dismantle all sliding wheels and pulley sheaves, renew all lubricating nipples, make free, grease and reassemble.
- d - On boat deck davits pipe legs (16), weld shaped steel doublers with 300 x 150 x 4 mm.

For access: remove and replace, on completion, the awning beams in way of repairs.
- e - Remove eight winch motors to complete overhaul. Renew brushes and allow for renewal of eight ball bearings. Refit on completion.
- f - Remove and replace after works all eight starters to complete overhaul.
- g - Open and overhaul all limit switches.
- h - Dismantle and overhaul all hand and centrifugal brakes.
- i - On winch boxes, renew by welding iron plates with 800 x x 200 x 5 mm.

Renew 8 round iron cover plates fixed by screws with \varnothing 200 x 4 mm.

Renew all lubricating nipples and grease the drum bearings.

./

- Make free all door hinges.
- j - Rig cables, place the boats, adjust limit switches and make running test to chief mate satisfaction.
- k - On four davits make small necessary adaptations in order to fit the new plastic life boats in proper way.

2.4.4 - Front and side casing on deck

- a - In way of front and side cabins on deck level, crop, remove and partly renew by welding a strip of plate with approx. 58 000 x 300 x 7 mm..
- b - Chip and paint with one coat of betuminous paint supplied by yard, all surface of waterway behind the cropped plate and below the windows.
- c - For access remove and replace after works the following equipment:
 - cabins nrs. 1, 2, 3 and 4 (on each)
 - two portable iron bunks
 - one wood wardrobe
 - cabins F and H (on each)
 - four portable iron bunks
 - one chest-of-drawers
 - cabins E and G (on each one)
 - four portable iron bunks
 - cabins de luxe P. and Stb. (on each)
 - day-room and bedroom
 - one wood bed
 - one wood wardrobe
 - bath-room (4) (on each)
 - one bath-tube

./

- In all cabins remove and replace plywood panels in way of repairs.

d - Staggering must be included (outside).

2.4.5 - Awning beams and stanchions

a - Beams (120 x 60 mm)

Remove, supply and fit:

one length	with 2	100 mm	long
two lengths	"	2 200 mm	"
five	"	3 600 mm	"
one length	"	6 000 mm	"

b - Awning beams accessories

Make as per sample the follow galvanized iron angle pieces, removing old ones

15 galvanized angle pieces

100 x 75 x 12 mm with fixing holes

6 galvanized angle pieces

150 x 75 x 12 mm with fixing holes

80 galvanized screws with nuts 4" x 1 1/2"

To be fitted in all decks.

2.4.6 - E.R. skylight

a - To be removed for access engine-room works.

b - Crop lower edge plate on way of fixing holes and fit by welding a new 6 mm thick plate all around skylight
3 800 x 3 150 x 100 drilled for 3/4" fixing bolts.

- Renew the bolts, nuts and joint.

./

- c - Supply and renew five skylight glasses.
- d - Deck plate around skylight and funnel
 - Chip completely and paint with two coats of primer and one top coat (40 sq. mts.).

2.4.7 - Remote control valves steel boxes

- a - Chip and paint internal and externally with two coats of primer and one top coat - dimensions:
 - one 1 200 x 400 x 450
 - one 650 x 450 x 450
 - two 650 x 200 x 250
- b - Make and fit one cover plate with hinges with 650 x 200 x 5 as per sample (for one of above boxes).

2.4.8 - E.R. ventilators (mushroom type with motors)

four 38" ϕ x 2 000 mm high

- a - Remove head, chip and paint inside, make free and grease butterfly valves, supply and fit suitable chains on butterfly fixing position pins.
- b - Outside ventilators, scrape loose paint, touch up with primer and apply one finishing coat.

2.4.9 - Waterway and after bulkhead edge plate in way of planking

- a - Chip completely P.Stb. and after, paint with two coats of primer and one top coat (approx. 25 sq. mts.).

2.4.10- Fire houses wood boxes

- a - Remove from forward bulkhead, chip this in the way boxes and paint.
- b - Scrape and paint the boxes, replace as before.

./

2.4.11- Wood top railling (about 60 running meters)

- a - Remove 20 running meters of wood as per indication, chip and paint with two coats of primer the wood laying top bar and refit the top wood.
- b - Total scraping and sanding with fine sandpaper on top wood and apply two coats of varnish supplied by the yard.

2.4.12- Wood doors and framings

- Scrape and sand with sandpaper, revarnish with two coats supplied by the yard on both sides of two wood doors and framings.

2.4.13- Wood deck access ladders

- Ditto as above on two officers deck access wood ladders 600 mm width.

2.4.14- Scraping and painting

- a - Funnel
 - Complete wash down
 - Apply one full coat of top paint (black with three strips white and blue)
 - Staggering must be included
- b - Bulkheads, railling, awning beams and stanchions, thermo tank and ventilators, skylight, to be scraped on rusted or loose paint areas, washed, touched up with primer and painted with a full top coat.

2.5.0 - PROMENADE DECK

2.5.1 - Top planking (oregon pine 5" x 2 1/2")

- a - Remove and renew 25 running meters of planking distribut-

ed by different places as per Superintendent's instructions.

Chip and paint the plate before replace the wood.

- b - Remove all old pay, caulk with two threads of oakum and pay, remove spilling tar.

Total caulking about 3 700 runnings meters.

- c - Remove, supply and fit about 850 running and defective turned dowels.

- d - Access for caulking:

remove and replace six life rafts stands fixed to deck by screws

remove and replace two deck tools wood boxes.

2.5.2 - Front casing on deck

- a - In way of both "verandas cafe" and "smokerroom" at deck level, crop, remove and partly renew, by welding, a strip of plate with approx. 30,000 x 300 x 7 mm.
- b - Chip and paint with one coat of betuminous paint supplied by yard, all surface of waterway, behind the cropped plate and below the windows.
- c - For access remove and replace all plywood panels in way of repairs.
- d - Staggering must be included.

2.5.3 - Nr. 3 hold hatch covers

Four flush wood covered steel panels with 2 400 x 5 850 Mac Gregor type non permanent wheels.

- a - Remove ashore the four panels and replace on board after repairs.

./

- b - Remove and renew completely, applying with proper glue the rubber joints, shipyard supply (rubber Mac Gregor type, two different sizes, total length approx. 53 mts.).
- c - All panels to be chipped, side and lower plates, apply two coats of primer and one coat of finishing paint.
- d - All panels to be removed all old pay, caulked with three threads of oakum and payed, remove spilling tar; total caulking about 140 sq. mts. surface.
- e - Mechanical chipping on panels rubber channels and fair the indented edges.
- f - In three panels crop and renew by welding the transversal rubber compression bar with 5 600 x 65 x 7 mm..

2.5.4 - Nr. 3 hold hatch coaming

- a - Chip completely flush covers recess about 12 sq. mts.
- b - All around recess, fit by welding doubler plates 7 mm. thick with following dimensions:
 - 2 plates 10 100 x 210 mm.
 - 2 " 5 850 x 210 mm.

For access crop ten eye plates and fit by welding new ones made by cropped sample.

- c - Hammer scale all around the compression rubber vertical edge top, plane by gridding the contact rubber top, fit on the top welding both edges one iron bar 3/4" x 1/4" to make a good contact surface for rubber packing.
- d - Apply two coats of primer and one coat of finishing paint on all chipped and new iron work.

./

- e - Around the coaming, remove eight safety wire handrail stanchions supports screwed to wooden deck, fair four of them, make two, as per sample and refit on completion with new screws.

2.5.5 - Wood top railling (about 130 running meters)

Total scraping and sanding with fine sandpaper on top wood and apply two coats of varnish supplied by the yard.

2.5.6 - Wood doors and framings

Ditto as above, on both sides of doors and framings.

2.5.7 - Access ladders to boat deck

Ditto as above on two access ladders, 1 250 mm. width.

- Paint handrails.

2.5.8 - Natural air exhaust ventilators

6 ventilators on forward P. and Stb. bulkheads

2 " on after, bulkhead

Average size 500 x 300 mm.

- a - Remove all eight covers from ventilators, renew rubber packings, rubber packing fixing bars and screws. Make free and grease the hinges, scrape the handling packings surfaces, paint with primer and top coat and replace as before.

2.5.9 - Winches seatings on deck

- a - Nr. 3 hold - Forward seatings (2)

Crop, remove and renew by welding seating plates, with 1 700 x 1 700 x 10 mm. dimension.

./

Crop and reweld on new plates two eyerings.

Chip all framings and paint old and new iron work, to be coated twice with primer and one top coat.

b - Nr. 3 hold - after seatings (2)

Chip all framing and paint as above

c - Accesses:

Winches removals are included on the item "Winches".

Remove and replace two bolted chequered plates platforms on after seatings.

2.5.10 - Waterway and after bulkhead edge plate in way of planking

a - Chip completely P. Stb. and after. Paint with two coats of primer and one top coat (approx. 50 sq. mts.).

2.5.11 - Skirting board

- Around the casing, 100 mm high.

a - Chip all around and paint with two coats of primer and one top coat.

2.5.12 - After Mast

a - Electric cabling and fittings:

- renew completely the instalation using electric cables type aproved by LRS.

- after removal of old cables, chip, rust and thiek paint in way of cabling and paint the chipped areas with two coats of primer and one top coat.

- fit by welding leading cable chairs alongside mast and apply aproved type cleats.

- four flooding lights instalations - run two lengths of cable 15 mts. each one of 2 x 4 sq. mm. with two watertight, of two outlet socket boxes and 16 mts. of flexible cable with plugs, from socket boxes, to lights.

- Supply and fit 4 new approved type flooding lights
Adapt the supports to new fittings.
 - Cargo lights socket boxes (2) instalation - run eleven
mts. of cable 2 x 4 mm², fit two watertight junction
boxes with two outlets.
 - Mast navigating light instalation - run 15 mts. of
cable 2 x 4 sq. mm and fit one socket box.
 - All these cables are to be connected underneath the
deck in the junction boxes supplied and fitted by
the yard.
 - All staggering must be included.
 - Working test on completion.
- b - Renew the navigating light support plate 400 x 100 with
welded fixing holed bars for plate and for light.
- c - Renew the top length of iron ladder - iron bars with
approx. 3 mts. of 2" x 3/8" with 3/4" round bar steps-.
- d - Chip completely the mast table and the mast until same
high.
- Apply two coats of primer, one undercoat and one top coat.
 - Wash and paint the remaining areas of mast steel work.
- e - Make supply and renew 3 shrouds with following dimensions:
- | | | |
|--------------------------|------------|----------|
| 2 - shrouds - wire cable | 11.45 mts. | x 4 1/2" |
| 1 - shroud - " " | 11.97 " | x 4 1/2" |
- Note: six strands each of 19 wires one fibre centre.
- Remove for overhaul one shroud, brush the wire and
replace.
 - After fitting the wires protect them with white zinc
supplied by yard.
 - Accessories - overhaul, make free and grease: eye pla
tes, shackles and turn rigging screws.

f - All staggering for mast jobs must be included.

2.5.13 - Cargo gear span wire reels (5)

- Unrig cables, chip, rust and paint, grease, paint with two primer coats and one top coat. Rig the cables on completion.

2.5.14 - Ventilator - 18" diameter mushroom

Type

- Crop the lower part 300 mm. high and renew by welding.

2.5.15 - Mechanical exhaust ventilator mushroom type near mast

- a - Renew wire mesh as well fixing bars and bolts, 800 mm. dia.
- b - Make free and grease butterfly valve.

2.5.16 - Fashion plate round edge

- In way of nr. 3 hatch coaming port, crop and renew by welding 10 mts. length round pipe edge top 2" diameter.

2.5.17 - Scraping and painting

- a - Casing bulkheads, bulwarks, railling, ceilings ventilators, to be scraped on rusted or loosed paint areas, washed, touched up with primer and painted with a full top coat.

2.6.0 - FORECASTLE

2.6.1 - Forward deck plating (about 60 sq. mts.)

- a - Chip completely and apply two coats of primer and one top coat.

./

2.6.2 - Break water

- a - Crop and renew fully, by welding 10 mts. of round pipe edge top - 2" dia.
- b - Crop and renew by welding seven brackets 400 x 600 mm. on average.
For access remove and replace wood planks in way of brackets renewals.
- c - Chip remaining steel work and paint with two coats of primer and one top coat.

2.6.3 - Roller fairleads

- a - Make free by heat and grease two double rollers and two, three rollers fairleads.

2.6.4 - Bulwark stanchions

- a - Crop and renew by welding two stanchions edge pipes with 1 400 mm x 2 1/2" ϕ full welded both sides.

2.6.5 - Pipe welded to stringer plate edge top

- a - On P.side crop and renew by welding 13 mts. length round pipe edge top with 2" dia.

2.6.6 - Windlass

Stothert & Pitt Ltd.

BHP - 47

RPM - 900

Volts- 220 DC

- a - Remove alectric motor to the work shop, open up, clean, dry, skim comutator, revarnish, renew bearings and brushes, refit, meggertest and refit on board.
- Enclosed electromagnetic brake.
- Dismantle all components to overhaul, clean, megger

./

test, dry and revarnish the coils, inspect ferod lining, refit and adjust disc gaps.

- b - Overhaul electric motor controller. Renew cover rubber joints.
- c - Overhaul contactors panel components.
- d - Overhaul resistance groups.
- e - Open up for LRS survey all shafts bearings, clean, adjust, lubricate and refit after survey.
- f - Drain warm gear box and oil ring bearing box, open up, clean for LRS survey, close and refit with new oil supplied by ship.
- g - Open up slipping clutch for cleaning and LRS survey, refit and adjust under working conditions.
- h - Adjust and put workable lifter clutches movements.
- i - Overhaul hand brake: stell band, movements, etc..
- j - Hoisting test according LRS rules.

2.6.7 - Chain stoppers

- a - Make free, put workable and grease.

2.6.8 - Spring wire reels (2)

- a - As per sample supply or make two wire reels with steel band hand brake.

2.6.9 - Hatch scapes

Dimensions:

fore store	-	1 000 x 800 x 200 mm.
magazin space	-	1 500 x 1 200 x 200 mm.

- a - Chip completely and paint with two coats of primer and one top coat.

./

- b - Make free hinges, swivel turn bolts and nuts.
- c - Supply and renew packings for LRS.

2.6.10- Top planking (oregon pine 5" x 2 1/2")

- a - Remove all old pay, caulk with two threads of oakum and pay, remove spilling tar.
Total caulking 2 000 running meters.
- b - Remove, supply and fit about 400 running and defective turned dowels.

2.6.11- Forward Mast

- a - Electric cabling and fittings:
 - renew completely the instalation applying elec
tric cable, type aproved by LRS.
 - after removal old cables, chip rust and thick
paint on way of cabling and paint the chipped
areas with two coats of primer and one top coat.
 - fit by welding leading cable chairs alongside
mast, and apply aproved type cleats.
 - flooding lights instalation (4) - run two lengths
of cable 13 mts. each one of 2 x 4 sq. mm. with
two watertight of two outlet socket boxes and
16 meters of flexible cable with plugs from soc-
ket boxes to lights.
 - supply and fit 4 new aproved type flooding
lights.
Adapt the supports to new fittings.
 - cargo lights (2) socket boxes instalation - run
two lengths of 8 and 12 mts. of cable 2 x 4 sq. mm.
 - mast navigation light instalation - run 14 mts.
of cable 2 x 4 sq. mm. with one watertight socket
box and one watertight junction box.

- all these cables to be connected underneath the deck in one junction box supplied by the yard and in a fuse box.
 - working test on completion.
- b - Renew the top length of iron mast ladder and the next below with following dimensions:
- side bars 3 mts. x 2" x 3/8" with two 3/4" round bar steps
 - side bars 3.6 mts. x 2" x 3/8" with twelve 3/4" round bar steps.
- c - Crop and renew by welding two 7/8" round bar steps on after side top mast.
- d - Renew the iron bar mast yard clamp.
- e - Supply and weld one eye ring to fixe emergency navigating light supporting wire as per instructions.
- f - Paint with two coats of primer all new iron work, wash and paint all remaining surfaces.
- g - Make supply and renew 4 shrouds and two preventer stays with following dimensions:
- shrouds - wire cable 11.45 mts x 4 1/2"
 - preventers stays - wire cable 13.10 mts. x 4 1/2"
- Note: six strands each of 19 wires one fibre centre
- After fitting the wires, protect them with white zinc supplied by yard.
- Accessories - Overhaul, make free and grease: eye plates, shackles and turn rigging screws.
- h - All staggering for mast jobs to be included in the tender.

./

2.6.12 - Natural air ventilators

a - Two cowl type	2 000 x 400	Ø mm
" " "	2 000 x 375	Ø mm
Three"	2 000 x 300	Ø mm
" " "	2 000 x 275	Ø mm
Two " "	2 000 x 225	Ø mm

- Heads to make free and grease.
- Butterfly valves to make free and workable.
- Scrape rust or loosed paint, touch up with two primer coats and paint with one top coat.

b - Two mushroom type	1 200 x 300	Ø mm
" " "	1 200 x 475	Ø mm
One " "	1 400 x 620	Ø mm

- Butterfly valves to make free and workable.
- Scrape rust ou loosed paint, touch up with two primer coats and paint with one top coat.

2.6.13 - Bulwark top rail

- a - Chip completely.

2.6.14 - Railing (about 45 running meters)

- a - Fair by heat rail indents (about 20).
- b - Renew protecting life wire net, about 25 running mts.
- c - Scrape and paint all railing and net.

2.6.15 - Waterway and after bulkhead edge plate in way of planking

- a - Chip completely P, Stb. and after paint with two coats of primer and one top coat (approx. 17 sq.mts)

2.6.16 - Winches seatings on deck (4)

- a - Crop and renew, by welding, winches seatings framings, with following dimensions:

on each winch four frames are made in 10 mm. L plate with 200 x 150 x 3 000 mm and three welded brackets 200 x 150 x 10 mm on each frame.

- b - Accesses:

- Winches removals included in item "Winches".
- Remove and replace chequered plates platforms.
- Remove and fit new wood planks in way of deck weldings.

- c - Paint all framings with two coats of primer and one top coat.

2.6.17 - No.1 hold hatch coaming

- a - Chip outside coaming and paint with two primer and one finishing coat.

2.6.18 - Square ventilator under mast table

- a - Chip lower part 100 mm high, crop and renew by welding the forward side galvanized plate 700 x 900 x 3 mm.

2.6.19 - Deck plating thickness determination

- a - Allow for 25 checks by ultrasonic system.

2.6.20 - Cargo gear span wire reels (5)

- Unrig cables, chip rust and paint, grease, paint with two primer coats and one top coat.
- Rig the cables on completion.

2.6.21 - Scraping and painting

- a - Where not specified backward, scrape loosed paint or rust, touch up with primer and apply one top coat: bulwark, mooring devices, etc..

2.7.0 - AFTER DECK HOUSE TOP

2.7.1 - Top planking (oregon pine 5" x 2 1/2")

- a - Remove all old pay, caulk with three threads of oakum and pay, remove spilling tar.
Total caulking 1 500 running meters.
- b - Remove, supply and fit about 300 missing and defective turned dowels.
- c - For access: remove and replace 8 wood rafts one small boat and 6 mooring rope boxes.

2.7.2 - Deck edge plate

- a - All around the deck, chip the edge plate and paint with two primer coats and one top coat.
- b - On forward edge: crop the top plate 100 mm high 16 mts. long and weld a new 8 mm plate.
For access: crop and reweld 8 lugs and two awning stanchions.

2.7.3 - Thermotank with motors

- a - Scrape loosed paint, touch up with primer and apply one top coat.

2.7.4 - Exhaust ventilator motor seating

- a - Having the old one as sample make a new 5 mm steel plate motor seating with overall dimensions 200 x 350 x 300 mm and renew.
- b - Scrape and paint ventilator motor and seatings.

2.7.5 - Awning beams and stanchions

- a - Beams (120 x 60 mm wood)
Remove, supply and fit

one length	with	2 700 mm	long
four lengths	"	3 200 mm	"
one length	"	3 400 mm	"
two lengths	"	3 700 mm	"
three lengths	"	12 500 mm	"

b - Scrape loosed paint, touch up with primer and apply one top coat.

2.7.6 - Ventilators 7" cowl type (4)

a - Chip ventilators coamings, scrape ventilator loosed paint, apply two coats of primer and one top coat.

2.7.7 - Railing

a - All around deck, scrape loosed paint, touch up with primer and apply one full top coat.

2.8.0 - UPPER DECK

2.8.1 - Top planking (oregon pine 52 x 2 1/2")

a - Port and Stb. Alleyways, total area 170 m².

- Remove and renew all wood planking.
- Renew fixing studs washers and nuts.
- Before fitting the new planks, chip and apply one coat of Jotum Bitumax N supplied by yard.
- Caulk with three threads of oakum and pay, remove spilling tar.

b - Remaining planking -

Forward and after of middle ship casing: remove all old pay, caulk with two threads of oakum and pay, remove spilling tar. Total caulking 2 500 running meters.

./

- c - Remove, supply and fit about 500 missing or defective turned dowels.

2.8.2 - Waterway (110 sq. mts.)

- a - Chip completely and paint with two coats of primer and one top coat.

2.8.3 - Skirting board

- a - Chip completely skirting board with 100 mm as follow:
 forecastle front bulkhead, all around middle
 ship casing and after casing. Apply two coats of
 primer and one top coat.

2.8.4 - Winches (10)

Two of 5 tons

Eight of 3 tons

Stothert & Pitt Ltd.

Placed on forecastle, promenade deck and upper deck

General work

- Remove ashore and replace after works all of them.
- Chip completely the paint and rust, inside and outside, apply two coats of primer and one undercoat and one top coat.
- Remove resistances and contactor boxes, crop and renew by welding the bottom plate (approx. 950 x 800 x 8 mm.)
- Overhaul contactor panel components.
- Overhaul resistances group.
- Overhaul controller components.
- Dismantle electromagnetic brake, centrifugal brake and foot brake for inspection, overhaul all components and reassemble.

Allow for supply and renewal the ferods on electromag-

netic foot brakes of 5 winches.

- Dismantle foot brake transmissions, make free , adjust, renew grease nipples and reassemble.
- Meggertest the motor, remove armature, skim comutator, clean dry, revarnish, similar job for field coils. Overhaul support brushes, supply and renew brushes.
Allow for renewal 50% ball and roll bearing.
- Overhaul the main switch.
- Drain oil from worm box for inspection, clean and refit after works. Ship supply the oil.
- Open up drum shaft bearings, hang the shaft for inspection of bearings, journals, gears and oil seals.
Allow for renewal 50% of oil seals and 50% of shaft bearing nuts supplied by yard.
- Make free and grease ventilators.
- All winch boxes covers to be fitted with new joints studpins and brass nuts supplied by yard.
- Running test before cargo gear weight hoisting test.

Additional work

Nr. 1 P. Winch

- a - Make and renew one bearing plastic guard shaped steel plate 1 100 x 310 x 5 with 4 fixing holes.
- b - Crop and renew by welding two shaped edge plates on port bearing space 1150 x 40 x 5 mm.

Nr. 1 Stb. winch

- a - Crop and renew by welding two worm box side lower plates with 1150 x 140 x 5 mm.

- b - Crop and renew by welding the lower part of stb. bearing recess 310 x 330 mm made in two halves with welded side plates.

We allow for 5 running meters of welding.

Nr. 2 port forward, winch

- a - Make and renew one worm box side guard with 1 000 x 150 x 5 mm and holed angle bar ends for fixing.
- b - Crop and renew by welding the inside lower worm box guard 1 100 x 150 x 5 mm.
- c - Crop and renew by welding foot brake chequered foot pressing plate 100 x 80 x 5 mm.

Nr. 2 Stb. forward winch

- a - Make and renew one bearing guard plate. Shaped steel plate 1 150 x 40 x 2 mm with 4 fixing holes.
- b - Crop and renew by welding two shaped edge plates on stb. bearing recess 1 150 x 40 x 5 mm.

Nr. 2 port after winch

- a - Crop and renew by welding two shaped edge plates on port bearing recess 1 150 x 40 x 5 mm.
- b - Renew the feeding electric cables guard plate with 600 x 120 x 5 mm, bolted. Weld one guard fixing flat bar 300 x 25 mm.

Nr. 2 stb. after winch

- a - Crop and renew by welding foot brake chequered foot pressing plate 100 x 80 x 5 mm.
- b - Make and fit the feeding electric cables guard plate with 600 x 120 x 5 mm, bolted. Weld one guard fixing iron flat bar 300 x 25 mm.

Nr. 3 Port after, winch

- a - Renew the feeding electric cables guard plate with 600 x x 300 x 200 mm.
- b - Crop and renew by welding outside shaped edge plate on port bearing recess 1 150 x 40 x 5 mm.

Nr. 4 Port, winch

- a - Crop and renew by welding outside shaped edge plate on port bearing recess 1 150 x 40 x 5 mm.

Nr. 4 Stb. winch

- a - Crop and renew by welding outside shaped edge plate on stb. bearing recess 1 150 x 40 x 5 mm.

2.8.5 - Winches (2)

Two of 3 tons

"Lidgerwood"

Placed on promenade deck

General work

Same like item 2.8.4 "General work", where applied.

- a - Supply and fit two 1/2" round bar screwed to gear box and fixed with nuts to wire drum guard on opposite end, fit two 1/2" G pipe as distance piece 600 mm long.
- b - Separate resistance and contactor box fitted on boat deck:
 - Disconnect feeding cables, release holding down bolts and remove ashore the common resistance and contactor box. (Dimensions 2 500 x 550 x 1 500 mm with 4 front covers fitted by 1/2" bolts.

./

- Remove from box: contactors, fuses and dipoles panels and overhaul these components.
- Remove from boxes the resistance groups, dismantle resistance groups, scrape and brush the resistance elements and reassembly.
- Chip, scrape and paint the boxes with two coats of primer and one top coat (Internally and externally) crop and renew by welding the boxes bottom plate 2 500 x 550 x 5 mm.
- On two central front covers, crop and renew two small, inspection covers with hinges 450 x 450 mm, crop and renew by welding, inspection doors framings 30 mm width.
- Fit covers with new rubber packing and renew about eighty (80) missing or defectives pins and bolts. Shipyard's supply.

2.8.6 - Winch seatings on deck (upperdeck)

- Chip and paint with two coats of primer and one top coat (2 seatings).

2.8.7 - Cargo gear quadrienal test

10 single derricks of	5	tons
4 " " "	3	tons
1 heavy derrick "	20	tons

- a - Release and remove completely from masts, king posts, cargo booms, bulkheads and decks all rigging appliances.
- b - Disconnect, shackles, slings, hooks, blocks, sheaves, etc., send to workshop, anneal wire brush, clean, examine, grease, paint and test. Certificate issued accordingly.

- c - Return all cargo gear appliances on board and refit in position.
- d - Remove to workshop, test all cargo gear appliances in store, as chain slings with hooks, shackles, sheaves, blocks, etc., grease, paint, return and restore on board.
- e - Remove all derrick booms, inspect pin clearances and report results.
Chip completely all cargo booms and apply two coats of primer, one undercoat and one top coat; paint number and safety load figures.
- f - Make all cargo gear weight hoisting test and issue testing certificates as per International Regulations.

2.8.8 - Forecastle front bulkheads

- a - At portside near waterway, crop and renew by welding one piece of bulkhead plate with 500 x 500 x 8 mm.
For access, remove and replace, two steam cooper pipes through new bulkhead plate.

2.8.9 - Access doors on forecastle front bulkhead

- a - Nr. 2 tweendeck access doors P. and stb. (4):
 - fill by welding to adjust hole hinges and ream
 - make and renew 4 hinge pins according new size
 - renew rubber packings fixed with screwed bars, renew screws too
 - adjust and put workable 3 doglocks.
- b - Forward spaces access doors P. and Stb. (2):
 - supply and renew two locks with handles fixed by bolts.

c - Nr. 1 tweendeck access doors P. and Stb. (4):

Same work as specified on "a".

d - Forward frigo fans room access door (1)

- renew rubber packings fixed with screwed bars, renew screws
- adjust and put workable the dog locks.

2.8.10 - Chequered plate steps

- a - Crop and renew by welding one step with 600x200x5 mm. on laundry access door.
- b - Ditto as above with 2 000 x 200 x 5 mm on nr. 1 port tweendeck access door.
- c - Ditto as above, but two steps 1 000 x 200 x 5 mm. forward nr. 2 hatch coaming passage.

2.8.11 - Forecastle wood access ladders (2 x 750 mm width)

- a - Scrape and sand with sandpaper, apply two coats of varnish supplied by yard.
- b - Paint railing.

2.8.12 - Nr. 2 hold hatch coaming

- a - Chip outside coaming and paint with two coats of primer and one top coat.
- b - Crop and renew four brackets 450 x 450 x 10 mm welded and riveted with four rivets each one.

2.8.13 - Nr. 2 DB tanks filling pipes

- Remove and renew the 3" pipe through deck, underneath deck, connect new pipes to existing ones with rubber hose pieces fitted with extensive cleats, to make tight.

Fix the existing pipes to the pillars with welded bars.
Access: remove and replace wood planks in way of repairs.

2.8.14 - Laundry steam pipes guard plates

- Make 25 running meters of new guard plate with 100 x 100 x 4 mm and renew old one fixing with new screws.
Fitting new guard to be after waterway chipping and painting.

2.8.15 - Natural air exhaust ventilators (21)

Around middle ship casing with 600 x 200 mm angle size

- Remove covers, chip and paint, renew rubber packings, rubber fixing bars and screws.
- Make free the hinges and dog locks.

2.8.16 - Ventilation room inlet air wire nets and covers

Eight 600 x 500 mm P. and Stb.

- Remove nets, scrape, clean, paint and refit with new screws.
- Scrape and paint venetians behind nets.
- Remove covers, chip and paint, renew rubber packings, rubber fixing bars and screws.
- Make free the hinges and dog locks.

2.8.17 - Emergency generator inlet air covers

Eight 650 x 550 mm.

- Remove covers, chip and paint, renew rubber packings, rubber fixing bars and screws.
- Make free the hinges and dog locks.
- Scrape and paint venetians.

2.8.18 - Access doors around middle ship casing

"Steel doors"

- Renew rubber packings, rubber fixing bars and screws.
Adjust and make free dog locks on following doors.

Portside

- Bakery escape access door 1 500 x 750 mm
- Port ventilation room access door 1 100 x 700 mm.
- Port tweendeck access door 1 500 x 800 mm.
- Port fuel embarkment station access door 1 000 x 750 mm.
- Luggage room 1 050 x 1 050 mm.
- Port E.R. access door 1 500 x 750 mm.

Starboard side

- Stb. galley escape access door 1 500 x 750 mm.
- Stb. ventilation room access door 1 100 x 700 mm.
- CO2 room access door 1 000 x 750 mm and make a new dog lock.
- NH3 frigo room escape 1 500 x 750 mm.
- Stb. fuel embarkment access door 1 500 x 750 mm.
- Sprinkler tank room access door 1 100 x 700 mm.
- Stb. tweendeck access door 1 500 x 150 mm.

"Wood doors"

On both ship sides, eleven wood doors 1 500 x 600 mm.

- Scrape, sand with sandpaper and apply two coats of varnish supplied by yard, on both door sides and framings.

./

Chequered plate steps below doors

- Crop and renew by welding 3 steps
700 x 200 x 5 mm.

2.8.19 - Remote control valves in way of waterway (38)

two storm valves, tweendeck drain valves, fuel tanks overflow valves and fuel oil deep tank balance valves

- Dismantle completely all transmissions.
- Renew all passage pipes with glands through decks.
- Renew rods and flexible couplings as necessary.
- Make free and workable the indicator of position shut/
/open.
- Renew two hand wheels.
- For accesses remove plywood panels in way of tweendeck crew accommodations.

2.8.20 - Bulwarks brackets

- Crop and renew by welding 16 brackets edge pipes \emptyset 55 x
x 1 200 mm. as per indication.

2.8.21 - Deck above scupper pipes

- Renew two pipes on port alleyway forwd. and after with
 \emptyset 55 x 2 500 mm.

2.8.22 - Access wood doors on after casing

Four doors

- Scrape sand with sandpaper and apply two coats of varnish
supplied by yard on both door sides and framings.
- Supply and fit one brass lock with handles.

2.8.23 - Nr. 4 hold hatch coaming

- a - Chip outside coaming and paint with two coats of primer
and one top coat.

./

2.8.24 - Promenade deck wood access ladders (1 200 mm. width)

- a - Scrape and sand with sandpaper apply two coats of varnish supplied by yard.
- b - Paint the railling.

2.8.25 - Ventilators

On forward deck:

- 2 mechanical mushroom type 500 x 2 500 mm
- 2 mushroom type 500 x 1 500 mm
- 2 cowl type 450 x 2 000

On after deck:

- 2 cowl type 625 x 5 000 mm
- 2 " " 450 x 2 500 mm
- 2 " " 300 x 1 300 mm
- 2 " " 250 x 1 800 mm

- On all ventilators make free and grease the heads, make free and put workable the butterfly valves for LRS surveyor.
- Scrape loosed paint, touch up with primer and apply one full top coat.
- On above port, 625 mm ventilator head, crop and renew by welding a small piece of plate, about 400 x 400 mm.
- On two above 250 mm ventilator heads, crop and renew by welding small pieces of plate on each one, about 200 x x 200.

2.8.26 - After roller fairleads

- Make free by heat and grease two double roller fairleads.

./

2.8.27 - Scraping and painting

- a - Front and side middle ship casing:
in way of plating repairs, fill disturbed paint areas with putty; on remaining surface, scrape loosed paint and rust.
- b - Where not specified backwards, scrape loosed paint or rust, touch up with primer and apply one top coat: bulkheads, bulwarks, ceilings, mooring devices, tanks filling and air pipes, etc..

2.9.0 - DECKS ADDITIONAL WORK

2.9.1 - Accommodation ladders (2 alluminium)

- a - Remove, scrape completely and paint with one coat of chromzinc primer and one coat of alluminium.
- b - Remove accost boats boom holders and refit with new bolts reinforcing side ladder in way.
- c - Supply and renew the axe land rollers.
- d - Supply and renew on Stb. ladder, wood side roller with axe.
- e - Chip and paint top landings framing and stanchion.

2.9.2 - Hatch covers trampaulings fixing bars

- a - Supply 10 top fixing bars with 3 400 x 75 x 9 mm.
- b - Supply 4 side bars 4 750 x 50 x 9 mm.
- c - Supply 7 side bars 3 000 x 50 x 9 mm

2.9.3 - Remove and renew Stb. after frigo chamber ventilator pipe on Stb. waterway (pipe \varnothing 75 x 400 mm with two flanges).

2.9.4 - Stb. upper deck bulwark doors

- a - Supply and weld one small stop piece for lock and one 1/2" round bar handle.

3 - CARGO SPACES

3.1.0 - NR.1 CARGO HOLD

3.1.1 - Tank top planking (180 x 60 mm planks)

- a - Remove all planks about 85 sq. mts.
- b - Renew 20 sq. mts. of planks and all bearers.
- c - Replace as before.

3.1.2 - Tank top plating

- a - Clean and chip all hold floor plating completely and clear up dirt.
- b - Apply one coat of "Jotum Bitumax N" supplied by yard.

3.1.3 - Bilges

- a - Remove all wood bilge ceiling, 13 x 2,5 mts. area each side, limbers, bearers, laths and fixing bolts, including inspect covers.
 - Renew 20 sq. mts. of timber, 8 bilge inspect covers, all laths, fixing bolts and nuts, refit on completion.
- b - Chip bilges completely, remove dirt and apply two coats of cement wash supplied by the yard (about 180 sq. mts.).
- c - Remove and renew six broken cement chocks and wood bases, chipping including shell frames in way for LRS surveyor before applying new cement composition supplied by yard.
- d - Overhaul bilge suction mud boxes and n.r. valves, clean and replace as before.
- e - Fill with water and bilge test by ship means for LRS survey.

./

3.1.4 - Piping

- a - Hammer test all piping: bilge suction, sounding, DBT filling and air pipes, tweendeck scupper pipes, etc., removing guards as necessary and refitting with all by work. Stagging included.

3.1.5 - Cargo battens

- a - To be removed completely for access works and ranged in place all cargo battens for survey.
- b - Supply and fit 100 running meters of cargo battens.
- c - Fair about 20% of fixing cleats.

3.1.6 - Chipping

- a - Chip:-forward bulkhead 200 mm up from top plating
 - after bulkhead 500 mm up from top plating
 - two after shell plate framing spaces in all length.
- b - On chipped surfaces apply two coats of primer paint.

3.1.7 - Scalling and painting

- a - After tank top planking and bilge ceiling removals, wash down all internall steel works with high pressure fresh water and pumping out the water from the bilges on completion.
- b - Scrape all rust and loose paint on internall steel work, 35% of total area to be touched up with two coats of primer and apply one full coat of finishing paint.
- c - Chip completely five hatches beams, fair indentend ends, apply two coats of primer and one top coat.
- d - Stagging included

3.1.8 - Wood hatch covers and hatch coaming (Lower tweendeck level)

- a - Range in place all hatch covers, for Free Board Survey.

3.2.0 - NR.1 CARGO LOWER TWEENDECK

3.2.1 - Cement chocks

- a - Remove cement composition from 36 framing spares, chip the flat bar, frames deck and shell plates in way of cement and apply new cement composition supplied by yard.

3.2.2 - Cement composition on deck

- a - Remove small damaged areas as per indication and apply new composition supplied by yard (allow for renewal 25 sq. mts.).

3.2.3 - Protecting wire net guard around tweendeck hatch

- a - Fair 10 panels (about 1 500 x 2 500 each one) with framed angle bar.
- Weld to deck, panels holding angle bar.
- Replace the panels with new 1/2" bolts and nuts.

3.2.4 - Cargo battens

- a - To be removed for access works and ranged in place all cargo battens for survey.
- b - Supply and fit 15 running meters of cargo battens.
- c - Fair about 10% of fixing cleats.

3.2.5 - Chipping

- a - Chip:-After bulkhead 500 mm up from deck plating.

./

- b - On chipped surfaces apply two coats of primer paint.

3.2.6 - Scaling and painting

- a - Scrape all rust and loosed paint and all internal steel work including recess and access ladders, about 20% of total area, to be touched up with two coats of primer on scraped surfaces and apply one full coat of finishing paint.
- b - Apply one full coat of paint on deck cement composition.
- c - Chip completely five hatch beams, fair indented ends, apply two coats of primer and one top coat.
- d - Stagging included.

3.2.7 - Piping

- a - Hammer test all piping in and through tweendeck: filling, air, sounding pipes, etc., removing guards as necessary and refitting with all by work.
- b - Clear up tweendeck scupper pipes, overhaul scupper valves and remot controls.

3.2.8 - Wood hatch covers (upper tweendeck level)

- a - Supply (5) new hatch covers with 3 320 x 420 x 70 mm
 " (2) " " " " 1 650 x 400 x 70 mm

The ends banded with galvanized steel plate screwed to covers and with handgrips.

- b - Range in place all hatch covers for Free Board Survey.

3.3.0 - NR.1 CARGO UPPER TWEENDECK

3.3.1 - Cement chocks

- a - Remove cement from 36 framing spaces. Chip the flat

./

bars, frames, deck and shell plates in way of cement and apply new cement composition supplied by yard.

3.3.2 - Cement composition on deck

- a - Remove small damaged areas as per indications and apply new composition supplied by yard (allow for renewal 25 sq. mts.).

3.3.3 - P. after bulkhead to W.C. room

- a - Crop, remove and renew by welding 400 x 1 000 x 6 mm steel plate.
For access remove and replace deck cement composition in way of repair.

3.3.4 - Stb. after bulkhead to ventilation room

- a - Ditto as item 3.3.3

3.3.5 - Access ladders recesses P. and Stb.

- a - Crop, remove and renew by welding, on each recess, 400 x 2 000 x 6 mm bulkhead steel plates.
For access: remove and replace: deck cement composition and two access ladders fixed by bolts.

3.3.6 - Cargo battens

- a - To be removed for access works and range in place all cargo battens for survey.

3.3.7 - Chipping

- a - Chip: after bulkheads 500 mm up from deck plating.
- Forw. bulkhead 300 mm up from deck plating.
- b - Small areas below portlights.

./

3.3.8 - Sealing and painting

- a - Scrape all rust, loosed paint on all internal steel work including recess and access ladders, and hatch coaming, about 20% of total area to be touched up with two coats of primer on scraped surfaces and apply one full coat of finishing paint.
- b - Apply one full coat of paint on deck cement composition.
- c - Chip completely five hatch beams, fair indented ends, apply two coats of primer and one top coat.
- d - Staggering included.

3.3.9 - Piping

- a - Hammer test all piping in and through tweendeck: filling, air, sounding pipes, etc., removing guards as necessary and refitting with all by work.
- b - Clear up tweendeck scupper pipes, overhaul scupper valves and remote controls.

3.3.10- Wood hatch covers (upper deck level)

- a - Supply (4) new hatch covers with 3 320 x 420 x 70 mm
- " (2) " " " " 1 630 x 420 x 70 mm

The ends banded with galvanized steel plate screwed to covers and with handgrips.

- b - Range in place all hatch covers for Free Board Survey.

3.4.0 - NR. 2 CARGO HOLD

3.4.1 - Tank top planking (180 x 60 mm)

- a - Remove all planks about 333 sq. mts.
- b - Renew 50 sq. mts. of planks and all bearers.

- c - Replace as before.
- d - See item 4.30 "NR. 2 TANKS" and 4.6.0 "NR. 3A TANKS".

3.4.2 - Tank Top Plating

- a - Clean and chip all hold floor plating completely and clear up dirt.
- b - Apply one full coat of "Jotum Betumax N" supplied by yard.
- c - See item 4.3.0 "NR. 2 TANKS" and 4.6.0 "NR. 3A TANKS".

3.4.3 - Bilges

- a - Remove all wood bilge ceiling, 110 sq. mts., limbers, bearers, laths and fixing bolts, including inspection covers.
 - Renew 40 sq. mts. of planks, 10 bilge inspect covers all laths, fixing bolts and nuts, refit on completion.
- b - Chip bilges, completely, remove dirt and apply two coats of cement wash supplied by the yard (about 360 sq. mts.).
 - See item 1.15.0, Plating removals.
- c - Remove and renew 20 broken cement chocks and wood bases, chipping including shell frames in way, for LRS Survey before applying new cement composition supplied by yard.
- d - Overhaul bilge suction mud boxes and n.r. valves, clean and replace as before.

./

- e - Fill with water and bilge test by ship means for LRS survey.

3.4.4 - Piping

- a - Hammer test all piping: bilge suction, sounding, DBT filling and air pipes, fuel and ballast pipes, tweendeck scupper, etc., removing guards as necessary and refitting with all by work. The after bulkheads pipes wood guards are to be completely removed from bulkheads for piping access. (Approx. dimensions 22 x 1 x 0,5 mts.), see item "TANKS".
- b - Stagging included.

3.4.5 - Cargo Battens

- a - To be removed completely for access works and ranged in place all cargo battens for Survey.
- b - Supply and fit 150 running meters of cargo battens.
- c - Fair about 20% of fixing cleats.

3.4.6 - Chipping

- a - Chip:-forward bulkhead 200 mm up from deck plating.
 - after bulkheads 1 000 mm up from deck plating (this bulkhead is behind fuel and ballast pipes).
 For access see item 3.4.4 "Piping".
 - P. and stb. shell plating including frames and brackets.
 See item 1 100 shell riveting.
- b - Apply two coats of primer on chipped surfaces.
- c - Stagging indented.

3.4.7 - Sealing and painting

- a - After tank top planking and bilge ceiling removals, wash down all internal steel work with high pressure fresh water and pumping out the bilges on completion.
- b - After chipping (item 3.4.6) scrape all rust and loosed paint on unchipped steel work, 30% of this surface to be touched up with two coats of primer. Apply one full coat of finishing paint on total hold inside steel work.
- c - Chip completely five hatch beams, indented ends, apply two coats of primer and one top coat.
- d - Staggering included.

3.4.8 - Wood hatch covers

- a - Supply (6) new hatch covers with 1 830 x 400 x 70 mm
 - " (6) " " " " 3 680 x 350 x 70 mm
 The ends handed with galvanized steel plate, screwed to covers and with handgrips.
- b - Range in place all hatch covers for Free Board Survey.

3.5.0 - NR.2 CARGO TWEENDECK (cargo frigo chambers (4))

3.5.1 - Deck plating renewals:

- a - Crop, remove and renew by welding deck plating with 3 000 x 1 900 x 7,5 mm. thick in way of forward corridor between frigo chambers and adjacent chambers deck.

Fit by welding one double plate 250 mm up from deck around corridor bulkheads with 6 900 x 6 mm.

./

Accesses:

- Remove and replace cork insulation on chambers and fan rooms deck and bulkheads.
- Insulation removals:
 - on deck two areas with 3 000 x 600 mm
 - on bulkheads two areas with 3 000 x 250 mm.

b - Staggering included.

3.5.2 - Deck plating treatment

- a - Chip all around hatch coaming deck plating outside chambers, apply two coats of primer and one top coat.

3.5.3 - Scaling and painting

- a - Scrape, rust or loose paint on bulkheads, ceiling and hatch coaming, touch up with primer and apply one top coat.
- b - Chip completely five hatch beams, fair indented ends and apply two coats of primer and one top coat.

3.5.4 - Frigo cargo chambers and fan room doors (8 with 1 100 x 1 600 mm)

- a - Renew all rubber packings, rubber fixing bars and screws supplied by yard.
- Remove door hinges, machine hinge pins and renew hinge brass bushes. Refit and adjust the tightening of the doors).
- Scrape and paint.

3.5.5 - Frigo cargo chambers and fan room (4 + 4)

- a - Remove insulation for deck, side and ceiling plates survey, about 300 sq. mm. on each chamber each place and refit after inspection.
- b - Wood hatch covers
 - Range in place for Free Board Survey.

3.6.0 - NR. 2 CARGO UPPER TWEENDECK

3.6.1 - Cement composition on deck

Cement composition coating over cork insulation.

- a - Remove composition on damaged areas and apply new cement (allow for 50 sq. mts.).
- b - Apply one full coat of paint on deck cement composition.

3.6.2 - P. after bulkhead repairs

- a - Weld one doubler plate 400 x 800 x 6 mm, on lower part.

3.6.3 - Protecting wire net guard around tweendeck hatch

- a - Fair 10 panels (about 1 500 x 2 500 each one) angle bar framed.
 - Weld to deck panels holding angle bar.
 - Place the panels afterwards with new 1/2" boltes and nuts.

3.6.4 - Cargo battens

- a - To be removed for access works and ranged in place all cargo battens for Survey.

3.6.5 - Chipping

- a - Chip: after bulkhead 500 mm up from deck plating.
- b - On chipped surfaces apply two coats of primer paint.

3.6.6 - Scaling and painting

- a - Scrape all rust and loosed paint on all internal steel work including recess and access ladder, about 20% of total area to be touched up with two coats of primer and one full top coat.

./

- b - Chip completely five hatch beams, fair indented ends, apply two coats of primer and one top coat.
- c - Staggering included.

3.6.7 - Piping

- a - Hammer test all piping in and through tweendeck: filling, air, sounding pipes, etc., removing guards as necessary and refitting with all by work.
- b - Clear tweendeck scupper pipes, overhaul scupper valves and remote controls.

3.6.8 - Wood hatch covers

- a - Supply (6) new hatch covers with 3 680 x 400 x 70 mm
- " (6) " " " " 1 830 x 400 x 70 mm

The ends banded with galvanized steel plate screwed to covers and with handgrips.

- b - Range in place all hatch covers for Free Board Survey.

3.7.0 - NR. 3 CARGO HOLD

3.7.1 - Tank top planking (180 x 60 mm)

- a - Remove all planks about 80 sq. mts.
- b - Renew 30 sq. mts. of planks and all bearers.
- c - Replace as before.

3.7.2 - Tank top plating

Note: There are 54 tons. of cast iron ingots, fix ballast placed on tank top portside, forward, between tunnel shaft and shell side.

- a - Remove and replace afterward all fix ballast.
- b - Chip all hold tank top plating and clear up dirt.
- c - Apply one full coat of "Jotum Betumax N", and more

two coats in way of fix ballast, supplied by yard.

3.7.3 - Bilge brackets renewals

- a - Crop, remove and renew 15 bilge brackets at portside and 21 at Stb. as per indications. Bilge brackets 75 mm flanged, riveted to frames and welded to margin and shell plates. Plate thickness 11 mm.

See midship section

Note: Work to carry out during docking time.

3.7.4 - Bilges

- a - Remove all wood bilge ceiling: limbers, bearers laths and fixing bolts including inspection covers.
- Renew 15 sq. mts. of planks, 4 bilge inspect covers, all laths, fixing bolts and nuts, refit on completion.
- b - Chip after bilge brackets renewals. remaining steel work, remove dirt and apply two full coats of cement wash supplied by yard.
- c - Remove and renew ten broken cement chocks and wood bases, chipping including sheel frames in way for LRS Surveyor before applying new cement composition supplied by yard.
- d - Overhaul bilge suction mud boxes and n.r. valves, clean and replace as before.
- e - Fill with water and bilge test by ship means for LRS Survey.

3.7.5 - Piping

- a - Hammer test all piping: bilge suction, sounding, DBT filling and air pipes, tweendeck scupper pipes, soil pipes, etc.. Removing guards as necessary and refit with all by work.

./

b - Staggering included.

3.7.8 - Cargo battens

- a - To be removed completely for access works and ranged in place all cargo battens for survey.
- b - Supply and fit 150 running mts. of cargo battens.
- c - Fair about 20% of fixing cleats.

3.7.9 - Chipping

- a - Chip: portside forward bulkhead 800 mm up from deck in way of fix ballast.

Stb. forward bulkhead 200 mm up from deck.

Port tunnel shaft bulkhead 800 mm up from deck in way of fix ballast. For access remove, wood lining in way.

Stb. tunnel shaft bulkhead 200 mm up from deck.

For access remove wood lining in way

After bulkhead 500 mm up from deck.

Ship sides including frames 5 mts. up from cement chocks.
Hold access trunk.

- b - Chipped surfaces in way of fix ballast to be painted with three coats of "Jotum Betumax N" supplied by yard. Remaining chipped surfaces to be painted with two coats of primer paint.
- c - Staggering included.

3.7.10- Scaling and painting

- a - After tank top planing and bilge ceiling, removals, wash down all internal steel work with high pressure fresh water and pumping out the bilges on completion.
- b - After chipping (item 3.7.9), scrape all rust and loosed paint on unchipped steel work, 30% of this surface to be

touched up with two coats of primer. Apply one full coat of finishing paint on total steel work surface.

c - Staggering included.

3.8.0 - NR. 4 CARGO HOLD

3.8.1 - Hold floor plating (shafts tunnel top and nr.2 central tank top plating)

a - Chip completely all plating, apply two coats of primer paint and one top coat.

3.8.2 - Cement chocks

a - Remove and renew 4 broken cement chocks, chipping including shell frames in way for LRS Surveyor. before applying new cement composition supplied by yard.

3.8.3 - Drain Wells (2)

a - Chip two drain wells and paint with two coats of bituminous paint supplied by yard.

b - Overhaul wells suction mud boxes and n.r. valves. clean and replace as before.

c - Fill with water and bilge test by ship means for LRS survey.

3.8.4 - Piping

a - Hammer test all piping: bilge suction, sounding DBT filling and air pipes, tweendeck scupper pipes, soil pipes, etc.. Removing guards as necessary and refit with all by work.

b - Staggering included.

3.8.5 - Cargo battens

- a - To be removed completely for access works and ranged in place all cargo battens for Survey.
- b - Supply and fit 100 running mts. of cargo battens.
- c - Fair about 20% of fixing cleats.

3.8.6 - Chipping

- a - Chip: Forward bulkhead 200 mm up from floor.
After bulkhead 500 mm up from floor.
Ship sides completely including frames and brackets.
Hold access trunk.
- b - Chipped surfaces to be painted with two coats of primer.
- c - Stagging included.

3.8.7 - Scaling and painting

- a - Wash down all internal steel work with high pressure fresh water and pumping out the bilges on completion.
- b - After chipping (item 3.6.6) scrape all rust and loosed paint on unchipped steel work, 30% of this surface to be touched up with two coats of primer and apply one full coat of finishing paint on total steel work surface.
- c - Chip completely five hatch beams, fair indented ends, apply two coats of primer and one top coat.
- d - Stagging included.

3.8.8 - Wood hatch covers

- a - Supply (4) new hatch covers with 3 850 x 400 x 70 mm
- " (2) " " " " 3 850 x 350 x 70 mm
- " (2) " " " " 3 850 x 300 x 70 mm

./

The ends banded with galvanized steel plate screwed to covers and with handgrips.

b - Range in place all hatch covers for Free Board Survey.

3.9.0 - THICKMEN DETERMINATIONS (In holds and tweendecks)

a - Allow for 300 checks by ultrasonic system or similar as per Owner's Representative indications.

4 - DOUBLE BOTTOM, STRUCTURAL TANKS AND COFFERDAMS

Manhole doors particulars:

fitted with 5/8" studs, nuts and washers.

Joints:

for fuel oil are gaskoid or similar, for water are rubber with two canvas layers.

General work specification:

- Open up, remove by shipyard means, send ashore and dispose of any remaining fluids, from fuel oils. Make gas free tests on fuel tanks as necessary for cleaning or access works.

Clean completely and clear up dirty for Surveys. Check all inside piping by hammer test and fix any loose fixing piping clamp.

Make all double bottom and structural tanks hydraulic test for first leakage check and repairs on completion. Test again for LRS surveyor approval. Drain out, all tanks and dry fuel tanks. Overhaul access doors studpins and renew same defective ones.

Renew door joints and close after works.

Fresh water for tests supplied by the yard must be included in the tender.

Before tests the tank top plating must be very well clean and dry to LRS satisfaction.

Open, check seats or side rings tightness on chests of valves, renew all defective studs and nuts, overhaul spindle and nuts, renew joints and packings of overflow fuel oil sluice valves (one on each fuel tank).

./

4.1.0 - Fore peak tank

Frames 158/stem

Capacity 69 c.m. (fresh water)

One manhole on upper tweendeck.

a - Drain out, open, scrape all loosed cement, clear up dirt and apply one full coat of cement wash supplied by the yard.

Close on completion with all by work.

b - Overhaul intermediate valve and its remote control.

4.2.0 - Nr. 1 double bottom tank

Frames 131/158

Capacity 98 cm (fresh water)

Three manholes in nr. 1 hold

a - Ditto as for item 4.1.0 "a"

4.3.0 - Cofferdam between Nr.1 and 2 DB tanks

Frames 130/131

Two manholes in Nr. 2 hold

a - Scrape loose paint and rust, clear up dirt and apply one full coat of anticorrosive paint.

4.4.0 - Nr.2 P. and Stb. double bottom tanks

Frames 111/130

Capacity 2 x 80.5 cm (fresh water)

Four manholes in nr. 2 hold

a - Tank top damage:

Crop, remove and renew by welding part of tank top plating with 1 000 x 1 200 x 12 mm thick on Stb. tank in way of hatch.

b - Ditto as for item 4.1.0 "a".

4.5.0 - Cofferdam between Nr. 2 and 3 DB tanks

Frames 110/111

Two manholes in Nr. 2 hold

a - Ditto as for item 4.3.0

4.6.0 - Nr. 3 P. and Stb. Double bottom tanks

Frames 102/110

Capacity 2 x 45 cm Marine Diesel oil)

Four manholes in Nr. 2 hold.

a - Open up, gas free, remove all scale and clear up dirt.
Close on completion with all by work.

4.7.0 - Nr. 3 A P. and Stb. Double bottom tanks

Frames 93/102

Capacity 55 cm (Marine Diesel oil)

Four manholes in Nr. 2 hold.

a - Ditto as for item 4.6.0

b - Crop, remove and renew by welding part of tank top plating in way of after bulkhead with 600 x 11 000 x 11 mm thick.

- Make as per old samples and fit by welding on new plate, two bilge wells. For access: remove and refit bilge suction pipes.

- Fit by welding one doubler plate with 3 000 x 12 000 x 8 mm thick on forward ballast deep bulkheads in way of new deck plating. This doubler to be fitted behind bulkhead piping.

- For access see item 3.4.4 "a" removal of pipe guards, crop and reweld guard chairs and pipe chair,

4.8.0 - Nr. 4 P. and Stb. Double Bottom Tanks

Frames 84/93

Capacity 2 x 58 c.m. (Marine Diesel oil)

Two manholes in Diesel deep tanks and two in cofferdam 83 x 84 frames.

a - Ditto as for item 4.6.0 "a"

b - Remove cement box and cement coating on tank top plating between frames 92/93, in way of repairs. Fit by welding a doubler plate with 750 x 3 000 x 8 mm thick.

4.9.0 - Cofferdam between Nr. 4 and Feed Water Tanks

Frames 83/84

Two manholes in E.R.

a - Ditto as for item 4.3.0 "a"

4.10.0- P. and Stb. Feed Water Tanks

Frames 80/83

Capacity 2 x 22.5 c.m. (fresh water)

Two manholes in E.R.

a - Ditto as for item 4.1.0 "a"

4.11.0- Cofferdam around E.R. sump and drain fuel tanks

Frames 65/81

Two manholes in E.R.

a - Ditto as for item 4.3.0 "a"

4.12.0- E.R. Center Drain Oil Fuel DB Tank

Frames 74/80

a - Open up, gas free, remove all scale, clean and clear up dirt. Close on completion with all by work.

4.13.0- E.R. Center L.O. Sump DB Tank

Frames 68/73

- a - Remove ashore about 8 Tons. of L.O. and dispose of.
- b - Open up, clean thoroughly and clear up dirt.
- c - Blank necessary flanges, pipes and make hydraulic test.

4.14.0- Nr. 5 P. and Stb. Double Bottom Tanks

Frames 63/80

Capacity 2 x 73 c.m. (Fresh water)

Four manholes in E.R.

- a - Ditto as for item 4.1.0 "a"

4.15.0- Nr. 5 P. and Stb. Double Bottom Tanks

Frames 36/33

Capacity 2 x 119 c.m. (Fresh water)

Two manholes in E.R. two in tunnel shaft and two in Nr.3 hold

- a - Ditto as for item 4.1.0 "a".

Note: See item 1.14.1 plating repairs.

4.16.0- Nr. 7 Double Bottom Tank

Frames 15/36

Full of cast iron ingots as fixed ballast

Two manholes in shaft tunnel

- a - Open up the doors only for Lloyd's Survey.

4.17.0- After peak tank

Frames 0/13

Capacity 192 c.m. (fresh water)

./

a - Ditto as for item 4.1.0 "a".

4.18.0 - Midship Deep Ballast Tank

Frames 92/98

Capacity 323 c.m. (ballast)

Two manholes in wine store

a - Ditto as for item 4.1.0 "a"

4.19.0 - Midship Center O.F. Deep Tank

Frames 85/92

Capacity 218 c.m. (Marine Diesel Oil)

One mahhole in galley

a - Ditto as for item 4.6.0 "a"

b - Weld one corrugated doubler plate on forward bulkhead at 2nd tweendeck level with approx. 500 x 1 500 x 8 mm thick.

For access: remove deck and bulkhead cork insulation in mineral and fish provisions frigo chambers in way of repairs and replace as before on completion.

c - Staggering included.

4.20.0 - Midship P. and Stb. Inner Deep Tank

Frames 85/92

Capacity 2 x 93 c.m. (Marine Diesel Oil)

Two manholes in galley and next corridor

a - Ditto as for item 4.6.0 "a".

4.21.0 - Midship P. and Stb. Outer F.O. Deep Tank

Frames 85/92

Capacity 2 x 147 c.m. (Marine Diesel Oil)

Two manholes in galley and next corridor

a - Ditto as for item 4.6.0 "a"

- b - Remove cement boxes (2) in way of balance valves, (2 sluice valves 14" Ø fitted on forward bulkhead inside ballast deep tank).
- Remove valves from bulkheads.
- These valves are to completely watertightened, so after grinding a hydraulic test is required. Allow for repairs in workshop includ access for removal, by cropping one passage on tank top plating.
- Replace on bulkhead with new joints.

4.22.0 - Nr.1 Midship Forward Tunnel Tank

Frames 36/53

Capacity 114 c.m. (fresh water)

One manhole in nr. 3 hold

- a - Ditto as for item 4.1.0 "a".

4.23.0 - Nr. 2 Midship after Tunnel Tank

Frames 23/36

Capacity 95 c.m. (fresh water)

One manhole in nr. 4 hold

- a - Ditto as for item 4.1.0 "a"

4.24.0 - Transom Space

With Wood Lining

- a - Remove and replace wood floor
- b - Chip completely steel work underneath wood floor, apply two coats of primer paint.
- c - Remove and replace one timber on each ship shell side for inspection.
- d - Remove wood in way of rudder post trunk door for access. Refit.

./

4.25.0 - Rudder Post Trunk

- a - Remove and replace rudder access trunk door and chip trunk inside and apply two coats of primer and one top coat.

5 - ACCOMMODATIONS AND COMPARTMENTS

5.1.0 - ON NAVIGATING BRIDGE DECK

5.1.1 - TSF Station Window

- a - Renew the rubber packing supplied by yard and make water tight, hose test on completion.
- Supply and renew window zinc drain box.
- For access release electric cables and remove plywood lining in way of window and replace after works.
- Paint disturbed work.

5.1.2 - Radio Officer Cabins (3)

- a - Paint bulkheads, ceilings and doors.
- b - Clean, polish the furniture.

5.2.0 - ON OFFICERS' DECK

5.2.1 - Captain's Day-room, bedroom and toilet

- a - Front windows - Renew the rubber packings supplied by yard and make watertight, hose test on completion, ma ke free and workable windows operating devices, remo- ve and replace zinc window drain boxes.

See item 2.3.6.

- b - Clean and polish bulkheads and furniture in day and bed-room and paint ceiling.
 - c - Scrape, rust or loose paint on ceiling and bulkheads, touch up and apply one coat of finishing paint in toilet.
- ./

5.2.2 - Chief Officer's Bathroom

- a - Scrape, rust or loose paint on ceiling and bulkheads, touch up and apply one coat of finishing paint.

5.2.3 - After bathroom and W.C.

- a - Ditto as per item 5.2.2

5.2.4 - Officers' pantry

- a - Ditto as for item 5.2.2

5.2.5 - Officers' mess-room

- a - Clean and polish all bulkheads and furniture. Paint the ceiling.

5.2.6 - Deck Officer cabins and others on deck (8)

- a - Paint bulkheads ceilings and doors.
- b - Clean and polish the furniture.

5.3.0 - ON BOAT DECK

5.3.1 - NRS. 1-3-5-2-4-6 Cabins (side cabins)

- a - Clean and polish bulkheads and furniture, paint ceilings and 4 bed bunks in each cabin.
- b - In nr. 5 cabin: remove plywood panel in way of window, remove tarket tilling and floor composition and weld one doubler 500 x 600 x 6 mm in way of underneath bath room.

5.3.2 - Above cabins bathrooms

- a - Scrape, rust or loose paint on ceiling and bulkheads, touch up with primer and apply one finish coat.

- b - In nr. 1 cabin bathroom - remove and replace tube side panel, crop and renew by welding one plate with 600 x 200 x 6 mm in after bulkhead.
- c - In nr. 3 cabin bath-room - Supply and renew one sheathed plastic laminate tube side plywood panel.
- d - In nr. 6 cabin bathroom - crop and renew by welding one plate with 2 500 x 200 x 6 mm in way of central bulkhead skirting.

5.3.3 - P. and Stb. luxe cabins (2)

- a - Bed and dayroom - clean and polish bulkheads and furniture, paint ceilings.

5.3.4 - E-F-G-H cabin

- a - Clean and polish bulkheads and furniture, paint ceilings and 6 bed bunks in each cabin.
- b - Cabin "E" - remove cork tilling and deck composition (about 15 sq. mts.), chip deck plating, allow for fitting by welding a doubler plate with 2 x 2,5 mts. 6 mm thick. Replace new deck composition and floor plastic tilling (tarket or similar) supplied by yard.

5.3.5 - Above cabins bathrooms

- a - Scrape, rust and loose paint, touch up with primer and apply one coat of finishing paint.

5.3.6 - Front and side cabin windows (25)

- a - Renew rubber packings supplied by yard and make watertight, hose test on completion. Make free and workable windows closing devices.
- b - Remove and replace zinc drain boxes, allow for 75% renewal.

./

- c - Wood venetians - for windows access remove and replace, supply and fit 20 missing blind wood strips, revarnish, and make free and workable.
- d - Mosquito screens - for windows access remove and replace. Renew screen gauzes, revarnish framings, make free and workable.

Note: For windows accesses see item 2.4.4

5.3.7 - Forward alleyway P. and Stb. W.C. and Stb. bathroom

- a - Scrape, rust and loose paint, touch up with primer, apply one top coat on bulkheads and ceilings.

5.3.8 - Entrance hall and alleyways

- a - Clean and polish bulkheads, doors and ladders wood top railling.
- b - Paint ceilings and ladders iron balustrade.

5.4.0 - ON PROMENADE DECK

5.4.1 - Smokerroom, P. and Stb. veranda cafe

- a - Front and side windows (15) - renew all rubber packings supplied by yard and make watertight, hose test on completion. Make free and workable, grease windows closing devices.
- b - Zinc drain boxes - for windows access remove and replace. Allow for renewal of 8 shaped plate 600 x 800 mm drain boxes.
- c - Wood venetians - for windows access remove and replace. Allow for small repair on 8 venetians. Revarnish, make free and workable.

- d - Mosquito screens - for windows access remove and replace, renew all screen gauzes, revarnish framing, make free and workable.

Note: For windows accesses see item 2.5.2

- e - Remove loose paint, putty and paint ceiling and electric fittings.
- f - Clean and polish all smokeroom bulkheads and doors.
- g - Remove loose paint putty and paint both verand as cafe bulkheads and ceilings.
- h - Furniture - Clean and polish: 7 tables, 18 chairs, 1 writing desk, 1 bookcase.
Brush and paint: 8 wicker tables and 27 wicker chairs.
- i - Renew one meter long of rotten wood skirting in way of Port bulkhead, beside bar.
- j - Clean and polish bar counter and 6 bar benches.

5.4.2- Frigo bar counter

- a - Remove and renew all wood front framing, (200 x 800 mm with four frigo doors 550 x 600 mm) framing made of wood boards with 70 x 30 mm. For access release and refit after works insulation covering plates and refill insulation in way. Fit frigo box door on new framing and adjust.
For access remove and refit top stainless sink plate.

5.4.3- Passanger cabin on deck (14)

- a - Scrape, loose paint, putty and apply one top coat on bulkheads and ceilings.
- Paint 4 bed bunks on each cabin.

./

5.4.4 - Above cabins bathrooms

- a - Scrape, rust and loose paint, touch up with primer and apply one top coat.
- b - Cabin nr. 11 bathroom - renew partially W.C. sink air pipe 1 1/2" x 600 mm with accessories.

5.4.5 - Purser Cabin

- a - Clean and polish furniture.

5.4.6 - Doctor cabin and consulting room

- a - Wash and paint bulkheads and ceilings.
- b - Clean and polish furniture.

5.4.7 - Chief Steward cabin

- a - Ditto as for item 5.4.6 "a"
- b - " " " " 5.4.6 "b"

5.4.8 - Above cabins, bathrooms

- a - Scrape, rust and loose paint, touch up with primer and apply one top coat on bulkheads and ceilings.

5.4.9 - Entrance hall and alleyways

- a - Remove two plywood panels on each after alleyway with 1 800 x 1 200 mm and renew by special wood sheathed as existing ones.
- b - Clean and polish all wood bulkheads and doors.
- c - Scrape, loose paint and repaint all ceilings and electric fittings.
- d - Scrape and polish wood top railing and paint iron balustrade on access ladders.

5.4.10- Barber's Shop

- a - Remove one towel electric heater, on its place, fit two wood sheathed doors with lock some model of existing ones (each door 850 x 300 mm).
- b - Clean and polish bulkheads
- c - Paint ceiling.

5.5.0 - ON UPPER DECK

Forward spaces and under decks

5.5.1 - Alleyways:

- a - Post Alleyway - crop and weld one new plate with 600 x x 150 x 5 mm in way of forward WC door sill
For access remove and replace 650 x 300 mm of tilling in way.
- b - Stb. Alleyway - weld a doubler plate 10 000 x 300 x 6 mm on Stb. bulkhead skirting as per indications.
- c - Chip Alleyways deck plate and bulkheads 400 mm up from deck, scrape remaining bulkheads steel work and ceiling. Apply two coats of primer on chipped areas and one full top coat.

5.5.2 - P. and Stb. bathrooms and WC including entrances

- a - Chip completely bulkheads and ceilings, apply two coats of primer and one top coat.
- b - Remove and renew, as per indication WC wood doors framings 600 x 1 700 mm, screwed to steel bulkheads and fit existing doors.

5.5.3 - Stb. Gutter Way

- a - Fair and weld small indent on bottom edge in way of deck.
For access remove and replace wood shelf.

Midship Casing5.5.4 - Dinning Saloon

- a - Front and side windows (17) - renew all rubber packings supplied by yard and make watertight, hose test on completion. Make free and workable, grease windows closing devices.
- b - Zinc drain boxes - for window access remove and replace. Allow for renewal of 9 shaped plate 600 x 800 mm drain boxes.
- c - Wood venetians - for window access remove and replace. Allow for small repairs in 9 venetians. Revarnish, make free and workable.
- d - Mosquito screens - for window access remove and replace, renew all screen gauzes, revarnish framings, make free and workable.
- e - Plywood panels in way of windows - for access remove and replace.
- f - Remove loose paint putty and paint ceilings and electric fittings.
- g - Clean and polish all bulkheads and doors.
- h - Furniture - clean and polish 70 chairs, 15 tables (only legs), 6 small cupboards and 1 large.
- i - Renew 15 meters long of wood skirting 50 x 50 mm on front bulkhead.

5.5.5 - Pantry - (Dinning Saloon)

- Remove for scraping the pantry frigo cabinet.
- Remove to outside (deck), one electric stove approx. 1 500 x 800 x 600 mm.
- For access remove and replace plywood bulkhead in way of door.
- Remove existing stainless dish-wash.

./

- Supply and fit one stainless doubler wash sink with drip tray approx. dimension 1 600 mm length.
- Connect sink drain to existing pipe underneath deck.
- Connect existing fresh and salt cold and hot water lines to new place using approx. 5 mts. each line of 1/2" galvanized steel pipe with accessories.
- Fit on bulkhead in way of wash sink one stainless guard plate approx. 1 600 x 600 mm.
- Supply and install one domestic frigo 220/250 litres capacity for use with 220 V D.C. current, electric feeding installation must be included.
- Supply and fit on front bulkhead in way of removed frigo cabinet, one dish rack made by existing sample with 1 300 x 1 700 mm.
- Remove, supply and renew all floor unslip tilling and cement composition, weld all around floor pantry one flat bar 100 mm high.
- For access remove and replace central table and bar frigo machine, recharge this one with Freon 12 and test.

5.5.6 - Nrs. 20 - 22 - 24 - 26 - 23 - 25 - 27 - 29 Cabins

- a - Remove by scraping loose paint and apply one full coat on bulkheads and ceilings.
- b - Clean and polish the furniture.
- c - Scrape and paint 4 bunks on each cabin.
- d - Remove and renew 8 floor plastic tiles in way of bunk legs.

5.5.7 - Entrance Hall after, bathroom WC, and entrances

- a - Scrape loose paint, touch up with primer and apply one full coat on bulkheads and ceilings of 2 entrances, 6 WC and 2 bathrooms.

- b - Remove tilling and cement composition on port entrance, 6.5 sq. mts. fit by welding one doubler plate 6 mm thick on this area and replace cement composition with welded cleats and new tilling supplied by yard.
- c - Remove and replace from port centre WC bulkhead loosed asbestos composition 1 200 mm up from deck.

5.5.8 - Entrance Hall

- a - Clean and polish bulkheads and doors.
 - b - Scrape loose paint and apply one full coat on ceiling and electric fittings.
 - c - Clean and polish ladders wood top railing, scrape completely old paint and rust of ladders iron balustrade, apply two coats of primer and one top coat.
 - d - Remove completely floor plastic tilling and deck composition approx. 60 sq. mts.. Replace new composition with cleats and new plastic tiles (Tarket or similar), supplied by yard.
- Particulars: one plain colour with two decorate strips 125 mm. wide all around. Different shade of strips as original.

5.5.9 - P. and Stb. ventilation rooms (2)

- a - Scrape, rust and loose paint, touch up with primer paint and apply one top coat on bulkheads, ceilings and equipment.

5.5.10- P. Tweendeck access (frames 78/81)

- a - Chip deck plating, apply two coats of primer paint and one top coat.
- b - Scrape, rust and loose paint, touch up with primer paint and apply one top coat on bulkheads and ceiling.

./

5.5.11- Emergency battery room

a - Ditto as above "a" (Item 5.5.10)

b - " " " "b" (" ")

5.5.12- Emergency generator room

a - Ditto as above "a" (Item 5.5.10)

b - " " " "b" (" ")

5.5.13- Port E.R. access

a - Ditto as above "a" (Item 5.5.10)

b - " " " "b" (" ")

5.5.14- CO2 Room

a - Ditto as above "a" (Item 5.5.10)

b - " " " "b" (" ")

5.5.15- Sprinkler tank room

a - Ditto as above "a" (Item 5.5.10)

b - " " " "b" (" ")

5.5.16- Deck Office

a - Paint ceiling and bulkheads

b - Clean and polish furniture: writing desk, bookcases
and two chairs.5.5.17- Stb. Tweendeck access (Frames 64/68)a - Chip deck plating, apply two coats of primer paint and
one finishing coat.b - Scrape, rust and loose paint, touch up with primer paint
and apply one top coat on bulkhead and ceiling.

./

- c - For access remove and replace NH₃ gas cylinder stored on bulkheads.

5.5.18- Chief Engineer's accommodation

- a - Clean and polish bulkheads and furniture and doors in day and bed rooms.
- b - Paint ceilings in day and bed rooms.
- c - Scrape, rust and loose paint, touch up with primer paint, apply one top coat on bulkheads and ceiling in bathroom.

5.5.19- Engineer's bathroom and WC

- a - Scrape, rust and loose paint, touch up with primer paint, apply one top coat on bulkheads ceilings doors and framings.

5.5.20- Engineer's mess room

- a - Clean and polish bulkheads and furniture and doors.
- b - Paint ceiling.

5.5.21- Pantry (mess room)

- a - Paint bulkheads, ceiling and furniture.

5.5.22- Engineer's and electrician's cabins (8)

- a - Paint bulkheads, ceilings and doors.
- b - Clean and polish the furniture.

5.5.23- 3rd Class cabins 4 (Frames 34/42)

- a - Paint bulkheads, ceiling, doors, bunks and metal wardrobes.

5.5.24- Two bathrooms and two WC (Frames 39/42)

- a - Scrape, rust and loose paint, touch up with primer and apply one top coat.

5.5.25- 3rd Class dinning room and lounge

- a - Paint bulkheads and ceilings.
- b - Clean, polish or paint the furniture.

5.5.26- Pantry (3rd class dinning-room)

- a - Paint bulkheads, ceiling and furniture.

5.5.27- Alternative for items 5.9.23 to 5.9.26

Conversion into a large dinning-room with pantry, in the space between frames 30/42.

See attached plan.

Please quote in separate (price difference)

- a - Remove all furniture.
 - Remove all electric installation, but leave feeding cables for other places.
 - Remove all plywood divisional bulkheads as per plan.
 - Redress disturbed cement deck composition and paint.
 - Remove showers and sinks from bath and WC rooms and repair deck disturbed tilling.
 - Crop one passage on central bathrooms divisional bulkhead and weld necessary stiffeners in way of new opening.
 - Supply and fit one stainless double dish wash sink with drip tray cement sink drains to existing soil pipes, connect existing salt water and fresh cold and hot water bathroom lines to the sink taps these ones for supply too.
 - Make and fit one cupboard as per plan with the stainless steel sheathed top.
 - Make and fit 4 settees as per plan with pergamoid or similar overlayed, seats and backs.

./

- Supply 56 armchairs (plain wood).
- Supply and fit 10 wood tables as per plan.
- Fit frigo cabinet besides lifter box.
- Make necessary electric lightning installation with suitable and necessary light fittings. Shipyard's supply.
- Repair all disturbed work and paint completely.

AFTER CASING

5.5.28- Hospital

- a - Bathrooms (4) - scrape, rust and loose paint, touch up with primer and apply one top coat on bulkheads and ceilings.

5.5.29- Front Tweendeck access

- a - Chip deck plating and paint with two primer coats one top coat.
- b - Scrape, rust, touch up with primer and apply one top coat.

5.6.0 - ON 1st TWEENDECK

5.6.1- Galley

- a - From forward bulkhead, remove one electric stove and one working counter.
- Crop and renew galvanized plate bulkhead lining 1 300 mm up from deck 8 mts long with 9 shaped plates to cover bulkhead stiffeners. Redress asbestos insulation in way before fitting new plates.
- b - Remove completely the brine pipes galvanized plate sheathed wood box with 12 000 x 1 600 x 700¹ mm along St. ship shell side and replace after works with new galvanized plate.

./

- Remove and store in bags all cork insulation and replace after works.
- Chip shell plating and deck including frames in way of box and apply one coat of betuminous paint supplied by yard.
- Scrape and brush all brine pipes.
- Hydraulic test and repairs of pipes before close the box.
- c - Remove 15 sq. mts. of broken or slack non slipping tiles and all cement composition in way. Supply and fit new tiles.
- d - Ventilation exhaust ducts and range canopy.
Remove all nets and four duct lengths for access, clean completely inside and replace as before.
- e - Chip after and P. bulkheads 500 mm up from deck and apply two coats of primer.
- f - Scrape, rust and loose paint, touch up with primer and apply one full top coat on bulkheads and ceiling.
- g - Galley double range with 2 000 x 1 800 mm size, four ovens, "Moorwoods" maker.
- Remove all heating plates and ovens resistances to overhaul.
- Scrape completely inside and outside steel work and paint with two coats of heat resistance paint supplied by yard.
- Overhaul oven doors and adjust hinges and locks.
- Remove bus bars, brush and refit renewing broken porcelain insulators with new screws and shunts.

- Open up 4 control boxes with four "Arrow" type commutators and signal lamps each one. Renew all burnt shunts and retight terminals.
- Reassemble range, check insulation and make heating test.
- h - Four grill plates - similar work as for galley range "g".
- i - One Toaster - similar work as for galley range "g".
- j - Galley kneeding machine - dismantle completely, make necessary adjustments and reassemble.
 - Electric motor: complete overhaul, skim commutator, renew brushes and ball bearings.
 - Scrape and paint completely.
- k - Potatoes peeler - remove bowl and bottom dish and renew the abrasive.
 - Electric motor: as for "j".
 - Scrape and paint completely.
- l - Four working benches with 3 500 x 900 x 700 mm.

Scrape, rust and paint, completely from structure paint with two coats of primer and one finishing coat.

 - From one of them, remove definitely front, back and side plates.
 - Make 4 new 2 mm galvanized plate drawers with 650 x 700 x 180 mm to fit on above benches.
- m - Electric stove -
 - Scrape completely and paint.
 - Remove two sliding doors with 900 x 600 mm made in steel plate and framed with steel bar.

./

- n - Steam pan (2)
 - Scrape outside and paint.
- o - Clear all scuppers.

5.6.2 - Scullery

- a - Crop and renew galvanized plate bulkhead lining 1 800 mm up from deck 5 mts. long with 5 shaped plates to cover bulkhead stiffeners. Redress asbestos insulation before fitting new plates.
- b - Make and renew 3 grating plates 450 x 350 mm fixed by screws on ventilation exhaust duct.
- c - Chip shell plate in way of dale, frames and brackets in way of ceiling (5 sq. mts.), apply two primer coats.
- d - Scrape, rust, touch up with primer paint and apply one full top coat on bulkheads ceiling and frigo cabinet.
- e - Clear all scuppers.

5.6.3 - Bakery

- a - Remove piping steel guard near after bulkhead 2 200 x x 350 x 180 mm fixed by screws, renew completely using 4 mm thick steel plate.
 - Before closing, chip the place and pipes, apply two primer coats of paint.
- b - Make and renew one length of ventilation air duct with 1 300 x 230 x 100 mm galvanized steel plate.
- c - Scrape, rust and loose paint, touch up with primer, apply one full coat on bulkheads ceiling and working bench.

- d - Two baker ovens - "Moorwoods" maker.
 - Remove resistances to overhaul.
 - Overhaul bus bars and insulators.
 - Renew burn shunts and retight terminals.
 - Adjust door, hinges and locks.
 - Scrape and paint completely.
 - Reassemble check insulation and make heating test.
- e - Baker kneeding machine -
 - Scrape and paint completely.
 - Electric motor - open up, complete overhaul, skim commutator, renew brushes and ball bearings.

5.6.4 - Pastry room

- a - Renew partially cofferdam air pipe 2 1/2" x 500 mm through deck.
- b - Clear scuppers.

5.6.5 - Provision store access alleyway

- a - Remove piping steel guard near watertight bulkhead 4 800 x 500 x 180 mm fixed by screws, renew two lengths with 1 600 and 1 300 mm using 4 mm thick steel plate.
 - Crop and renew by welding one flat bar with 1 000 x 150 x 8 mm.
 - Before closing, chip the place and pipes, remove dirt and paint with two primer coats.
- b - Crop and renew by welding one plate with 500 x 500 x 5 mm on bakery after bulkhead.

./

- c - Chip 400 mm up from deck all around bulkhead and apply two coats of primer.
- d - Scrape, rust, touch up and apply one full top coat of paint on bulkheads and ceilings.
- Brush all divisional bulkhead nets before painting.

TWEENDECK, CREW ACCOMMODATIONS

5.6.6 - Cabins (30) (as per plan)

General work:

- Scrape, rust on ceilings in front of portlight and touch up with primer.
- Wash down and paint: decks, bulkheads ceilings doors and portlights recess.
- Paint wardrobes and steel bunks.
- Clean and revarnish wood bunks, wardrobes and chest-of-drawers.

a - Nr. 20 cabin (P.)

- Remove deck cement composition 1 000 x 2 500 mm fit by welding same areas doubler plate 8 mm thick and replace new composition.

For access, remove and replace two bunks and one chest-of-drawers.

b - Nr. 9 cabin (Stb.)

- Remove deck cement composition 3 000 x 1 500 mm. Crop, remove and renew by welding same area of 8 mm thick plate and replace new composition.
- For access, remove and replace 4 wood bunks.

c - Nr. 11 cabin (Stb.)

- Remove deck cement composition 4 000 x 1 500 mm.
Crop, remove and renew by welding same area of 8 mm thick plate and replace new composition.
- For access, remove and replace 4 wood bed bunks and bulkhead plywood panels.

d - Nr. 17 cabin (Stb.)

- Remove deck cement composition 1 100 x 2 200 mm.
fit by welding same area doubler plate 8 mm thick and replace new composition.
- For access, remove and replace one bunk and two wardrobes.

e - Nr. 21 cabin (Stb.)

- Remove completely deck cement composition 10 sq. mts.
double by welding same area with 8 mm thick plate and replace new composition.
- For access, remove and replace 4 bed bunks 4 wardrobes and 2 chest-of-drawers.

f - Nr. 23 cabin (Stb.)

- Remove deck cement composition 1 000 x 2 500 mm.
fit by welding same area doubler plate 8 mm thick and replace new composition.
- For access, remove and replace 2 bunks and 1 chest-of-drawers.

5.6.7 - Bathrooms and WC on deck (6 + 10) respectively

General work:

- Allow for total scraping in order to remove completely, rust and loose paint, consider half surface for touching

./

up with primer and apply one full coat of paint on bulk - heads ceilings and doors.

- Clear all scuppers and shower drains and prove drainage.

a - Bathroom and WC in front of nr. 9 cabin

- Crop, remove and renew by welding one plate 1 000 x 1 200 x 6 mm on WC alleyway bulkhead.

- Remove all deck tilling and cement composition in entrance, shower room and 2 WC rooms approx. 9 sq. mts.. Crop, remove and renew by welding deck plating in way of 8 mm thick. Crop, remove and renew by welding WC doors sills bulkhead plates two with 150 x 1 200 x 6 mm..

Supply and replace new tiles and composition rebuilding the shower place.

For access, remove and replace two closets, WC doors framings; remove and refit - soil scuppers and sewage pipes.

5.6.8 - Crew mess-room (P. frames 28/36)

a - Remove deck cement composition 1 000 x 2 000 mm. fit by welding same area doubler plate 8 mm thick and replace new composition.

For access, remove and replace two frigo cabinets.

b - Cut and renew 1 000 x 1 300 mm of ventilation air duct plywood lining.

c - Remove 4 plywood bulkheads bent panels and refit on right position, cut and partially, renew one of them 1 300 x 1 200 mm.

For access, remove and replace one dish wash sink bench and release pipes and taps from bulkhead.

d - General painting bulkheads ceiling and deck.

5.6.9 - Crew recreation room (Stb. Frames 59/64)

a - General washing and painting including deck.

5.6.10- Pantry (P.O. messroom) (Stb. Frames 56/59)

a - Remove deck cement composition 1 000 x 4 000 mm fit by welding same area doubler plate 8 mm thick and replace new composition.

For access remove and replace dish wash sink bench.

b - General washing and painting including deck.

5.6.11- P.O. mess room (Stb. frames 51/56)

a - Remove 2 plywood bulkhead bent panels and refit on right position.

For access remove and replace one dimension type frigo cabinet.

b - General washing and painting including deck.

5.6.12- P.O. recreation room (Stb. frames 27/31)

a - Remove one plywood bulkhead bent panel and refit on right position.

b - General washing and painting including deck.

5.6.13- Crew accommodation alleyways

a - Remove and replace deck cement composition 2,5 sq. mts. in front of P.O. mess room.

b - General washing and painting including decks.

./

5.7.0 - ON 2ND TWEENDECK

5.7.1- Provisions frigo chambers

- 1 - mineral room
- 1 - meat room
- 1 - fish room
- 1 - vegetable room
- 1 - handling room

General work

- Doors (5)
- Renew all rubber packing, rubber fixing bars and screw supplied by yard. Doors dimensions 900 x 1 600 mm. Remove door hinges, machine hinge pins and renew hinge brass bushes. Refit and adjust the tightening of the doors. Scrape and paint completely.
- Scrape all loose on bulkheads and ceilings, apply one coat of proper paint for frigo chambers "Glassomax" paint or similar.
- Remove all deck protecting grating in order to complete cleaning and replace on completion after renewing all broken rafters.

a - Meat Room

- Chip slack areas on insulation cement covering and replace new cement. Allow for 5 sq. mts. to repair.
- Crop and renew by welding on Port bulkhead in way of deck one plate with 1 500 x 200 x 6 mm. For access, remove and replace inside chamber, one wood panel 1 500 x 1 900 mm. Remove and replace deck and bulkhead cork insulation in way of repair.

./

b - Fish room

- Chip slack areas on insulation cement covering and replace new cement. Allow for 1.5 sq. mts. to repair.

c - Vegetable room

- Same work as above. Allow for 5 sq. mts. to repair.
- Fair bent galvanized steel plate shelves reinforce holding system fitting light 30 x 600 mm galvanized angle bar beams and sixteen 30 Ø x 500 mm galvanized pipe legs as per existing ones.

d - Handling room

- Chip slack areas on insulation cement covering and replace new cement. Allow for 4 sq. mts. to repair.
 - Renew two wood boards 1 400 x 200 and 500 x 400 mm on brine pipes guard.
 - Fix by screws one electric cables leading tray with 2 mts. long.
 - Renew the bottom wood piece (sill) of door framings.
- Particulars: 1 000 x 300 x 100 mm galvanized steel plate sheathed.

5.7.2- Wine store room

- Chip completely deck plating, apply one coat of primer about 20 sq. mts..
- Double this area with welded 8 mm thick plate.

5.8.0 - MACHINERY SPACES5.8.1- CO2 Gas Compressors Room (On Stb. E.R. flat)

- a - Chip completely deck plating approx. 20 sq. mts., paint with two coats and one coat finishing paint.

./

- b - Crop, remove and renew by welding partially deck plating 2 500 x 3 700 x 8.5 mm. thick.

Accesses:

- Remove and refit brine pumps insulation box.
- Disconnect three brine pumps suction pipes in way of deck.
- Remove and refit three brine pumps.
- Crop on deck level common brine pumps seating with 1 800 x 900 x 500 mm and remove. Refit.
- Underneath deck, crop and reweld leading cables and piping chairs.

- c - Brine piping - For L.R.S. survey

- Remove wood insulating brine piping boxes, store insulating cork into bags and remove these ones away of the repairs place:

- 1 box on shell side with 6 cm
- 1 box on forward bulkhead with 3.5 cm
- 1 box insulating brine pumps and suction with 1.5 cm.

Renew the boxes with new wood and fill with cork after works.

- Drain brine system.
- Scrape and brush piping and valves; chip bulkheads and deck including frames in way of boxes and apply one coat of bituminous paint supplied by yard.
- Allow for renewal 10 mts. of brine 2 1/2" steel pipe inside boxes.

Note: This total length means various small pipe pieces threaded or welded at ends and some are straight and others bend pipes.

- Open up 25 sluice valves 3" the bigger ones, grind, inspect spindles and nuts. Renew packing and close.
- Hydraulic test of brine pipes L.R.S. before closing the insulating boxes.
- Refill brine system with new brine prepared by yard.
- General washing, paint disturbed work and apply two coats of varnish on insulating wood boxes, supplied by yard.

d - CO2 Gas Piping

- Remove all old insulation from gas piping, 70 mts. length. Renew pipe cork insulation in halves using proper glue, cover insulation with wire net and special cement composition.

5.8.2 - NH3 Gas Compressor Room (On Stb. 1st tweendeck)

- a - Chip completely deck plating and equipment seatings, approx. 20 sq. mts., paint with two coats of primer and one coat of finishing paint.
- b - Crop and renew by welding two cock chest supporting plates with 600 x 500 x 10 mm each one.
- c - Brine piping - (For L.R.S. survey).
 - Remove wood insulating brine piping boxes, store insulating cork in bags and remove these ones to outside of the repairs place:

1 box on forward bulkhead with 2.5 cm
 1 " " Port " " 1 cm

./

- Renew the boxes with new wood and fill with cork after works.
- Scrape and brush piping valves and cocks; chip bulk - heads and deck in way of boxes; apply one full coats of betuminous paint supplied by yard.
- Hydraulic test of brine pipes for L.R.S. before closing the insulating boxes.

d - NH₃ Gas Piping -

- Remove all old insulation from gas piping 40 mts. length. Renew pipe cork insulation in halves using proper glue cover insulation with wire net and special cement composition.

For access: remove electric installation from ceiling wood piping guard.

Remove and refit ceiling wood piping guard 4 500 x 1 200 mm, 50% of wood to renew.

e - NH₃ Evaporator

- Remove all old insulation, renew as original applying glued cork slabs covered with wire net and special cement composition.

Evaporator dimensions: Ø 580 x 2 950 mm

- f - Make and renew one length of ventilation exhaust duct with 1 200 x 200 x 130 mm galvanized steel plate.

- g - General washing, paint disturbed work and apply two coats of varnish on insulating wood boxes supplied by yard.

5.8.3 - Engine-Room

- a - General washing including E.R. trunk up to boat deck.
- b - Pressurized water hose wash tank top plating for survey and underfloor piping arrangement in way. Pumping water from bilges by shipyard means.
For access, remove and replace floor platform plating and gratings.
- c - Chip and scrape port and starboard bilges and apply two coats of primer.

Note: "b" and "c" must be done during dry dock time.

- d - Wash all engine-room equipment.

5.8.4 - Shafts tunnel including recess

- a - Chip and scrape shaft tunnel, recess well, clean and apply two coats of primer.
- b - Pressurized water hose wash tank top for survey and under floor piping arrangement in way.
- c - General washing.

6 - MACHINERY

6.1.0 - MAIN MACHINERY

6.1.1 - Main Engine (2)

2 Doxford 56 LBA - Bore 560 mm - Strokes 700/980 mm

2 500 BHP at 136 rpm

1 central scavenge pump each

- a - Open crankcase doors, clean for works, remove dirt and overhaul crankcase relief devices.
- b - Check afloat bed plate holding down bolts tightness and crankshaft deflections. Report results.
- c - Check for cracks on crankshaft main bearings transverse girders and ribs joining weldings (by penetrating liquids).
- d - Gauge pistons compression spaces before and after works and check inner dead centers position. Report results.
- e - Open all cylinders, remove all sixteen pistons. Clean pistons and liners.
- f - Open pistons, check piston heads and piston rods studs; gauge and adjust piston heads and piston rods clearances; make piston heads hydraulic test; check ring grooves and rings gaps and report results before and after works. Remove rings and overhaul ring grooves. Renew all rings by new ones stored on board. Check piston bearing rings tightness and wear. Reassemble pistons.

./

- g - Gauge all cylinder liners, report results.
- h - Remove from liners and upper piston guidesoil scraper rings. Inspect grooves and take rings groove and top clearances; refit on completion.
- i - Test crankshaft halves fore and after flange coupling bolts tightness.
- j - Open out upper piston transverse beams center bearing, renew rubber rings, gauge diameters, take clearances. Remove transverse beam lubricate cooper pipes for annealing and refit.
Take transverse beams side rods bearing top caps, cut by machining 3 mm in order to fit thicker shims supplied by yard, remove pins ridges, adjust, take clearances and report results.
Boring out three transverse beams and renew two, on each one, machined cast iron bearing as per instructions.
- k - Adjust upper pistons transverse beams guide shoes on top guides.
- l - Release side rods for inspection of rod and nut threads and refit after survey.
- m - Remove and overhaul all cylinders safety valves, came driven starting valves, non return air starting valves and air cocks.
Machine seats and lids, grind in renew packings, adjust test under working load and refit on completion with all by work.
- n - Overhaul starting air valves operating gears, check air operated pistons, rings and springs, operating lever bushes and rollers. Report clearances.

- o - Dismantle all lower pistons cooling water system. Overhaul and adjust lever bearings and spring loaded glands (48) and elbow pipes glands; renew packings. Refit on completion and test under working pressure with all by work.
- p - Renew on workshop air scavenge pump air intake felts. Shipyard supply.
Open engine scavenge air trunk, clean remove dirt, renew doors joints, overhaul safety valves, grind up seats and lids and close on completion.
- q - Overhaul, air scavenge pumps, suction and delivery valves, seats, guards and springs.
- r - Only on port side engine:
Adjust air scavenge pump crankshaft bearing, crosshead bearings and slipper guides. Take clearances before and after works. Report results. Remove piston and piston rod for inspection and refit afterwards. Check piston for cracks by magnaflux process.
Check scavenge air pump piston rod extension flanged bush (in top cover) clearances and piston rod upper and lower seal rings. Report results.
- s - Overhaul control manoeuvring transmission, levers, links, rods, etc.. Check pinned connections clearances. Smooth lubricating oil grooves and holes.
- t - Remove all lengths of air starting pipes, clean and refit after survey, renewing joints, bolts, etc. as necessary.
- u - Open out and overhaul, engine thrust blocks. Check thrust pads and shaft bearing clearances, report results; renew after ring oil retaining felt, and close on completion after survey.

v - Only on Portside engine:

Overhaul engine camshaft driving chain, overhaul aprocket and jockey whells and bearings. Check clearances and report results.

State chain stretched branck "slacking" after works and adjust on completion.

x - Reassemble engine after works and refit all guards skylights, platforms, handrails, floor plates removed for access to repairs. This access must be included.

y - Make engine running mooring test and then sea trials (see work complement).

6.2.0 - SHAFTING

6.2.1 - Shafts and intermediate bearings

- Open out and overhaul 16 shafting tunnel bearings for survey. Re-sharp shaft oil scraper edges. Check oil deflectors and oil driving disc tightness. Take bearing housing and shaft clearances before and after works. Overhaul cooling water inlet and outlet valves.

6.3.0 - MAIN ENG. AUXILIARY EQUIPMENT

6.3.1 - Main Eng. Lub. Oil Coolers (2 Serck)

- Open up, drain lub. oil, remove ashore and dispose of.
- Clean water side tubes.
- Scrape covers and water chambers, apply two coats of paint.
- Renew cathodic protection anodes.
- Overhaul sea water inlet and outlet 125 mm stop valves.

./

- Reassemble cooler renewing packings and joints and make running test.

6.3.2 - Main Eng. Distilled Water Cooler (2 Serck)

- Open up.
- Clean salt water side tubes.
- Scrape covers and water chambers, apply two coats of paint.
- Renew cathodic protection anodes.
- Overhaul sea water inlet and outlet 300 mm stop valves.
- Reassemble cooler renewing packings and joints and make running test.

6.3.3 - Fuel priming pumps (2 forward and after)

- a - Open out, check plungers clearances. Overhaul valves and chain driving gear. Adjust bearings. Report results before and after works.

6.3.4 - Main Eng. S.W. Circulating Pump

Drysdale upright pump - 350 ton/h - 1250/1950 rpm - 46 HP

- a - Open out rotor casing overhaul:

Rotor scaling rings, rotor casing, rotor spindle bush.
Renew rotor spindle gland packing.

6.4.0 - AUXILIARY INDEPENDENT MACHINERY

6.4.1 - Steering gear

J. Hastie & Co. - Electro-hydraulic-Hele Shaw pump two rams.

- a - Open out pump for survey. Overhaul pistons, gudgeon pins, floating rings ball bearings cylinder body ball

./

bearings, spindle oil seal.

Renew joints and close on completion.

- b - Overhaul flexible coupling to driving motor.
- c - Check floating lever connecting links and levers pins clearances.
Ream holes and renew worn or defective pins.
- d - Replace system oil level and make running test, including hand operating control.

Auxiliary Steering Gear

- a - Overhaul components transmission gears and connections.
- b - Make running test.

6.4.2 - Emergency Air Compressor

Weir - Tandem cylinders steam driving

- a - Open out for survey and overhaul: pistons, piston rings, valves, crank and main bearing, coolers, etc. and refit on completion renewing packing and joints.
- b - Make running test.

6.4.3 - Emergency fire bilge tunnel pump

Drysdale - Rotary Centrex 150 Ton/h - 1 300/1 750 rpm -
21 HP Vertical Centrifugal

- a - Open out rotor casing overhaul:
Rotor, scaling rings, rotor casing rotor spindle bush.
Spindle main bush bearing.
Lubricator.
Renew rotor spindle gland packing.

- b - Overhaul on alternative air pump (two cylinders-driving gear; crankshaft main and crank bearings; gear lubricating oil pump, pistons and piston rings; delivery spring loaded valves.
Having old one per sample make and fit a new heli-
coidal driving gear wheel.
- c - Overhaul: air pump control valve and needle float ball controlled valve.
- d - Reassemble pump after survey and works renewing packings and joints.

6.5.0 - INDEPENDENT AUXILIARY EQUIPMENT

6.5.1 - Fresh water hydrophor tank

Diam. 1.20 mts.

Height 2.50 mts.

- a - Open up, chip internally, remove dirt and apply two full coats of cement wash.
- b - Close on completion and make test.
- c - Supply and renew one 2 1/2" size outlet sluice brass valve.

6.5.2 - Salt water hydrophor tank

Diam. 1.20 mts.

Height 2.50 mts.

- a - As per item 6.5.1 - "a" and "b".

6.6.0 - AUXILIARY DIESEL ENGINES

6.6.1 - Nr.1-2-3-4 Auxiliary Diesel Engines

Mirrlees Bickerton and Day Ltd.

8 cylinders - 300 HP - 4 Stroke 460 rpm

./

- a - Remove and send ashore to specialized workshop all fuel injection pumps (32) Mod. AIAZ - 140 - 2 - S 72 (BRYCE). Overhaul completely all fuel injection pumps, allow for renewal all plungers and barrel elements.
- b - Remove all governors for complete overhaul, adjust and renew all ball bearings.
- c - Remove overhaul and test 4 tachometers.
- d - Refit all removed material and test under working conditions.

6.6.2 - Emergency auxiliary diesel engine

Crossley Brothers Ltd. England

5 cylinders - 85 HP - 4 Stroke

- a - Check crankshaft deflections before and after works.
- b - Open up all working cylinders, remove pistons and clean cylinders covers, liners, pistons and crankcase.
- c - Overhaul air inlet and exhaust, safety valves on covers; machine seats and lids, grind up and test under load conditions, renew packings and joints and refit on covers.
- d - Check piston rings gaps and groove clearances and report results.
Renew any defective or worn ones.
- e - Overhaul connecting rod top and bearings.
Take clearances gauge gudgeon pins and report results.
- f - Smooth liners ridges, gauge and report results.
- g - Adjust crankshaft main bearings and con. rod big end bearings.
Take clearances and report results.
- h - Overhaul: camshaft driving gears and report clearances.

- i - Overhaul: camshaft bearings.
- j - Overhaul centrifugal cooling water circulating pump.
- k - Overhaul fuel injection pumps (5) (Bosh type).
- l - Release and remove exhaust and air inlet manifolds, clean completely, renew joints, studpins, bolts, etc., as required.
- m - Reassemble engine after survey, take piston compression spaces clearances and make running test under full load. Check governor speed variations when on sudden break out of current access.

6.7.0 - BOILER

Works for B.S. Certificate Renewal.

6.7.1 - Combine Exhaust and Fired Boiler

Cochran - 5' 6" Diam. x 14' 9" height

W.P. 125 Lbs/sq. inch

- a - Clean externally combustion furnace, gas chamber, smoke box, fire tubes and clear up dirt. Overhaul smoke box cover doglocks.
For access, remove burner and piping.
- b - General scale internally, clean, clear up dirt and water wash afterwards.
- c - Expand all fire tubes on both ends.
- d - Remove for access to above works bolted chambers covers, renewing combustion chamber ~~portable~~ cover fire brick lining and refit afterwards. (Shipyard supply bricks).

./

e - Open out for survey boiler mountings:

one main stop valve
 one double safety valve with remote control
 two combined feed valves (n.r. and stop)
 one blow down valve
 one sum valve
 one salinometer cock
 three test cocks
 one level gauge with cocks.

Machine seats and lids, grind in check seats and stud pins tightness, renew packings and joints and refit after survey.

f - Overhaul all boiler insulation mattresses, scrape and paint boiler with two coats of heat resisting paint.

g - Remove and renew all furnace and back plate firebrick (supplied by the yard). Test furnace collar ring for cracks by magna flux system.

h - Reassemble boiler, make working test and adjust safety valves under steam pressure for Lloyd's Survey on completion.

6.8.0 - BOILER AUXILIARY EQUIPMENT

6.8.1 - Auxiliary steam condenser

- a - Release and remove front and rear covers.
- b - Scrape and wire brush water boxes and covers internally and paint. Supply and fit zinc anodes.
- c - Clean tubes inside and tube plates.
- d - Make hydraulic test applying necessary blank flanges.
- e - Overhaul studpins, renew nuts and washers as necessary and refit cover with new joints.

6.9.0 - CARGO SPACE COOLING PLANT MACHINERY

For L.R.M.C. Completion

6.9.1 - After CO2 Gas Compressor (Nr.2)

Built - J & E HALL, LTD.

Type - Vertical

Cylinder - 1

Electric driving

a - Open up compressor, remove cylinder cover and piston.

Overhaul: suction and delivery valves,
piston, piston rings and piston rod,
crankshaft main and crank bearings.

b - Open up and overhaul suction and delivery valves.

c - Remove and renew by ship's spaces found defective
parts including white metal gland seal packing.

d - Reassemble compressor, charge with new gas and make
running test.

6.9.2 - Forward and after CO2 Gas Compressors electric driving motors and starters (2)

BHP - 20

RPM 1125/1500

AMPS 78

Volts 220 DC

a - Remove ashore two motors, open, clean, dry, revarnish,
skim commutator, renew brushes supplied by shipyard
and close.

b - Remove ashore for complete overhaul. Smooth starters
fixed and mooring contacts, overhaul springs and ad-
just under voltage over charge devices.

./

6.9.3 - Forward brine pump (Nr.1)

- a - Open up for survey and overhaul: casing, rotor, shaft, supply and renew shaft ball bearing and close with new joints and packings.

6.9.4 - Three brine pumps motors and starters

- a - As per item 6.9.10 "a"
- b - " " " 6.9.10 "b"

6.9.5 - Cooling plant condensers circulating pump (1)

- a - Open up for survey and overhaul and repairs: remove and renew casing and rotor sealing rings, smooth shaft in way of packing and close with new joints and packing.

6.9.6 - Circulating pump driving motor and starter

- a - As per item 6.9.10 "a"
- b - " " " 6.9.10 "b"

6.9.7 - Upper and lower gas condensers (4)

- a - Remove ashore, open up, remove coils, clean and make hydraulic test with frigo oil, scrape inside shell covers and paint, supply and renew zinc anodes. Close and replace.

6.9.8 - Evaporator

Double closed HALL type

- a - Remove completely the insulation, open the body, clean internally and check thickness on bottom and side plates by ultrasonic system.
- b - Scrape the coils and make hydraulic test with frigo oil supplied by yard, blanking pipes as necessary.

./

- c - Close the body and make hydraulic test, blanking pipes as necessary.
- d - Supply and fit new insulation; glued cork slabes covered with wire net and special cement composition.

e - Overhaul following attached valves:

two gas inlet valves
 " " outlet "
 " separator gas and oil drains
 one brine inlet valve
 " " outlet "

open up, machine seats and lids, ~~grind in~~ and close renew ing packings and joints.

6.9.9 - Brine head tank

Fitted on the funnel

- a - Having removed old one as per sample, make a new head tank of 8 mm thick steel plate flanged with \varnothing 800 x x 1 280 mm, top cover fitted with bolts and four welded small pipe pieces for piping connections.
 Place the new tank inside ~~funnel~~ and make and ~~connect~~ new 2 1/2" pipes including deck passage.
 Refit, dismantle wood box and fill with cork.

6.9.10- Cargo chambers and provision rooms electric motor fans (4 + 4 respectively)

- Remove fans ashore, open, clean, dry, revarnish skim com mutators, supply and renew brushes and ball bearings, close, replace and test.

./

6.10.0- ELECTRICAL PLANT

6.10.1 - Megger Test

- a - Make a complete megger test of electrical power and lighting installation, including cables from generators to main switchboard and report results.
- b - Carry out the necessary repairs according readings found and Superintendent's decision.

6.10.2 - Switchboards (220 V)

Main, secondary and auxiliary switchboards and fuse boxes, general work specification.

- a - Clean completely switchboards, casing and recesses.
- b - Check bus bars connections and secondary circuits, contacts tightness and cables and terminal insulation.
- c - Overhaul main and secondary automatic circuit breakers. Adjust under working load all overload and low voltage protecting equipment.
- d - Remove check and refit voltmeters and ammeters.
- e - Clean and smooth voltage regulators fixed and movable contacts.
- f - Overhaul dipoles and fuse breakers.
- g - Overhaul switchboard structure framings, platings doors, etc..

./

A - Power and lighting switchboard and fuse boxes to be overhauled

a - Main switchboard in E.R.

Four main circuit breakers to be modified overload protection system.

The shipyard must supply the necessary equipments as following.

- The overboard protection should be made by Measuring Controllers of electric type, with a measuring scale in D.C. Amperes and an adjustable set of contacts for overboard tripping of circuit breakers.

The D.C. information for Measuring Controllers should be picked up from shunts, inserted in the outgoing bars of each circuit breaker. The feeding power for Measuring Controllers should be taken from the main bus bars through a static converter 220 V. DC/220 V.AC.. The set of contacts for tripping should establish the circuit of a timing relay, that opens the circuit of circuit breakers under-voltage coil. The equipment may be one of the following makers or equivalent:

- Philips
- Neuberger
- Artman & Braun

The DC generators to be protected are 220 V 900 Amp. and the scales of Measuring Controllers should be 1 200 Amp. full scale.

b - Emergency Switchboard

In emergency generator room

- Supply and renew one 60 Amp. fuse breaker.

- c - Emergency distribution boxes (Nr. 1A - 2A)
In emergency generator room
Six 30 Amp. circuits each one
- Supply and renew three 30 Amp. fuse breaker.
- d - Emergency fuse box (Nr. 3 - 3A)
In navigating room
- Twelve 15 Amp. circuits each one.
- e - Emergency fuse box (Nr. 4)
On boat deck
- Four 15 Amp. circuits.
- f - Emergency fuse box (Nr. 5)
In 1st class bar
- Six 15 Amp. circuits.
- g - Emergency fuse box (Nr. 6)
In 1st. class pantry
- Five 15 Amp. circuits.
- h - Emergency fuse box (Nr. 7)
Beside laundry door
- Eight 15 Amp. circuits.
- i - Emergency fuse box (Nr. 8)
In front of bakery
- Eight 15 Amp. circuits
- Supply and renew 2 fuse breakers.
- j - Emergency fuse box (Nr. 10)
Beside 2nd Chief Steward
- Four 15 Amp. circuits.

k - Emergency fuse box (Nr. 11A)

Near sailors cabins

- Four 15 Amp. circuits.

l - Emergency fuse box (Nr. 11B)

In Hospital Alleyway

- Six 15 Amp. circuits.
- Supply and renew 3 fuse breakers.

Note: Renew partially Nr. 11A and 11B boxes common feeding cable (20 mts. of cable 1 x 6 sq. mm. with junction box).

m - Fuse boxes (50A - 50B)

Beside laundry door

- Four 20 Amp. circuits
- Ten 20 Amp. circuits.

n - Fuse boxes (51)

Near electric workshop

- Four 20 Amp. circuits.

o - Fuse box (51A)

Beside laundry door

- Eight 20 Amp. circuits
- Supply and renew 4 fuse breakers.

p - Fuse box (51B)

Near bakery

- Ten 15 Amp. circuits.

q - Fuse box (51C)

In after winch switchboard

- Six 15 Amp. circuits.

- r - Fuse box (52)
Near fitters cabin
 - Three 50 Amp. circuits.
 - Supply and renew 1 fuse breaker.
- s - Fuse box (52A)
In engineer's accommodations
 - Six 15 Amp. circuits.
- t - Fuse box (52B)
Near baker cabin
Ten 15 Amp. circuits.
 - Supply and renew 1 fuse breaker.
- u - Fuse box (52C)
Near greaser's cabin
 - Six 15 Amp. circuits.
- v - Fuse box (53)
In galley entrance
 - Six 60 Amp. circuits.
 - Supply and renew 2 fuse breakers.
- w - Fuse box (53A)
In deck Officers' pantry
 - Twelve 15 Amp. circuits
 - Supply and renew 2 fuse breakers.
- x - Fuse box (53B)
On boat deck
 - Twelve 15 Amp. circuits
 - Supply and renew 2 fuse breakers.

- y - Fuse box (53C)
 - In 1st Class Bar
 - Twelve 15 Amp. circuits.
- z - Fuse box (53D)
 - In 1st Class Bar
 - Twelve 15 Amp. circuits
 - Supply and renew 2 fuse breakers.
- a.a - Fuse box (53 DA)
 - In 1st Class Bar
 - Twelve 15 Amp. circuits.
- b.b - Fuse box (53 E)
 - In 1st. Class Pantry
 - Ten 15 Amp. circuits
 - Supply and renew 2 fuse breakers.
- c.c - Fuse box (53 EA)
 - In 1st. Class Pantry
 - Ten 15 Amp. circuits.
- d.d - Fuse box (53 F)
 - In 3rd Class Pantry
 - Six 15 Amp. circuits.
- e.e - Fuse box (55)
 - Near electric workshop - Four 60 Amp. circuits
 - Supply and renew 2 fuse breakers.
- ff - Fuse box (55 D)
 - In 1st Class Pantry
 - Three 50 Amp. circuits.
- gg - Fuse box (55 E)
 - In Engineer's Pantry
 - Four 15 Amp. circuits
 - Supply and renew 4 fuse breakers.

hh - Fuse box (55 F)

In 3rd Class Bar

Four 15 Amp. circuits

- Supply and renew 3 fuse breakers.

ii - Fuse box (55 G)

In crew recreation room

Six 15 Amp. circuits.

- Supply and renew 4 fuse breakers.

jj - Fuse box (55)

Near P.O. Mess room

Four 60 Amp. circuits

- Supply and renew 1 fuse breaker

kk - Fuse box (57)

In Galley

Four 100 Amp. circuits.

ll - Fuse box (18)

In Galley

Three 100 Amp. circuits.

mm - Fuse box (18 B)

In Galley

Eight 30 Amp. circuits

- Supply and renew 8 fuse breakers.

nn - Fuse box (18 C)

In Galley

Six 60 Amp. circuits

- Supply and renew 2 fuse breakers.

./

- oo - Fuse box (30)
 - Near electric workshop
 - Two 60 Amp. circuits.
- pp - Fuse box (30A)
 - Beside Laundry Door
 - Four 50 Amp. circuits.
 - Supply and renew 4 fuse breakers.
- qq - Fuse box (30 B)
 - In front of Filters bath-room
 - Four 50 Amp. circuits.
- rr - Fuse box (33)
 - In Galley entrance
 - Four 60 Amp. circuits.
- ss - Fuse box (?)
 - Inside funnel
 - Four 30 Amp. circuits
 - Supply and renew 4 fuse breakers.
- tt - Fuse box (33 D)
 - Four 30 Amp. circuits
 - Supply and renew 2 fuse breakers.
- uu - Fuse box (33 N)
 - In Provision Store
 - Four 30 Amp. circuits.
- vv - Fuse box (34 A)
 - Inside Funnel
 - Four 30 Amp. circuits
 - Supply and renew 2 fuse breakers.

xx - Fuse box (3⁴ B)

In Provision Store

Six 15 Amp. circuits

- Supply and renew 1 fuse breakers.

6.10.3 - Electric Power Generators (4)

Maker - W.H. ALLEN SONS & CO. LTD.

KW - 200

Volts - 220

AMP - 910

RPM - 460

General work specification

- a - Make insulation test before and after works. Report results.
- b - Remove guard covers and armatures.
- c - Clean internally main and auxiliary poles and framing.
- d - Clean and overhaul armature shaft bearing, brush gear and commutator. Skim commutator and undercut commutator segments isolating micas.
- e - Make armature coils insulating test, revarnish, dry, re-fit and adjust bushes on commutator.
- f - Test field and serie winding coils insulation, revarnish, dry and test terminals tightness.
- g - Reassemble generators, test main insulation and overhaul circuit breaker. Adjust protecting devices under working load. Report results and gaps.
- h - Make a full load running test with ship means.
- i - Take aggregated diesel motor crankshaft deflections before and after repairs. Report results.

./

6.10.4 - Emergency batteries

NIFE Type

- a - Remove ashore 190 elements, drain electrolit, wash, overhaul elements, refit with new electrolit, charge, replace on board and test.

6.10.5 - Ventilation electric motors and startersGeneral work

- 1 - Disconnect, release, remove to workshop
 - 2 - Make megger test before and after works
 - 3 - Remove covers, overhaul bearings and armature shafts.
(Allow for 50% renewal of ball bearings)
 - 4 - Clean armature and framing windings, overhaul coils terminals and connecting, poles fixing devices tightness
 - 5 - Skim armature commutator, under cut commutator segments mica insulation, smooth commutator and overhaul brush gears
 - 6 - Revarnish coils and armatures winding, make oven drying, reassemble motor, supply and adjust brushes
 - 7 - Make motors running test
 - 8 - Smooth starters fixed and moving contacts overhaul springs and adjust under voltage over charge devices
 - 9 - Refit motor on board reconnect and make running test motors and starters with ship's current supply check speed
 - 10 - Check main and starter insulation
- ./

Electric motors and starters to be overhauled

- a - S1 Ventilator in P. Nr 2 Tweendeck
Hugh J. Scott 5.4 HP - 700/900/RPM - 220 V - 22.5 Amp.
- b - S2 Ventilator in St. Nr. 1 Tweendeck
Hugh J. Scott 5.4 HP - 700/900/RPM - 220 V - 22.5 Amp.
- c - S3 Ventilator in P. Ventilation room
Hugh J. Scott 4.15 HP - 700/950/RPM - 220 V - 18 Amp.
- d - S4 Ventilator in Stb. Ventilation room
Hugh J. Scott 4.15 HP - 700/950/RPM - 220 V - 18 Amp.
- e - S5 Ventilator in Provision Store
Hugh J. Scott 1.79 HP - 700/950/RPM - 220 V - 8.3 Amp.
- f - P1 Ventilator on Stb. after Bridge deck
Hugh J. Scott 6.75 HP - 700/980/RPM - 220 V - 27 Amp.
- g - P2 Ventilator on P. after bridge deck
Hugh J. Scott 3.25 HP - 700/950/RPM - 220 V - 13 Amp.
- h - P3 Ventilator in P. Ventilation room
Hugh J. Scott 4.15 HP 700/950/RPM - 220 V - 18 Amp.
- i - P4 Ventilator in Stb. Ventilation room
Hugh J. Scott 4.15 HP 700/950/RPM - 220 V - 18 Amp.
- j - P5 Double Ventilator on after boat deck
Hugh J. Scott 6.4 HP - 700/980/RPM - 220 V - 25.5 Amp.
- k - P6 Double Ventilator on after casing top deck
Hugh J. Scott 4.3 HP - 700/950/RPM - 220 V - 17.6 Amp.

./

- l - E1 Exhauster in forward winch switchboard room
Hugh J. Scott 2.7 HP - 700/950/RPM - 220 V - 12.5 Amp.
- m - E2 Exhauster on Port Bridge deck
Hugh J. Scott 1.9 HM - 700/950/RPM - 220 V - 8.4 Amp.
- n - E3 Exhauster on Stb. forward Boat Deck
Hugh J. Scott 1.9 HP - 700/950/RPM - 220 V - 9.4 Amp.
- o - E4 Exhauster on Port inside funnel
Hugh J. Scott 6.25 HP - 650/850/RPM - 220 V - 26.5 Amp.
- p - E5 Exhauster on Stb. inside funnel
Hugh J. Scott 6.25 HP - 650/850/RPM - 220 V - 26.5 Amp.
- q - E6 Exhauster on deck after skylight
Hugh J. Scott 1.45 HP - 700/950/RPM - 220 V - 7 Amp.
- r - E7 Exhauster on deck near after mast
Hugh J. Scott 1.45 HP - 700/950/RPM - 220 V - 7 Amp.
- s - E8 Exhauster on after casing top deck
Hugh J. Scott .75 HP - 700/950/RPM - 220 V - 4.1 Amp.
- t - E9 Exhauster in NH3 Frigo Compressor room
Hugh J. Scott .30 HP - 800/1050/RPM - 220 V - 1.65 Amp.
- u - E10 Exhauster on battery room bulkhead
Hugh J. Scott .30 HP - 800/1050/RPM - 220 V - 1.65 Amp.
- v - E11 Exhauster in Provision Store
Hugh J. Scott 12 HP - 700/950/RPM - 220 V - 5.75 Amp.
- w - T1 Nr.1 Hold Exhauster in Carpenter Workshop
S. Hodgson - 11 BHP - 1650/2180/RPM - 220 V - 4.8 Amp.

./

x - T2 and T3 Nr.2 Hold Exhauster on upper deck near of forecastle front bulkhead

S. Hodgson - 1.1 BHP - 1650/2180/RPM - 220 V - 4.8 Amp.

y - T4 and T5 Nr. 2 Hold Exhauster in Nr. 2 Tweendeck

S. Hodgson - 1.1 BHP - 1650/2180/RPM - 220 V - 4.8 Amp.

z - T6 and T7 Nr.3 Hold Exhauster - on after promenade deck

S. Hodgson - 1.1 BHP - 1650/2180/RPM - 220 V - 4.8 Amp.

a.a - E.R. Ventilators (Reversible type) 4 on boat deck

Windsor Engineering 4.6 BHP - 835/1100/RPM - 220 V - 19 Amp.

b.b - On all above radial or axial flow ventilators and exhaustors remove impellers, scrape, remove all rust and paint with one coat of primer paint.

6.11.0 - PIPING

General Work Specification

Valves

Open out, chip and paint internally and externally. Check seats and gate rings tightness. Machine seats and lids, grind in. Overhaul valve spindles, gate nuts and covers and remote control gears.

Make studpins hammer test, and renew as necessary: studpins, bolts, nuts, washers split pins. Renew as original standard and dimension, packings and joints.

Close valves and reconnect controls checking its operatibility with all by work for access.

Pipes

Make thickness strength and flanged or renewed connection tightness hammer test. Overhaul piping fixing clamps, chairs. Paint all renewed pipes as before.

6.1.1.1 - E.R. Salt Water Piping System

- a - Open out and overhaul as above specified the following valves
 - Five 200 mm intermediate sluice valves
 - Ten between 75/150 mm valves
- b - Remove and renew partially one length of galvanized pipe
 - Ø 100 x 1 500 mm with 1 bend and 1 flange.
 - Near E.R. forward pillar.
- c - Remove and renew one galvanized pipe length of bilge pump discharge to S.W. main line - Ø 125 x 3 000 mm with 1 bend and 2 flanges. For access, remove and refit one 55 mm cooper pipe.
- d - Remove and renew one galvanized pipe length GS pump discharge pipe to generators Portside cooling line - Ø 100 x 2 000 mm with two bends and two flanges.
- e - Remove and renew one pipe cross piece Ø 100 x 200 x 300 mm with 3 flanges on generators Portside cooling line.
- f - Idem - Ø 100 x 200 x 300 mm with 4 flanges.
- g - Remove and renew one galvanized straight pipe length Ø 100 x 1 000 mm with two flanges.
- h - Remove and renew one pipe cross piece Ø 125 x 300 x 300 mm with 4 flanges on generators Portside cooling line.
- i - Remove and renew one galvanized straight pipe length - Ø 100 x 3 000 mm with two flanges.
- j - Remove and renew completely cooling fuel valves tank line - Ø 30 x 12 000 mm with bends and flanges.
- k - Remove and renew under emergency air compressor one galvanized pipe length - Ø 150 x 2 000 mm with two bends, two flanges and one welded 25 mm short pipe piece with flange
- l - From above pipe up to air compressors, remove and renew two galvanized pipe lengths - Ø 150 x 1 200 mm and Ø 150 x 1 700 mm with one bend and two flanges each one.

For access, remove and refit four pipe lengths of \varnothing 150 mm size.

- m - Remove and renew one pipe cross piece \varnothing 150 x 500 x 500 with 4 flanges, between air compressors.
- n - Remove and renew one galvanized pipe length - \varnothing 150 x 1 700 mm straight with two flanges connected with above cross piece.
- o - Remove and renew one galvanized pipe length \varnothing 150 x 2 500 mm with two bends, two flanges and one welded \varnothing 50 mm short pipe piece with flange, connected to above pipe.
- p - Remove and renew one pipe cross piece 350 x \varnothing 150 mm with 4 flanges, connected to above pipe.
- q - Remove and renew one galvanized pipe length \varnothing 125 x 2 700 mm straight pipe, with two flanges, connected to above pipe.
- r - Remove and renew one galvanized pipe length \varnothing 125 x 3 000 mm straight, with two flanges, connected to above pipe.
- s - Remove and renew one straight pipe length - \varnothing 150 x 1 000 mm with two flanges and one welded piece with flange \varnothing 125 x 300 mm of inlet lub. oil cooling water line.
- t - Remove and renew one 90° small bend \varnothing 200 x 400 with one welded piece \varnothing 125 x 300 mm with 3 flanges.
- u - Remove and renew one 90° bend \varnothing 250 x 500 with two flanges.
- v - Remove and renew one galvanized pipe length \varnothing 250 x 1 800 mm with one bend, two flanges and one welded \varnothing 50 mm short piece with flange.

For access, remove and replace one length of pipe \varnothing 300 mm and one cross piece \varnothing 125 x 200 mm.

w - Remove and renew one galvanized pipe length - \varnothing 55 x 2 000 mm with two bends and two flanges on M.E. upper guides circulating line.

x - Remove and renew one galvanized pipe length \varnothing 225 x 2 700 mm, with two bends and two flanges, inlet upper destiled water cooler.

For access, remove and replace one chest of 4 fuel valves and respective piping. Pay attention that this access is very difficult.

6.11.2 - E.R. Ballast piping system

a - Open out and overhaul as specified the following valves: twenty five since 75 up to 150 mm valves.

b - Remove and renew two galvanized pipe lengths \varnothing 125 x 2 400 mm with 2 bends and 2 flanges each one of ballast deep tanks.

6.11.3 - E.R. Fuel piping system

a - Remove and renew one fuel port deep tank suction pipe \varnothing 90 x 1 300 with two bends and flanges.

b - Remove and renew one fuel nr. 3A Port DB Tank suction pipe, \varnothing 100 x 2 000 mm with 3 bends and flanges.

6.11.4 - E.R. Bilge Piping System

a - Open out and overhaul as specified the following valves: seventeen 100 mm size valves.

b - Remove one length of holg pipe near GS pump, renew partially by welding \varnothing 150 x 300 with flange and refit.

c - Remove and renew galvanized bilge pipe length \varnothing 150 x 2 000 with two welded short pieces \varnothing 150 mm and 4 flanges in total.

./

- d - Remove and renew galvanized bilge pipe length \varnothing 150 x 300 mm with two flanges and two slight bends.

6.11.5 - Wash decks piping

- a - Allow for renewal 8 lengths \varnothing 76 x 3 000 mm galvanized steel pipe with flanges distributed for various decks.

6.12.0 - SAFETY EQUIPMENT

6.12.1 - "Grinnel" Sprinkler System

- a - Drain tank, open up scrape and brush St2 grade inside completely and paint with Jotum Ballastic, close with new door joint after completely drying of the paint.
- Open up two sluice valves, clean, grind in paint and close with new joints and packings.
- Open up non-return automatic valve, supply and renew valve lid rubber disc, disconnect pipe to cock and clear passage between double seats, close with new joint.
- Open up tank safety, overhaul, fit, adjust and test.
- Check alarm switch operation and clean contacts.
- Clean filter.
- b - 8 Sprinkler station including eng. room
 - Overhaul as above including drain and test valves.
- c - Fill system with fresh water and make working test on completion.

6.12.2 - CO2 "Walter Kidd" fire smothering system

- a - Check CO2 cylinder weight and issue certificate.
For access disconnect, remove ashore and replace as original.
- b - Remove ashore two smoke detector fan electric motors, open, dry, revarnish, skim commutator, supply and renew brushes and bearings.
- c - Overhaul smoke detector cabinet components.
- d - Clear cargo spaces CO2 delivery pipes. Make a full smoking detecting test.

6.12.3 - Deck and E.R. hydrant valves (34)

- a - Overhaul as specified for piping general work
 - 2 - on bridge deck
 - 4 - " officers deck
 - 4 - " boat deck
 - 8 - " promenade deck
 - 11 - " upper deck
 - 3 - " engine room

6.12.4 - Fire alarm push button stations

- a - Overhaul all push buttons (about 50)
- b - Megger test all circuits and report to Owner's Superintendent for eventual decision of repairs.

7 - MISCELLANEOUS =====

7.1.0 - TELEPHONES

a - Test and overhaul following telephones:

Captain
Chief Officer
" Engineer
Engine room
Forecastle
Poop

7.2.0 - Helm Indicator

a - Remove ashore for repair, bridge angle rudder repeter,
refit and test after repairs.

7.3.0 - Navigating Aids

a - Overhaul by experts from maker the following equipment:

SPERRY - Gyro compass and gyro pilot
KELVIN HUGHES - Long range radar
" " - Short range radar
IMR - 26 - Direction finder
HUGHES MSXXIB - Echo Sounder

7.4.0 - Compass calibration

a - On ship sailing provide expert people for calibration of:

Standard compass
Steering "
After "

./

8 - SPECIFIED WORK COMPLEMENT

8.1.0 - RENEWALS

- a - On single renewals, due the overhauls, by spares, ready to fit from ship stores, must be included in the overhaul work although not specified.

8.2.0 - Supplyings for specified works to be made and included on lumpsum price

- 1 - Ship's lines handling on arrival departure and dock trials, and moorings.
- 2 - Pumping equipment for drainage of bilges and tanks as required.
- 3 - Electric power for: lighting and power supply according item 16 of General Clauses and costs envolved to be agreed with owner's representative.
- 4 - Pressurized air.
- 5 - Fire lines connections to shore system when aplicable.
- 6 - Shore planking or gangways.
- 7 - Sanatary facilities for ship's personal.
- 8 - Temporary means for access to internal and external structures as works requires.
- 9 - Stagging required for all works to be carried out.
- 10 - Pumps and hoses for entire tank cleaning.

Note: All spares and paints supplying to be made by ship stores, unless otherwise stated on this work specification or by Owner's Representative instructions.

./

8.3 - Surveys

- a - All ship structures and machinery to be surveyed as per Lloyd Rules.

Survey fees are at Owner's responsibility.

- b - All surveys must be assisted by Shipyard and Owner's Representative always.

8.4 - Trials

- a - All trials shall be assisted by a Shipyard Superintendent.
- b - All machinery must have all running trials carried out after refitting.
- c - Main engines and auxiliary machinery to be ready for sea trials four days before ship delivery.
- d - Sea trials must be carried out within the undertaken and tendered time.
- e - Sea trials: pilots, tugs shall be at Shipyard account if the vessel returns to the quay after trials for Shipyard convenience.
- f - Assistance to trials by Shipyard people included on tender, its transport ashore be born by Shipyard as well.

8.5 - Cleaning

- a - Galley debris to be removed twice a week and included in tender and disposed of as well.
 - b - Vessel will be delivered to the Shipyard thoroughly cleaned at Owner's account on beginning of the works.
 - c - All cleanings during the repairs and due the works must be at Shipyard responsibility including removal ashore of all garbage, rubbish, etc., and included in the tender.
- ./

- Owners don't accept or agree with any charge as extras for cleanings due the Shipyard repairs.
- d - All water or other fluids coming from drainage of piping or equipments in repair must be pumping out as necessary by Shipyard means and at Shipyard account.

Lisbon, May 31st 1974.