

## Rpt. 4b

Date of writing report 28th February, 1964 Received London Port GENOA No. 28944  
Survey held at GENOA No. of visits In shops 45 First date 11/1/1963 Last date 3/12/1963  
On vessel 50 7/8/1963 6/4/1964

## FIRST ENTRY REPORT ON INTERNAL COMBUSTION MACHINERY

No. in R.B. Name " FEDOR POLETAEV " Gross tons 31,295  
Owners BLACKSEA STATE STEAMSHIP LINES Managers - Port of Registry ODESSA  
Hull built at GENOA-SESTRI By S.A. ANSALDO, CANTIERE NAVALE Yard No. 1594 Year 1964  
Main Engines made at TURIN By FIAT, S.G.M. Eng. No. 5064 When 1963-12  
Gearing made at - By - Gear No. - When -  
Aux./boilers made at GENOA-SAMPIERDARENA By ANSALDO S.A., STABILIMENTO MECCANICO. Blr. Nos. 484-485-494 When 1963-9  
Machinery installed at GENOA-SESTRI By S.A. ANSALDO, CANTIERE NAVALE When 1964-3

Particulars of restricted service of ship, if limited for classification None

Particulars of vegetable or similar cargo oil notation, if required None

If ship is to be classed for navigation in ice, state whether Class 1, 2 or 3 yes : Ice Class 3 Is ship an oil tanker? yes

Is refrigerating machinery fitted? domestic only If so, is it for cargo purposes? no Type of refrigerant -

Is the refrigerating machinery compartment isolated from the propelling machinery space? no Is the refrigerated cargo installation intended to be classed? no

The following particulars should be given as fully and as clearly as possible. Where the answer is "No" or "None", say so! Ticks and other signs of doubtful meaning are not to be used. Where the wording is not applicable to the installation, a black line should be inserted. If the main engines have been constructed at another port and are covered by a separate report, the particulars given in that report need not be repeated below, but all other relevant particulars must be given and the port and report number should be stated.

No. of main engines ONE No. of propellers ONE Brief description of propulsion system One direct reversing Oil Engine directly coupled to intermediate and screwshaft.

MAIN RECIPROCATING ENGINES. Licence Name and Type No. FIAT Airless Injection Type 909S Supercharged

No. of cylinders per engine 9 Dia. of cylinders 900 mm. stroke(s) 1600 mm. 2 or 4 stroke cycle 2 Single or double acting single

Maximum BHP per engine approved for this installation 19000 at 122 RPM of engine and 122 RPM of propeller.

Corresponding MIP 8.97 Kg/cm2 (For DA engines give MIP top & bottom) Maximum cylinder pressure 70 Kg/cm2 Machinery numeral 3800

Are the cylinders arranged in Vee or other special formation? in one vertical line If so, number of crankshafts per engine -

TWO STROKE ENGINES. Is the engine of opposed piston type? no If so, how are upper pistons connected to crankshaft? -

Is the exhaust discharged through ports in the cylinders or through valve(s) in the cylinder covers? through ports No. and type of mechanically driven scavenge pumps or blowers per

engine and how driven 9 Reciprocating Type Pumps driven by the main engine crossheads

No. of exhaust gas driven scavenge blowers per engine 4 Where exhaust gas driven blowers only are fitted, can the engine operate with one blower out of action? -

If a stand-by or emergency pump or blower is fitted, state how driven None No. of scavenge air coolers 5 Scavenge air pressure at full

power 0.95 Kg/cm2 Are scavenge manifold explosion relief valves fitted? Yes

TWO AND FOUR STROKE ENGINES. Is the engine supercharged? Yes Are the undersides of the pistons arranged as supercharge pumps? No No. of exhaust gas driven

blowers per engine 4 No. of supercharge air coolers per engine 2 Supercharge air pressure 0.95 Kg/cm2 Can engine operate without supercharger? Yes

No. of valves per cylinder: Fuel One Inlet None Exhaust None Starting One Safety One

Material of cylinder covers S.M. Steel Material of piston crowns S.M. Steel Is the engine equipped to operate on heavy fuel oil? Yes

Cooling medium for :—Cylinders F.W. Pistons Lub. Fuel valves F.W. Overall diameter of piston rod for double acting engines -

Is the rod fitted with a sleeve? - Is welded construction employed for: Bedplate? Yes Frames? Yes Entablature? Yes Is the crankcase separated from the

underside of pistons? Yes Is the engine of crosshead or trunk piston type? Cross-head Total internal volume of crankcase 236 m3 No. and total area of explosion relief

devices 9-30300 cm2 Are flame guards or traps fitted to relief devices? Yes Is the crankcase readily accessible? Yes If not, must the engine be removed for

overhaul of bearings, etc? - Is the engine secured directly to the tank top or to a built-up seating? Built up seating How is the engine started? by compressed air

Can the engine be reversed? yes If not, how is reversing obtained? -

Has the engine been tested working in the shop? yes How long at full power? 3 Hrs. at 19000 BHP-122 RPM-and 1Hr. at 20900 BHP-126 RPM

CRANK & FLYWHEEL SHAFTING. Date of approval of torsional vibration characteristics of the propelling machinery system 27.8.62 State barred speed range(s), if imposed

for working propeller - For spare propeller - Is a governor fitted? Yes Is a torsional vibration damper fitted to the shafting? Yes

Where positioned? fwd. end of crankshaft Type FIAT No. of main bearings 11 Are main bearings of ball or roller

type? No Distance between inner edges of bearings in way of crank(s) 1220 mm. Distance between centre lines of side cranks or eccentrics of opposed piston engines -

Crankshaft type: Built, semi-built, solid. (State which) semi-built

Diameter of journals 700 mm. Diameter of crankpins Centre 700 mm. Breadth of webs at mid-throw 1330 mm. Axial thickness of webs 420 mm.

If shrunk, radial thickness around eyeholes 312.5 mm. Are dowel pins fitted? no Crankshaft material: Journals S.M. Forged Steel Pins S.M. Cast Steel Minimum

Webbs S.M. Cast Steel Tensile strength 55 Kg/mm2

Diameter of flywheel 2870 mm. Weight 3800 Kg. Are balance weights fitted? Yes Total weight 5960 Kg. Radius of gyration Nos. 3 & 5=939.7 mm.

Diameter of flywheel shaft see Thrust Material - Minimum approved tensile strength - Nos. 6 & 9=960 mm.

Flywheel shaft: separate, integral with crankshaft, integral with thrustshaft. (State which) integral with thrustshaft

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Builder



MAIN GAS TURBINES. Name and Type No.

No. of sets of turbines Open or closed cycle BHP per set at RPM of output shaft

How is drive transmitted to propeller shaft?

ARRANGEMENT OF TURBINES. HP drives at RPM HP gas inlet temperature pressure  
(A small diagram should be attached showing gas cycle.)

IP drives at RPM IP gas inlet temperature pressure

LP drives at RPM LP gas inlet temperature pressure

No. of air compressors per set Centrifugal or axial flow type? Material of turbine blades Material of

compressor blades No. of air coolers per set No. of heat exchangers per set How are turbines started?

How is reversing effected? Are the turbines operated in conjunction with free piston gas generators?

Total No. of free piston gas generators Diameter of working pistons Diameter of compressor pistons No. of double strokes per

minute at full power Gas delivery pressure Gas delivery temperature Have the turbines and attached equipment been tested working

in the shop? How long at full power?

ELECTRIC PROPULSION (Reciprocating engines or gas turbines. Electrical particulars to be reported on Form 4d. State Port and report No.)

No. of generators KW per generator at RPM AC or DC? Position

No. of propulsion motors SHP per motor at RPM Position

How is power obtained for excitation of generators? Motors?

REDUCTION GEARING (Reciprocating engines or gas turbines. Full particulars to be reported on Form 4e.) Port

Report No.

CLUTCHES, FLEXIBLE COUPLINGS, ETC. If a clutch or other flexible connection is fitted between engine/turbine and gearing or between engine and line shafting give brief

description and, for clutches, state how operated

Can the main engine be used for purposes other than propulsion when declutched? If so, what?

STRAIGHT SHAFTING. Diameter of thrustshaft 700 mm. Material S.M. Forged Steel Minimum approved tensile strength 55 Kg/mm<sup>2</sup>

Shaft separate or integral with crank or wheel shaft? separate from crankshaft Diameter of intermediate shaft 580 mm. Material S.M.

Minimum approved tensile strength 55 Kg/mm<sup>2</sup>. Diameter of screwshaft cone at large end 625 mm. Is screwshaft fitted with a continuous liner? Yes

Diameter of tube shaft. (If these are separate shafts) Is tube shaft fitted with a continuous liner in way of stern tube Thickness of screwshaft liner at

bearings 55 mm. Thickness between bearings 43 mm. How is the after end of the liner made watertight in the propeller boss? Rubber Ring

Material of screwshaft S.M. Steel Minimum approved tensile strength 44 Kg/mm<sup>2</sup> Is an approved oil gland fitted? No If so, state type

Length of bearing next to and supporting propeller 3100 mm. Material of bearing Lignum Vitae In multiple screw vessels is the liner between

stern tube and "A" bracket continuous? If not, is the exposed length of shafting between liners readily visible in dry dock?

PROPELLER. If of special design, state type No Is it of reversible pitch type?

If so, is it of approved design? State method of control

Propeller	Diameter  M.	Mean Pitch M.	Built or solid	Total developed surface M2	No. of blades	Blade thickness at top of root fillet	Blade material	Tensile strength  Kg/mm2	Design moment of inertia of propeller (dry)	For Class 1 or 2 ice strengthening only			
										Blade thickness at 25% radius	Blade thickness at tip	Length of blade section at 25% radius	Rake of blade
Working	6.6	4.62	S.	18.80	4	249 mm.	Ni-Al- Mn-Bron- ze	61	G.D. 152000 m2/Kg.	Class 3			
Spare		-	See OSLO Cert. No. ST.5582										

AIR COMPRESSORS & RECEIVERS. No. of main engine driven compressors per engine None Can they be declutched?

No. of independently driven air compressors. (State capacity, prime mover, position in ship, and Port and No. of certificate) 2 Main Comp. Flat Port 405 m<sup>3</sup>/hr. elec. dr.

La Spz. 66713-66714 - 1 Aux. Comp. Flat Port 60 m<sup>3</sup>/hr. elec. dr. La Spz. 481 - 1 Emerg. Hand Start. 15 m<sup>3</sup>/hr. Dies

No. of starting air receivers. (Main and Aux. State capacity of each, position in ship and Port and No. of Certificate) 3 Off Main 9000 litres. Port Comp. Flat.

Genoa M. 6902 - Port Fwd. Comp. Flat 500 lt. 102727 Mil. A/102 - Port Fwd. Eng. Room Floor 3. 938415-29/3/1963-Mil

How are receivers first charged? Hand start diesel gnr. Maximum working pressure of starting air system 30 Kg/cm<sup>2</sup> Are the safety devices in

accordance with the Rules? Yes Has the starting of the main engines been tested and found satisfactory? Yes

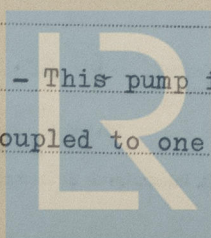
COOLERS. No. of main engine fresh water coolers Three No. of main engine lubricating oil coolers Four

OIL FUEL TANKS. No. and position of oil fuel settling or service tanks not forming part of hull structure Two boiler fuel. Port side Blr. Rm. (No.

One stbd. E.R. Flat Diesel Fuel.

MAIN ENGINE DRIVEN PUMPS (No. and Purpose) One lub. oil circ. - 500 m<sup>3</sup>/hr. - This pump is chain driven from the

intermediate shaft and is driving an oil motor which is directly coupled to one M.E. S.W. circ. pump and M.F.W. circ. pump.



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Name below essential pumps, state position and how driven. Give capacity of bilge pumps.	Service for which each pump is connected to be marked thus X														
	SUCTION								DELIVERY						
	Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cooling	Sea	Feed Tanks	Lub. Oil	Boiler Feed	Salt Water Cooling	Fresh Water Cooling	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cooling
Oily water separator - Port fwd.	X	X													
Electr. receipt. 56m3/hr															
Diesel alt. circ. Stbd.															
Electr. cent. 20m3/hr.						X				X					
T/A cond. extract Stbd.															
Material electr. cent. 6m3/hr															
Blr. circ. Stbd. aft.															
electr. cen. 50m3/hr.							X		X						
Blr. F/O Blr. Rm.															
Electr. cen. 3.5x0.3m3/hr				X											
Blr. feed Stbd. aft.															
electr. cen. 8m3/hr						X			X						
L/O trans. Port															
electr. cen. 20m3/hr							X							X	
M.E.F/O booster- Fwd.															
electr. cen. 8.6m3/hr				X											
M.E. fuel valve clg. Stbd. fwd.															
Elect. cen. 17m3/hr					X										
Comp. S/W circ. Port fwd.															
electr. cen. 22m3/hr						X									
Comp. S/W circ. Port fwd.															
Electr. cent. 1.5m3/hr						X									
Aux. diesel O/F fwd.															
Electr. cent. 1m3/hr				X								X			
Aux. diesel pre. lub. Stbd. fwd.															
Electr. cen. 16m3/hr								X							

#### MAIN CARGO PUMP ROOM.

Bilge Port fwd.															
steam duplex 40m3/hr															
Ballast Stbd. aft.															
Electr. cent. 1250m3/hr			X			X									
Pump room bilges Overboard															
FWD. PUMP ROOM.															
Bilge & ballast Mid. aft.															
Steam duplex 250m3/hr	X		X			X									
Fuel oil trans. Stbd.															
Steam duplex 100m3/hr			X	X		X						X			
Emerg. fire Port															
Diesel 250m3/hr						X							X		



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Turbo Alt. Flat

Steam Turbine

A.S.G.

GENOA M.6975

Main 450 kW

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INDEPENDENT PUMPS Name below essential pumps, state position and how driven. Give capacity of bilge pumps.		Service for which each pump is connected to be marked thus X														
		SUCTION								DELIVERY						
		Bilge Main	Bilge Direct	Ballast Main	Oil Fuel	Fresh Water Cool- ing	Sea	Feed Tanks	Lub. Oil	Boiler Feed	Salt Water Cool- ing	Fresh Water Cool- ing	Oil Fuel Tanks	Fire Main	Lub. Oil	Piston Cool- ing
Cond.circ.	Stbd.Fwd.															
electr.centrif.	600 m3/hr.						X									
Blr. feed	Stbd.Aft															
electr.centrif.	35 m3/hr.							X		X						
Atmos.cond.circ.	Stbd.															
electr.cent.	300 m3/hr.						X			X						
F/O trans.	Stbd.Fwd.															
electr.cent.	72 m3/hr.				X								X			
Daily serv.F/O trans.	Stbd.Fwd.															
electr.cent.	36 m3/hr.				X								X			
M.E.lub.oil	Stbd.Aft															
electr.cent.	500 m3/hr.							X							X	
F/W & S/W Circ.M.E.	Stbd.				X											
electr.cent.	800/600 m3/hr.					X			X		X					
Aux.S/W circ.	Stbd.															
electr.cent.	120 m3/hr.				X	X					X	X				
General service																
electr.cent.	100 m3/hr.	X	X				X				X					
Bilge	Port Fwd.															
steam duplex	40 m3/hr.	X					X									
Ballast & fire	Port															
electr.cent.	250 m3/hr.						X							X		
Fire pump	Port															
electr.cent.	250 m3/hr.						X							X		
Bilge	Port Fwd.															
electr.cent.	120 m3/hr	X	X													

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BILGE SUCTIONS. No. and size in each hold, deep tank or pump room. Main pump room : One Fwd. & One Aft - 100 mm.  
wd. pump room : One cent. - 63 mm. Two P & S Boatswains store - 63 mm. One chain locker - 63 mm.  
No. and size connected to main bilge line in main engine room. One aft(tunnel well):125mm- One aft:100 mm- Two P&S Fwd. in tunnel:125 mm.  
Two P & S Fwd.M.E.Coff.: 100 mm. - Three P.cent.S. Fwd.M.E.: 50 mm.  
In aux. space room Two P & S fwd.: 65 mm. - Two P & S aft : 80 mm. Size and position of direct bilge suction in machinery spaces one port mid.  
R.150mm-One stbd.mid.E.R. 150 mm. Size and position of emergency bilge suction in machinery spaces One stbd. E.R. : 350 mm.  
Is the bilge or ballast system fitted with means for separating oily water on the overboard discharge side? yes Do the piping arrangements comply with the Rules including  
special requirements for oil tankers, ships carrying cargo oil or classed for navigation in ice Class ~~XX~~ or 3? (Strike out words not applicable.) yes

### STEAM & OIL ENGINE AUXILIARIES

Position of each	Type	Made by	Port and No. of Rpt. or Cert.	Driven Machinery (For electric generators, state output)
Port	Diesel Sulzer	C.R.D.A.	TRIESTE-5525 ✓	Main 550 kW
Stbd. Inbd.	6 BCAH.29	"	" "	Main 550 kW
Stbd. Outbd.	"	"	" "	Main 550 kW
Stbd.Boat Deck	4 SCSA 266089	BREDA	MILAN M.2647 ✓	Emergency Diesel Alt.150kW
Turbo Alt.Flat Inboard	M.A.N.No 303098	M.A.N.	AUGSBURG 1734 ✓	Harbour service 200 kW
Turbo Alt. Flat	Steam Turbine	A.S.G.	GENOA M.6975	Main 450 kW
Fwd. Pump Room	Cent.pump K.S.B. Diesel	K.S.B. ALFA ROMEO	BREMEN 3679 P.B. 16/8/63	250 m3/hr.Emerg.Fire Pump
Port Comp. Flat		"ORIA"-REGGIO EMILIA	-	15 m3/hr.Aux.Air Comp.

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Is electric current used for essential services at sea? Yes If so, state the minimum No. and capacity of generators required in order that the ship may operate  
at sea One 450 kW Is an electric generator driven by Main Engine? no  
STEAM INSTALLATION. No. of aux./donkey boilers burning oil fuel two W.P. 12 Kg/cm2 Type Foster Wheeler W/T 10.5 m3/hr.  
(See Circular 2144)  
Position Port & Stbd. aft Eng.Room Flat (tween deck level) enclosed space up to upper deck level  
Is a superheater fitted? yes Are these boilers also heated by exhaust gas? no No. of aux./donkey boilers heated by exhaust gas only? One W.P. 12 Kg/cm2  
Type "DIESECON G." Position just below funnel casing Can the exhaust heated boilers deliver steam directly to  
the steam range? Yes-Superheated steam at 8 Kg/cm2 Port and No. of report on aux./donkey  
boilers Two W/T Blrs.F.E. Reports attached. One E.G.Blr. MILAN 40 attached. Is steam essential for operation of the ship at sea? Yes Are any steam pipes over 3 ins. bore? Yes If so, what is their  
material? M.S.solid drawn and copper For oil fired boilers is the arrangement of pipes, valves, controls, etc., in accordance with the Rules? Yes No. of oil burning pressure  
units three No. of steam condensers 1 No. of Evaporators 2 off  
2 off 3.5 m3/hr. heavy fuel.  
1 off 0.3 m3/hr. diesel  
STEERING GEAR. (State No. and Type of Steam Engines, Electric Motors, Hydraulic Pumps and other particulars including particulars of alternative means of steering)  
Two Electric Motors driving two hydraulic pumps. 4 Ram hasties No.H.G.9133/4- Greenock Cert.No. C.9736  
Have the Rule Requirements for fire extinguishing arrangements been complied with? yes Brief description of arrangements steam smothering in Blr.Room and  
Cargo Tanks C.O.2 in Eng.Room pump room, Blr. Room and Emerg. Gnr.Room, foam extinguishing in all cargo  
tanks. Fixed and portable fire exting. throughout ship.-Hydrants and hoses with spray and jet nozzles.  
Has the spare gear required by the Rules been supplied? yes Has all the machinery been tried under full working conditions and found satisfactory? yes Date and duration of full-  
power sea trials of main engines 4th April, 1964 - 12 hours Does this machinery installation contain any features of a novel or experimental nature? (Give particulars)  
NO

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The foregoing description of the main engine and installation is correct and the particulars are as approved for torsional vibration characteristics. (Strike out words not applicable.)  
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ANSALDO S.p.A. - CAN  
Builder

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# GENERAL REMARKS

State if the machinery has been constructed and/or installed under special survey in accordance with the Rules, approved plans and Secretary's letters. State quality of materials and workmanship and recommendations for classification, including any special notation to be assigned. Where existing machinery is submitted for classification the circumstances should be explained as fully as possible.

The machinery of this vessel has been constructed under special survey of tested materials and in accordance with the approved plans, Secretary's letters and Rules Requirements.

The material and workmanship are good.

The complete installation has been tried under working conditions at full power and found satisfactory.

The torsional vibration characteristics of the main machinery shafting installation have been approved for a service speed of 122 RPM. The machinery of this vessel is eligible to be classed in the Society's Register Book with the notation +LMC (with date) "OIL ENGINE".

(S. DINNEN FOR R. ELLIOTT & SELF)

Engineer Surveyor to Lloyd's Register of Shipping

## PARTICULARS OF IDENTIFICATION MARKS (Including Port of origin) of important Forgings and Castings. (Copies of certificates should be forwarded with report.)

Connecting RODS 52,56,57,58,59,60,61,62,63 - LLOYD'S TEST GEN. 5/7/63.

Upper Piston Rods :- 8402,8403,8316,8352,8329,8330,8353,8401,8317 - LLOYD'S GEN. R.E. 21/5/63.

Lower " " :- 882,888,890,894,896 LLOYD'S TEST GEN. R.E. 28/6/63; 895,889,891 - LLOYD'S TEST GEN. R.E. 5/7/63; 879, CRANKSHAFT OR ROTARY SHAFT Wd. Sect. LLOYD'S DSF. 530,400,274, W.S. 21/12/62. TEST GEN. R.S. 6/1/63. Aft. Sect. LLOYD'S DSF. 530,291,175, W.S. 21/12/62.

FLYWHEEL SHAFT } LLOYD'S TEST GEN. 74 R.E. 9/4/63: Thrust Collar LLOYD'S TEST GEN. P4671, R.E. 11/1/63.

THRUSTSHAFT

GEARING

INTERMEDIATE SHAFTS SS.1032 G.M. 19/6/63 GEN. ✓

SCREW AND TUBE SHAFTS SS.894 G.M. GEN. 18/5/1963. ✓

PROPELLERS M.5975 CERT. No. C.23121. P.1301 G.M. 18/11/1963. ✓

OTHER IMPORTANT ITEMS Exhaust gas driven scavenge blowers, GENOA CERT. No. M.7114. ✓

Main Engine Crossheads : LLOYD'S TEST GEN. 221,222,223(2),225, R.E. 21/5/63; 221(2),222(2) R.E. 17/5/63.

Is the installation a duplicate of a previous case? Yes

If so, state name of vessel m.s. "LEONARDO DA VINCI"

Date of approval of plans for crankshaft 27/8/62

Straight shafting 23/10/62

Gearing -

Clutch -

Separate oil fuel tanks 25/10/63

Pumping arrangements 12/5/63

Oil fuel arrangements 30/3/63

Cargo oil pumping arrangements 5/4/62

Air receivers 4/8/62

Aux. ~~boilers~~ O.F. 24/5/62 E.G. 18/1/63

Dates of examination of principal parts:-

Fitting of stern tube 17/9/63

Fitting of propeller 21/1/64

Completion of sea connections 15/8/63

Alignment of crankshaft in main bearings 31/12/63

Engine chocks & bolts 5/3/64

Alignment of gearing -

Alignment of straight shafting 5/3/64

Testing of pumping arrangements 4/

Oil fuel lines 11/3/64

Donkey boiler supports 31/12/63

Steering machinery 4/4/64

Windlass 30/3/64

Date of Committee

FRIDAY 11 SEP 1964

Decision

+LMCES

ABS

TS(CL)

SPS

4.64

Special Survey Fee DURING CONSTRUCTION

Fee lit. 1.391.950 plus Fee for

welding lit. 97.090 = lit. 1.488

- Actual Exps. = #

- REVENUE TAX. = #

A/c. no. 5558 dd. 23/3/1964

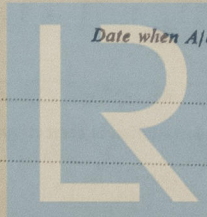
Expenses SURVEY DURING INSTALLATION

Lit. 800.000

Exps. (see Rpt. 1)

Date when A/c rendered

24/5/1964



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