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1.0 SCOPE

The scope of this document is to record the observations and findings of the initial survey carried out on board the FSU Belokamenka ex. ULCC Berge Pioneer with regards to its seaworthiness (and its suitability for further use as FSU/FPSO conversion candidate). Wherever possible, a recommendation is made as to whether the equipment under consideration should be refurbished or repaired prior to commencing any sea journey.

2.0 REFERENCE

2.1 REFFERENCE DOCUMENTS

- FSU Belokamenka — General Arrangement sheet 1
- FSU Belokamenka — General Arrangement sheet 2
- DNV GL — Letter from surveyor.

2.2 DEFINITIONS

Annual Class Survey	Annual survey which the vessel under goes a general examination to confirm that the vessel is in a general condition that satisfies Class Rues.
Class Renewal/Special Survey	Detailed class survey required every 5 years in order that the vessel remains within class. Requires the vessel to be dry docked and undergo Ultrasonic Thickness measurements.
Intermediate Survey	Class survey carried out around the third year following the last Special Survey. Depending on the age of the vessel, the Intermediate survey may be supplemented by Ultrasonic Thickness measurements.

2.3 ABBREVIATIONS

- AMS Class notation covering classification of machinery, boilers and systems.
- ACCU Class notation. Automated Centralised Control Unmanned.
- BWO BW Offshore
- BMS Burner Management System
- CAP Condition Assessment Programme
- COT Cargo Oil Tank
- CCR Central Control Room
- DFT Dry Film Thickness
- DLA Dynamic Loading Approach
- DNV GL Det Norske Veritas, Germanischer Lloyd, classification society
- DO Diesel Oil
- ESP Enhanced special survey
- FO Fuel Oil
- FSU Floating storage Unit
- FW Fresh Water
- GE Generator Engine
- HFO Heavy Fuel Oil
- LO Lub Oil
- MCR Maximum Continuous Rating
- ME Main Engine
- MT Motor Tanker
- OT Oil Tight
- OTF Offshore Transfer Facility
- R&LE Repair and Life Extension.
- RRDA Rapid Response and Damage Assessment
- ULCC Ultra Large Crude Carrier
- SH SafeHull
- UPS Uninterruptible Power Supply
- UWILD Under Water Inspection in lieu of Drydocking
- UT Ultrasonic Thickness.
- VEC Class notation. Vapour Emission Control;
- VLCC Very Large Crude Carrier
- WBT Water Ballast Tank

3.0 EXECUTIVE SUMMARY

FSU Belokamenka was built as ULCC Berge Pioneer at Mitsui in Chiba 1980 hull 1113, IMO number 7708314. It was converted to FSU at Dubai dry-dock in 2003/2004 and has been located in Kola bay Murmansk since. The 10 year in same location can be a concern for propulsion machinery if not properly conserved/maintained/inspected. The Main engine has however been turned regularly, lubricated and kept on heating.

The vessel is spread moored in 30-33 meters of water, there are 7 anchor chains aft, 3 on starboard side, 3 on port side and one at the centreline. Forward it has the two original anchors chains out (although org ships anchors are replaced) and an additional 2 chains from the centre of the bow.

The current crew is 28 person, maximum POB is 50 (traditional lifeboat arrangement STBD and Port side). Accommodation capacity is approx. 45. Minimum safe manning certificate is 13 crew. The storage capacity is 2.600.000 bbls.

The survey was carried out while the vessel was at anchorage on location in Kola Bay, Murmansk - Russia. The vessel is in hot standby condition with must equipment operational, ballasted and all cargo tanks inerted.

The crew consist of Navigators, Engineers, Deck, mechanics and cleaners. Further there is the catering staff.

During operation the vessel had a crew of 33 persons, the last oil handling was on 31st Dec 2013.

A couple of cargo tanks and water ballast tanks, including Fore and Aft peak were inspected during the survey.

General photographs taken during the survey can be found in Attachment 1, however all photos are available in P:/BWS/Candidate FPSOs/Belokamenka ULCC/Inspection photos.

Conclusion

The vessel has been operated and located in a dry, low temperature secured environment with good sea conditions and the overall condition of the vessel is as result very good. There is very little external corrosion on deck and in engine room. The hull was last UT gauged in 2012 and results were good. The vessel is well maintained, clean and in overall good condition.

The maintenance, integrity and record keeping systems are of expected standard, AMOS is being used as CMMS. Reporting in AMOS could be improved, the history is not useful.

The vessel is suitable for sea journeys (and as for FPSO conversion candidate for that matter), provided the following remarks are being addressed.

The general main concern areas are:

- The Main Engine Soeren T. Lyngsoe control and alarm system condition, a service visit is required to bring the system back in operational condition.
- The Main Engine critical spares condition needs to be confirmed, it is recommended having a complete set of overhauled spares available for the journey – complete piston with piston rod, piston crown, skirt and stuffing box, fuel pump plunger/barrel, complete cylinder cover with exhaust valve and fuel and starting air valve, a complete cylinder liner with cooling jacket in confirmed good condition. There is an overhauled cylinder cover with exhaust valve and there is what appear to be a new cylinder liner. There is no complete overhauled piston assembled.
- The Main Engine needs full commissioning, and is to be inspected to the satisfaction of a DNV Surveyor Memoranda 94. Mechanically the main engine appear to be in good condition. A port inspection was carried out which revealed a broken top ring on Cylinder No. 12 and a few minor issues. As a minimum cylinder 12 must be pulled, overhauled and rings replaced. The crankcase and camshaft of the main engine were also inspected and found in very good condition.

- The main engine turbochargers have been sitting in same position since 2004 without any rotation of the shaft, the lube oil system is internal in the turbochargers, so there has not been any oil splashing inside the bearings. It is therefore necessary to inspect the bearings on all three turbochargers.
- The Main engine Main starting air system has not been moved for 10 years, this must be fully functional tested and possibly overhauled – particular the main starting air valve and control system.
- There was small puddles of fuel oil on top of several pistons, during the port inspection all fuel oil inlet valves were closed. Once the fuel system has been commissioned, a port inspection must be made to determine any leaking from the fuel oil valves.
- The Main ships boilers needs minimal refractory work done on the plugged tube facing the furnace. Only STBD boiler was inspected, but Port boiler has similar plugged tube and condition expected the same. The refractory cones at the burners needs to be repaired as well. The internal soot layer needs to be removed.
- The accommodation air conditioning system is not functioning, this was reportedly decommissioned at Dubai drydock.
- The Port Radar is in poor condition and needs repair/replacement.
- The current GMDSS certificate is of class A1 only, this is for costal operation. This needs to be upgraded to A2 or A3 prior to any sea journey.
- Inmarsat B handset needs replacement as buttons are not functioning.
- The life rafts have been removed and is stored under the forecastle, evidence of last inspection dates to 2011 – new life rafts or inspection and certification of old ones needs to be done. A life raft also needs to be placed on the bow section.
- The turbo generator condition is unknown. The unit is not required for sea journeys – observation only.
- The exhaust pipe / funnel from Boilers are heavily corroded, and some repairs are necessary prior to starting any sea journey, these repairs could be limited to additional bracing giving the difficult position (all the way in top of funnel).
- Ships anchors needs to be installed for both anchor winches. The current anchors are for permanent mooring only.
- Aft Diesel Generator has an emergency repair done on fuel inlet pipe for Cyl#5, this needs replacement.
- Although Diesel Generators are regularly performance tested, it is recommended to conduct this test at 75% load. One diesel generator alone must be able to take the load on MSB during sea voyage conditions.
- The ODME system is not functioning, this can however be exempted from class for single voyage, provided no cargo carriage while (only ballast voyage) and no tank cleaning activity while en-route. The OB valve can be isolated and locked closed to ensure no discharge or accidental valve operation. If however cargo tanks are needed to be ballasted for stability in heavy weather, the ODME must be functional so the water from cargo tank can be discharged overboard via slop tank.
- There is an underwater inspection planned for June, during this inspection the hull and propeller must be cleaned. Further the notes from DNV regarding rudder bearing clearances must be completed during underwater survey as well.
- The freshwater generators were both switched off during the visit and water was received from shore, the daily water consumption is 20 ton. Both freshwater generators are

reportedly operational, it is however recommended to conduct a trial and/or performance test on both freshwater generators prior to sea journey.

- The Cargo tanks must be cleaned, demucked and final inspected.
- The Cargo tanks must be checked for NORMs
- It is estimated the above preparations will take 3 months to complete. The tank cleaning being the largest scope.
- A sea trial must be conducted in the beginning of the journey.

4.0 SURVEY DETAILS

The vessel FSU Belokamenka was inspected during period 29th April – 5th May 2015:

- The Facility is currently manned with 28 crew.
- The Facility systems are in operation, hot stand by.
- The Facility is in ballast condition with approx. 11m draft
- All Cargo Tanks were inerted, some tanks gas freed for inspection.
- No NORM measurements were carried out in any tanks, however a Geiger counter was obtained from a nearby navy yard and some readings were taken in COT 4S, these readings were similar to background readings.

4.1 FIRST SURVEY

- Date of Survey 29th April – 5th May 2015
- Place of Survey Kola Bay, Murmansk, Russia, Anchorage
- Personnel on Survey
  - Claus Schilling Nielsen — Technical Manager, TMS
  - Ruslans Piskunovs — Maintenance Superintendent, HEE Operations
  - Dmitry Nikolaev — Marine Superintendent, PER Operations

5.0 VESSEL PARTICULARS AND TANK CAPACITIES

5.1 VESSEL PARTICULARS

Item	Description		
Vessel Name	Belokamenka		
Vessel Previous Names	Berge Pioneer 2004		
Port of Registry	Murmansk		
Flag	Russian Federation		
Call Sign	UEUI		
IMO Number	7708314		
Builders	Mitsui Shipbuilding & Engineering Co. Ltd.		
Hull No	1113		
Where built	Chiba, Japan		
Year	7/1980, Converted to FSU in 2004, On location since 2004		
Maximum POB	50 (lifeboat capacity)		
Minimum safe manning	13		
Principal Dimension	Length LOA Length LBP Moulded Breadth Moulded Depth Maximum Summer Draft	340.50 m 325.00 m 65.0 m 31.5 m 23.252 m	
Lightship	52,220 tonnes		
Deadweight	360,700.0 tonnes summer (412.924m3 ~ 2.600.000bbls)		
Make & Type of Engine	12L90GFC MAN B&W		
No Off Cylinders	12 - Bore 900mm Stroke 2180 mm		
Name of Manufacturer	Mitsui Japan		
Design Speed of Vessel	Sea trial 16.3 Knots		
Max. Continuous Rating	40.900 BHP (30.102 kW) @ 94 rpm		
Continuous Service	37.200 BHP (27.379 W) @ 91 rpm		
Diesel Generators	Daihatsu 6DS-32 - 2 x 2100 HP @ 600 rpm		
Steam turbine generator	Mitsui Brown Boveri MTG300 1200 kW		
Emergency generator	Daihatsu 8D-26 – 1 x 950 HP (700kw) @720 rpm		
International Net Tonnage	136,062.73		
International Gross Tonnage	198,544.88		
Freeboard	Summer	Draught	Deadweight
	8.320 m	23.232 m	360.700 MT
Class	DNV & Russian Maritime Register of Shipping		
Present Class Notation	1A1 Ship-shaped Oil Storage Unit ECO		

5.2 TANK CAPACITIES

Table 1 –Cargo Oil Storage Capacity Excluding Slop Tanks

Centre Cargo Tanks		Fr Nos	100%	98%	Current level
			m^3	m^3	M^3
NO.1 C.O.T (C)		103 - 110	21882.1	21444.5	
NO.2 C.O.T (C)		96 - 103	24041.4	23560.6	
NO.3 C.O.T (C)		87 - 96	32391.1	31743.3	
NO.4 C.O.T (C)		78 - 87	32391.1	31743.3	
NO.5 C.O.T (C)		69 - 78	32391.1	31743.3	
NO.6 C.O.T. (C)		60 - 69	32716.5	32062.2	
TOTAL CENTRE T			175,813.3	172,297.2	
Wing Cargo Tanks					
NO.1 C.O.T	S	103 - 110	17467.1	17117.8	
	P		17467.1	17117.8	
NO.2 C.O.T	S	99 - 103	12519.3	12268.9	
	P		12519.3	12268.9	
NO.3 C.O.T	S	90 - 96	20591.3	20179.5	
	P		20591.3	20179.5	
NO.4 C.O.T	S	81 - 87	20591.3	20179.5	
	P		20591.3	20179.5	
NO.5 C.O.T	S	72 - 78	20570.5	20159.1	
	P		20570.5	20159.1	
NO.6 C.O.T	S	63 - 69	19041.4	18660.6	
	P		19041.4	18660.6	
SLOP TANK	S	59 - 63	9401.7	9213.7	
	P		9401.7	9213.7	
TOTAL WING TANKS			240,365.2	235,558.2	
TOTAL CTR & WING			**416,178.5**	**407,855.4**	

Table 2 –Slop Storage Capacity

Cargo Tank	**Fr Nos**	**100%**	**98%**	**Current approx. level**
		m^3	**m^3**	**m^3**
SLOP TANK (P)	59 - 63	9401.7	9213.7	3000
SLOP TANK (S)	59 - 63	9401.7	9213.7	4500
TOTALS		**18803.4**	**18427.4**	

Table 3 –Water Ballast Tanks

BALLAST WATER		Fr Nos	100%		
			m3	KT	Current approx. level
FORE PEAK		111– F.E.	14247.1	14603	
NO.2 WING	S	96 - 99	10291.1	10548	
	P		10291.1	10548	
NO.3 WING	S	87 - 90	10295.6	10553	
	P		10295.6	10553	
NO.4 WING	S	78 - 81	10295.6	10553	
	P		10295.6	10553	
NO.5 WING	S	69 - 72	10158.3	10412	
	P		10158.3	10412	
AFT PEAK		A.E.- 14	4746.1	4865	
TOTAL WING TANKS			101,074.4	103,600	

Table 4 –Fresh Water Tanks

Tank	**Side**	**Fr Nos**	**100%**	
			m^3	**FW tonne**
F.W. TK (P)	P	14 - 18	388.1	388.1
F.W. TK (S)	S	14 – 18	388.1	388.1
FEED WATER		55 - 58	82.6	82.6
FEED WATER BUFFER		34 - 38	92.2	92.2
DIST WATER TANK		34 - 38	92.2	92.2
COOLING WATER		14 - 17	47.9	47.9
TOTALS			**1091.1**	**1091.1**

Table 5 – Fuel Oil Tanks

Tank	Side	Fr Nos	100%	Current
			m^3	M^3
No. 1 H.F.O. Stor. Tk	P	110-111	1442.1	
	S		1442.1	
No. 2 H.F.O. Stor. Tk	P	50 - 59	3779.9	
	S		3779.9	
H.F.O. Sett. Tk ME		30 – 38	89.5	
H.F.O. Sett. Tk Boiler		30 - 38	178.3	
H.F.O. Serv. Tk.		30 - 38	162.5	
F.O. DRAIN. Tk.		54 - 58	109.8	
TOTALS			**10,984.1**	

Currently there is approx. 1000 m3 of HFO 380 onboard (May 2nd 2015). Daily consumption around 15 -18 ton during normal operation, if cargo operation the consumption increases to 40 – 45 ton/day.

Table 6 – Diesel Oil Tanks

Tank	Side	Fr Nos	100%	100%
			m3	tonne
D.O Storage. T.	P	38 – 54	280.1	
	S	30 - 54	381.5	
D.O. Serv. T.		42 - 49	68.6	
D.O. Sett. T.		42 - 49	62.9	
TOTALS			**793.1**	

Currently there is approx. 300 m3 of DO onboard (May 2nd 2015). Daily consumption around 4 ton.

6.0 CLASSIFICATION AND CERTIFICATION

The existing class is DNV GL and Russian Maritime Register of Shipping. DNV GL number 111713

6.1 CLASS NOTATION

1A1 Ship-shaped Oil Storage unit ECO

6.2 CLASS STATUS

In operation, Full term valid until 2018-12-29.

Memoranda MO 94 states the following equipment has been taken out of continuous machinery system while the vessel is in operation as a Floating Storage Unit:

1. Fuel System: FLFOO; FLMHE.

2. Lubricating Oil System: LSLFC; LSLME.

3. Main Diesel Engine: All items.

4. Miscellaneous Items: MMINC.

5. Feed Water System: NDCIR.

6. Shafting Arrangement: All items.

Before any of the above items are taken into use, they are to be inspected to the satisfaction of a DNV Surveyor.

MO 93 Aux Exhaust boiler taken out of service

MO 97 Tail shaft monitoring system taken out of service

MO 99 Steering gear taken out of service

MO 100 aft emergency towing arrangement has been disconnected

MO 101 Steam Generator taken out of service

MO 102 Propulsion system taken out of service

MO 105 Boiler control system

6.3 CLASS RECORDS

There are no condition of class and no condition related to statutory certificates

6.4 FLAG STATE/PORT INSPECTION REPORTS

Diving inspection is being planned for 2015, rudder and propeller inspection planned, propeller cleaning planned as well. No hull cleaning planned. Clean propeller and dirty hull can give heavy load to the main engine.

6.5 REVIEW OF CAP REPORT

No records available.

6.6 REVIEW OF LATEST UT GAUGING REPORT

Last UT gauging was done in 2012, the full reports are available in hard copy onboard. A brief check showed good readings with minimal critical areas.

7.0 VESSEL HISTORY

7.1 VESSEL EXISTING DOCUMENTATION

Very limited

7.2 VESSEL LOADING/TRADING HISTORY

Deployed to Kola Bay Murmansk in 2004 after conversion at Dubai Drydock, Main Engine was partly overhauled at Dubai dry dock. Last oil cargo operation in Dec. 2013

During the operation years up to 6 – 7 mio Tons of oil was handled per year, the export tankers was up to 100.000 ton size and the shuttle tankers up to 70.000 ton size. Cargo offloading could be up to 6 times a month.

History of loading condition has been randomly checked for last few years of operation. Maximum stresses found is 88% of sea condition. No records out of designed range for stresses & drafts.

7.3 LAST DRY DOCKING

The vessel was last dry docked in Dubai in 2003-2004.

8.0 VESSEL STRUCTURAL CONDITION

Coating condition definitions of “GOOD”, “FAIR” and “POOR” definitions defined in IMO Resolution A.744(18)/Annex and IACS UR Z10.1,Z10.3 and Z10.4.

8.1 EXTERNAL HULL

External hull was inspected with service boat around the vessel and no significant damage was observed, and generally found in GOOD condition. There are areas where the topcoat is damaged, but the primer is still in place and there is no significant corrosion.

STBD side fwd there is an indent damage on the upper deck level at approx. frame 102 side, this is at COT 2S (2 FWD) area. The damage has been inspected by rope access internal in the tank.

There was quite a lot of marine growth, particular in the hull section still under water. The Propeller and rudder has marine growth.

Yokohama fenders are in good condition

Diving inspection is planned for June and the outcome will determine cleaning. Generally it has little improvement to clean propeller without the hull. Heavy loading and high fuel consumption can be expected even with clean propeller if hull is dirty.

8.2 UPPER DECK / MAIN DECK

The main deck is in GOOD condition, there is little to no corrosion, the deck paint shows signs of regular maintenance. Deck plating, supports, pipes, tank domes, butterworth hatches are free from any signs of corrosion. It is noted that no fabric maintenance has been done for about a year, despite this fact, the overall condition is very good.

Generally the main deck structure, fixture, cranes, piping etc is in good condition.

8.3 POOP/AFT MOORING DECK

Aft deck is in FAIR to GOOD condition, there is little corrosion, the deck paint shows signs of regular maintenance.

8.4 SLOP & CARGO TANKS

The purpose of the hull structural survey on FSU Belokamenka is to evaluate its hull condition based on sea journeys. Please note a separate detailed report covering the tank inspection will be submitted, this report includes pictures from each tank.

This report does not cover the structural condition of the tanks, however full UT gauging report from 2012 is available onboard. All the cargo tanks are coated in the bottom (about a foot) and top part only.

Due to time availability of confined space entry only two cargo tanks were inspected.

- No.4 Stbd Cargo Tank
- No.5 Port Cargo Tank

SLOP TANKS

The slop tanks were not inspected, as they are still being used for operation and contains either water or oily sludge.

Port slop tank is approx. one third full with water for COW operation.

STBD slop tank is approx. half full with sludge from COW operation

No. 4 STBD Cargo Oil Tank (frame 81-87)

The tank was visually inspected & found in good condition. Structural elements are in good condition. No signs of hogging on vertical bulkheads. No signs of corrosion. The COT's are coated in the bottom and top only.

Found sludge on the bottom of the tank. Estimated quantity 10-15 cbm.

Bottom coating found to be in good condition. No signs of pitting. However, due to sludge on the bottom the inspection was done in few points only (not complete bottom).

Recommended to send samples of sludge to find out the composition of sludge (HC/sand/scale) and check for SRB presence.

Bell-mouths are in visual good condition. No problems reported.

Tank heating coils appear in good condition.

No.4 COT STBD	Comments
Upper Level	Good
Middle Level	Good
Lower Level	Good
Condition of pipe supports.	Good
Condition of Heating Coils	Good
Condition of Anodes	None Fitted
Condition of walkways and Ladders	Good
Tank Bottom Plating	Good, some sludge accumulated

No. 5 Port Cargo Oil Tank (Frame 72 – 78)

The tank was visually inspected & found in good condition. Structural elements are in good condition. No signs of hogging on vertical bulkheads. No signs of corrosion. The COT's are coated in the bottom and top only.

Found considerable amount of waxing on the bottom of the tank. Estimated quantity 20-30 cbm. Seems that heating system is not managing to heat the cargo properly due to cooling of cargo from the cold sea (single hull). Bell-mouths could not be inspected properly.

Bottom coating found to be in good condition. No signs of pitting. However, due to waxing problem the inspection was done in few points only (not complete bottom).

Recommended to send samples of bottom sediments (wax with potential sludge) to find out the composition (HC/sand/scale) and check for SRB presence.

Tank heating coils appear in good condition.

No.5 COT PORT	Comments
Upper Level	Good
Middle Level	Good
Lower Level	Good
Condition of pipe supports.	Good
Condition of Heating Coils	Good
Condition of Anodes	None Fitted
Condition of walkways and Ladders	Good
Tank Bottom Plating	Solid layer of wax

8.5 WATER BALLAST TANKS

A total of six (6) ballast tanks were inspected, generally the condition of the water ballast tanks are good, and they are suited for sea voyage. Please note a separate detailed report covering the tank inspection will be submitted, this report includes pictures from each tank.

The WBT's are fully coated.

The tanks inspected are summarized below:

- Fore Peak Tank
- Aft Peak Tank
- No.2 Water Ballast Tank Port & STBD
- No.4 Water Ballast Tank STBD
- No. 5 Water ballast tank Port

Fore Peak Tank

The Fore Peak is fully coated, and has been partly re-coated during the deployment in Kola Bay.

The tank was visually inspected & found in acceptable condition.

Corrosion found on stringer levels & on the ladders. Some repair carried out. Few ladders were replaced.

The tank was blasted & painted in 2009 by service company "Bars". However, grit & scale were not properly cleaned from the bottom. Found considerable amount of such sediments on the bottom of the tank. To be removed before the bottom can be inspected.

No structural damage was observed.

FPT	Comments
Upper Level	Good

Middle Level	Good
Lower Level	Good
Condition of pipe supports.	Fair
Condition of Heating Coils	None Fitted
Condition of Anodes	Good
Condition of walkways and Ladders	Fair
Tank Bottom Plating	Not inspected as grit blast covers the bottom

Aft Peak Tank

The AFT peak tank is fully coated and has been re-coated during the deployment in Kola Bay – however please see note on coating below. General condition of tank is fair.

The tank found with considerable damage to coating (paint pilling). Tank repair conducted in 2009 by local service company “Bars”. Completion report states that painting was partly completed only due to lack of materials.

Corrosion is still within acceptable limits based on visual inspection.

Structural elements are in acceptable condition (ladder, platforms, manholes etc.). Thickness measurement report is available on board (conducted by Russian Maritime Register).

No critical observations reported.

APT	Comments
Upper Level	Fair
Middle Level	Fair
Lower Level	Fair
Condition of pipe supports.	Fair
Condition of Heating Coils	Fair
Condition of Anodes	Ok
Condition of walkways and Ladders	Fair
Tank Bottom Plating	Fair

Water ballast Tank 2 port

The tank is fully coated and has been partly re-coated during the deployment in Kola Bay. The tank was visually inspected & found in acceptable condition considering age of the unit. Some signs of corrosion observed. Almost no scale on the bottom.

WBT 2 PORT	Comments
Upper Level	Coating - Good/ Fair
Middle Level	Coating – Good

Lower Level	Coating – Good
Condition of pipe supports.	Good
Condition of Heating Coils	None Fitted
Condition of Anodes	Good
Condition of walkways and Ladders	Good

Water Ballast tank No. 2 STBD.

The tank was visually inspected & found in acceptable condition considering age of the unit. The tank is fully coated and has been partly re-coated during the deployment in Kola Bay.

Some signs of corrosion observed in the middle & bottom parts of the tank but within acceptable limits. Coating condition is in fair condition. Some areas to be re-coated.

Bell-mouth is in good working condition. Found the same problem with securing bolts (corrected).

WBT 2 STBD	Comments
Upper Level	Coating - Good
Lower Level	Coating - Good
Condition of pipe supports.	Good
Condition of Heating Coils	None Fitted
Condition of Anodes	None Fitted
Condition of walkways and Ladders	Good

No. 4 Water Ballast Tank Stbd

The tank was visually inspected & found in acceptable condition. The tank is fully coated, and have had patch work repairs done on coating during the deployment in Kola Bay.

Coating condition is in fair condition. In few areas painting found to be loose. It doesn't affect integrity on present stage.

Bell-mouth is in good working condition. Some scale observed on the bottom of the tank.

No. 4 WBT Stbd	Comments
Upper Level	Coating - Good
Middle Level	Coating - Good
Lower Level & DB	Coating – Fair
Condition of pipe supports.	Good
Condition of Heating Coils	None Fitted
Condition of Anodes	Good

Condition of walkways and Ladders	Fair
Other	Some areas with loose coating

No. 5 Water Ballast Tank PORT

The tank has signs of coating break down in several areas, there are also signs of patch work to coating. The tank found in acceptable condition.

Some areas have considerable signs of corrosion. However, structural integrity is not compromised on present stage. Steel under the scale is still in good condition.

Top ladders were changed during tank repair. Anodes are in place.

No. 5 WBT PORT	Comments
Upper Level	Coating - Good
Middle Level	Coating - Fair
Lower Level & DB	Coating – Fair
Condition of pipe supports.	Fair
Condition of Heating Coils	None Fitted
Condition of Anodes	Good
Condition of walkways and Ladders	Fair with some wastage
Other	

9.0 DECK EQUIPMENT

The FSU is fitted with the usual trading tanker layout on deck, there are some modifications done to cater for the low ambient temperatures in the area e.g. the fire lines are insulated and heated, the deck seal tank is insulated and heated.

9.1 GENERAL

Deck plates: general in very good condition, there are little to no corrosion seen. There is evidence of touch up painting by crew.
General Piping and piping supports: general in very good condition, again there is evidence of fabric maintenance by crew.
COW lines and COW system in good condition
Main crude oil lines in good condition
Windlass, anchor winches and capstans, general in good condition.
Foundations for equipment is generally found in good condition.
Lagging and insulation on steam piping, SW fire lines etc is generally found in good condition.
Hatches, hatch covers, manhole covers for tanks found in good condition.
Midship loading and offloading manifold in good condition.

9.2 Gas Compressors

Not applicable, there are no gas compressors

9.3 Turret System

Not applicable, the vessel is spread moored and does not have a turret

9.4 Main Processing & Utility System

Not applicable

9.5 Desanding Unit

Not applicable

9.6 Chemical Injection Skid

Not applicable

9.7 GENERAL CORROSION TOPSIDE

Generally the deck equipment has been kept in very good coating condition, and evidence of fabric maintenance is seen throughout the facility.

10.0 ACCOMMODATION

The FSU was generally operated with 33 POB, however since oil operations stopped in Dec 2013 the crew has been reduced to 28 POB. The accommodation is the original ships design, it is of high quality and standard in 1980. The cabins are spacious and officer cabins have separate bedrooms. The accommodation is very large and as such comfortable.

Although original 1980 fitted, the accommodation is in excellent condition, well kept and tidy.

The following was inspected inside the accommodation areas:

- Bridge and Navigation Deck
- Captains Deck, Captains room, 3rd officer day and bed room, HVAC room
- 3rd cabin deck, owners cabin and the two bed rooms, 1st officer dayroom and bedroom.
- 2nd cabin deck, officers' day room, billiard saloon/bar, gymnasium, family room.
- 1st cabin deck
- Boat deck, meeting room, Cargo control room, captains office, CE office, CO office, Chief steward office, galley, crew TV room, crew recreational room, officers mess room, crew mess room, duty mess room
- Upperdeck, changing room, foam room, workshops etc

The accommodation was kept under heating from steam supply to HVAC on captain's deck. The temperature was well controlled.

Overall condition and housekeeping is in a very good condition. No signs of leakage or damage noticed. HVAC and water supply and Black and Grey water drainage system and lighting where all functioning and condition of equipment was good. The air conditioning compressors has been decommissioned and disconnected from the air handling unit, reportedly the R22 piping is in poor condition.

Number of single man cabins total capability (POB): approx. 42

All toilets and showers are ships original, in good condition considering the age. Inventory such as wash basins, toilets, showers, furniture, lights etc. were found in a good condition. Sewage treatment plant designed for 2600 l/day.

The Central cargo control room was in good condition, although relatively small.

The Galley is located on the boat deck level, it is relatively small for an accommodation of this size. The galley equipment all appear to be of org ships supply, but in good working order nonetheless.

10.1 SUPERSTRUCTURE

Overall external appearance of the superstructure is very good. It was however noted that several drain lines from the external parts of the accommodation were cracked due to frost damage. Some of the drain pipes are temporary repaired by wrapping, some of this wrapping also has frost damage.

10.2 ACCOMMODATION VENTILATION

Condition of ventilation system in the accommodation is good, however there is only heating available as the air condition has been decommissioned during drydock. Traces of internal corrosion in the Freon piping is evident.

10.3 ACCOMMODATION EXPANSION

NA for this purpose.

10.4 HELIDECK

There is no Helideck, there is a Helicopter landing zone on STBD side forward of midship. This has not been used while the vessel has been in operation in Murmansk..

11.0 LIFE SAVING APPLIANCES

11.1 EMERGENCY EMBARKATION AREAS

The vessel is fitted with two (2) davit lifeboats, one port and one starboard and there is one (1) fast rescue boat. The lifeboats each have a capacity of 50. The fast rescue boat is located starboard side forward of the lifeboat, it has a capacity of 9 people.

The life rafts have been removed from both sides and is stored in the forecastle area.

11.2 LIFE BOATS AND DAVITS

Vessel is fitted with two (2) off lifeboats and one (1) fast rescue boat. The life boats are the org. ships supply. The life boats are being lowered to water on a monthly basis and tested on water every year. The FRC has a problem with the engine and has never been used while on location. The FRC is not a requirement in current location. Details are given below:

Mechanical Inspection Report			
S/No.	**Particulars**	**Remarks**	**Remarks**
1	Item description	Lifeboat	
2	No Off	2	
4	Type	Enclosed type	
5	Make	Harding 28’	
6	Capacity	2 x 50	
7	Other observations	These are original 1979 lifeboats	
8	Engine	Saab Diesel	
8	**Recommendation**	**Good Condition**	

Both lifeboats were inspected and found in good condition, one life boat was lowered to the boat deck. Bothe life boat engines were started and tested.
Due to the located of the vessel (near to shore), certain life boat equipment has been exempt from class e.g. provision, pyrotechnics.

11.3 LIFE RAFTS

Vessel was fitted with 2 x 25 life rafts each side and a life raft davit of 1.75T capacity. However life rafts are removed and stored under the forecastle. They were last inspected in 2004 and was due for recertification in 2005. Also the lifting wires on the davits have been removed in both Port and STBD side.

There is no life raft located on bow area, this needs to be installed.

11.4 FAST RESCUE CRAFT AND LAUNCHING DEVICE

Vessel is fitted with one (1) fast rescue craft (9 person) with own davit. This is located starboard side forward of the life boat. The FRC is not in use and has engine trouble.

12.0 MARINE DECK MACHINERY AND PIPEWORK

12.1 ANCHORING EQUIPMENT

Vessel is fitted with two (2) off anchors, two anchor chains, a number of windlasses. All equipment is reported to be in working condition and has been well maintained**.** The Port and Starboard anchor was deployed at site, the original anchors have been replaced in order to accommodate mooring at site. There is an original type spare anchor on the bow port side area – this appear in excellent condition.

The org ships anchors have been lost during mooring operation on location, the spare anchor from deck port side needs to be fitted and another anchor needs to be procured for the second winch.

The anchor and windlass winches are all steam operated, further two hydraulic winches were installed during the 2004 conversion. Poop deck has three steam operated windlasses, one port, one STBD and one double drum centre aft.

The vessel is spread moored, with seven (7) smaller chains AFT and four (4) larger ones FWD. Slack on FWD anchor chains were pulled in last year with the org winches.

12.2 MARINE MOORING EQUIPMENT

All in place and functional. The winches are being exercised now and then.

12.3 OFFTAKE EQUIPMENT

The ship side manifolds are being used for loading and offloading activities. These are the original ship manifolds. Mainly the STBD side manifold has been used for cargo operations and currently the offloading – loading hoses are hooked up to this manifold. The Port side manifold has mainly been limited to bunker operations due to navigational space constrains towards Belokamenka village.

12.4 DECK CRANES

Vessel is fitted with two (2) deck cranes fitted in 2004 and 2 derricks org from vessel build. One crane and one derrick is fitted in STBD and Port side, the STBD one has been used the most. All four units are operational and with current certificates.

Both deck cranes were tested. No leaks observed. Limit switches on boom wires are not working. Remote control for port crane is not working.

Crane wires had never been changed during operation. Nevertheless, they seem to be in good condition. No signs of damage or corrosion.

The 2 set pedestal cranes each has a capacity of 15 tons, and is located on main deck starboard and port side around mid-ship manifold. The working radius is 6 – 24 meter.

1 set monorail crane with downgraded capacity of 1 ton located on main deck aft of accommodation running port to starboard side. The down grade of the monorail crane is reportedly done so recertification can be done by crew. The original capacity of this crane was 6 Ton at low speed and 2 Ton at high speed

Mechanical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item description	2 x Deck Area Crane
2	Manufacturer	ABAS
3	Year of Manufacture	2003, installed 2004
4	Capacity	15 ton @ 6 - 24 meter
5	Max / Min working radius	6 – 24 meter
6	Other observations	General good condition
7	Recommendation	

Mechanical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item description	Mono Rail crane AFT
2	Manufacturer	Liebherr
3	Year of Manufacture	1980 estimated
4	Type	Electrical driven
5	Capacity	1 T (downgraded from 6/2Ton)
6	Other observations	Original ship crane
7	Recommendation	N/A

13.0 MACHINERY DECKS / ENGINE ROOM

A survey was carried out on all the machinery decks. A brief description is given below based on visual inspection. If was noted that the ER appearance and housekeeping was generally very good. There was however some areas in the upper part at Exhaust boiler level bottom where house keeping could be improved.

13.1 ENGINE ROOM LOWER LEVEL

The external appearance of the equipment foundations, tank tops and bilges area in good condition. Few rust spots noted on tank top. Pump foundations are in good condition. Bilges were found to be clean and with limited fluid level. All sea water pumps, MGPS, fire pumps, bilge separator are located here. The two Main fire pumps are regularly being used. All SW pumps are operational.

The equipment in the lower level includes SW IG scrubber pump, Bilge and GS SW pump, 2 x Main Fire pumps, FO transfer pumps, 2 x IG seal water pumps, 2 x Condenser SW pumps, 2 x Aux SW pumps condenser, 2 x Main SW cooling pumps, 1 Hypochlorite generator, seachest, 1 new FWG ejector pump and 2 x org FWG ejector pumps, 3 x Main Lube oil pumps, 2 x camshaft lube oil pumps, 2 x sterntube lube pumps, sterntube and turning gear for Main engine.

The ship side shell, the overboard valves and stub pieces as well as the seachests appear in good condition. There is very little corrosion noted on these critical items.

There were three spare scavenging air cooler segments for the Main Engine stored FWD of the engine.

13.2 ENGINE ROOM 4TH DECK PLAN

This deck has the main central cooling FW coolers and pumps, M/E L.O cooler, purifier room and cargo pump turbines. The cargo pump turbine platform has four cargo pump turbines and two ballast pump turbines, all six turbines are same make and model.

In detail the purifier room has 3 x FO purifiers, and 1 x LO purifier, all are same make and model. The FO pumps for main engine and boiler as well as heaters are located here.

The 4th deck has 2 x Condenses for the turbines, 2 x condensate pumps, 2 x FW pumps for Main engine, 2 x vacuum pumps, 2 x ME LO coolers, 2 x LT FW cooling pumps, 2 x FWG, 2 x ME Aux blowers, 2 duplex Main engine LO filters, 1 LT cooling pump for port use, 4 x CJC filters, and the 2 x LT central coolers as well as ME FW cooler.

13.3 ENGINE ROOM 3rd DECK PLAN

This deck is the ME top level. In detail the 2 auxiliary generators and their local control panels are located here. The main workshop, fuel injector shop and electrical workshop is on this level. The ME large spares are located aft. The 2 x main boilers are located forward with the local control panel. Boiler water testing station, hammelman HP centralized cleaner, boiler feed pumps, atmospheric drain tank, FO-DO blending unit (not in operation), FO-DO blending heater, LO purifier for Aux engine, 2 x LO priming pumps, Hot water tank and circulation pump, Hydrophore tank and 2 x hydrophore pumps.

13.4 CONTROL ROOM FLAT

This deck has the Engine Control Room located on the Port side containing switchboard and ER equipment control.

The turbo generator, the small and the large ship service air compressors with receiver, the control air compressor with receiver and air dryers and the nozzle air blower is located on this level.

13.5 ENGINE ROOM 2nd Deck PLAN

This deck has stores room, the sewage treatment plant and sewage tank, the new service air compressor and receiver, the steering gear flat, the exhaust valve sealing air compressor and receiver, the 3 x main starting air compressors, the 2 x main starting air receivers, the 2 x provision ref. units, the 2 x main Air conditioning units (decommissioned) with receivers and condensers, LO, FW and FO tanks, 2 x air ejectors for the boilers, the 2 x FD fans for boilers, top of boilers, the boiler chemical injection pumps, the steel store area, various ME parts for turbochargers, 2 x boiler feedwater tanks, the incinerator. .

13.6 ENGINE ROOM UPPER DECK AND ENGINE CASING

This area has the bottom of the Aux. Exh boiler and the dearator. The uptake valves for the IG plant are also located here.

14.0 MACHINERY SPACES (external to ER)

A survey was carried out of the machinery spaces (external to ER). A brief description is given below based on visual inspection. All areas were well maintained and clean.

14.1 PUMP ROOM

The pump room and equipment was found in good condition. Pump room consists of 4 pcs cargo and 2 pcs ballast pumps, 2 pcs steam driven stripping pump. Visual condition of the pump room is good.

All equipment appear well maintained, cleaned & marked. Ventilation is working well. Lighting is in good condition. Pump room bilges are clean & empty. Pump room bilge alarms were not tested. Gas alarm system was not tested, but appear functional.

All valves are in good condition. No signs of leak or corrosion. Marking is in place. Note that some marking is in Russian only.

Area is covered with CO2 & Foam fixed fire-fighting system. Mesh on foam nozzle on the bottom is a little bit dirty. No critical.

COP No. 2 appear to have minor leaking from mechanical seal.

Spare shaft and impeller available on board.

14.2 AHU ROOM

AHU room is located on the captain's deck (just below bridge) in the accommodation. Visual appearance and housekeeping is good. The existing space consists of the two Main AHUs.

14.3 CO2 ROOM

The existing CO2 room is located on upper deck STBD side FWD part of engine casing. Visual condition is good, the CO2 bottles are with current certificates. The engine room as well as the pump room is protected with CO2 coverage.

14.4 EMERGENCY GENERATOR ROOM

The existing EDG is rated at 700 Kw. This is a Daihatsu 8DS26 720rpm diesel engine. The engine can be operated on air cooling for EMG purposes and with SW cooling for parallel operation to Auxiliary generators. The general condition was good. The EMG generator is being tested weekly.

14.5 PAINT STORE

The paint store is located midship aft of accommodation on upper deck.

14.6 CARGO CONTROL ROOM

The cargo control room and central control room is located on the Boat deck. The tank gauging control system is SAAB tank radar system.

14.7 WORKSHOPs

Bosun workshop located on Port side. Some items have to be sea fastening before sailing. Housekeeping is on acceptable level. Mostly used equipment stored there (used wires, ropes, wood, old embarkation ladders etc.). Two coils of mooring ropes stored there. Found number of anodes stored in Bosun Store, which can be used for renewal in ballast tanks as required.

Deck workshops were inspected & found to be in good order. Spare parts & equipment are well preserved & can be used, if required. Sea fastening required before sailing.

Engine room workshop was well equipped with tools and house keeping was good.

14.8 STEERING GEAR FLAT, ENG ROOM 2nd LEVEL

The steering gear flat layout consists; the steering gear, three hydraulic units. The steering gear unit has been decommissioned under MO 99. However the lock was removed and the steering gear was tested successfully from bridge control as well as local control. All three hydraulic power units are fully functioning. The hand powered phone connecting to the bridge was also functioning.

There had been one repair of hydraulic piping from the STBD hydraulic pump, the repair appear to be older and of good standard.

15.0 ASBESTOS REPORT

It is unclear whether the vessel is asbestos free. It was noted that some of the steam insulation in the engine room appear to be the original ships 1980 supply. Ceilings in accommodation is likewise org supply from yard in 1979-1980

16.0 PIPING AND VALVES

Conducted a survey of the piping, valves, pipe supports etc was not reviewed. However, no leakages, unpainted areas noticed anywhere in the engine room.

A visual inspection of piping and valves carried out in the engine room bilge areas. General in good condition. SW piping for coolers appear to be CU-NI.

17.0 CARGO AND BALLAST SYSTEM

17.1 CARGO PUMPS WITH DRIVER

Vessel is fitted with four (4) steam turbine driven cargo pumps. Details as given below:

Pump Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Cargo Pumps 4 off
2	Manufacturer	Shinko KVD-450-4
3	Year of Manufacture	1979
4	Serial Number	
5	Type	Vertical, Single stage, Centrifugal
6	Rating	4500 m3/hr x 155 m
7	Whether observed in running condition – yes / no	Yes
8	Any Major Repairs	No
9	Abnormal observations: vibration / high temp / corrosion etc	NA
10	General Condition	Good
11	**Driver**	Steam Turbine
12	Manufacturer / Frame Size	Shinko RS-700, vertical
13	Year of Manufacture	1979
14	Serial Number	49831/49832/49833/49834
15	Nameplate Details:	2500kw normal, Pmax 16bar Pnorm 14.5bar, 5864/1200rpm
16	Cargo Pump Instrumentation	Good
17	Cargo Pump Local Control Panel	Good
18	Ex Certification (if applicable)	NA
19	**Recommendation**	**Good condition**

17.2 CARGO STRIPPING PUMP

Vessel is fitted with one (1) off steam driven stripping pump. Pump is located in the cargo pump room.

Pump Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Cargo Stripping Pump 2 pcs
2	Manufacturer	Shinko
3	Year of Manufacture	1979
4	Serial Number	
5	Type	Vertical, Steam Driven, Duplex Double Acting
6	Rating	350 m3/hr at 155m
7	Whether observed in running condition – yes / no	No
8	Any Major Repairs	No
9	Abnormal observations: vibration / high temp / corrosion etc	No
10	General Condition	Good
11	**Driver**	Steam
12	Manufacturer / Frame Size	
13	Year of Manufacture	
14	Serial Number	
15	Nameplate Details:	
16	Ex Certification (if applicable)	
17	**Recommendation**	**OK for further use**

17.3 BALLAST PUMPS WITH DRIVER

Vessel is fitted with two (2) off ballast pump, steam turbine driven. Pump is located in the cargo pump room, the steam turbine is located in the engine room.

Pump Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Ballast Pump 2 off
2	Manufacturer	Shinko KVD 450-4
3	Year of Manufacture	1979
4	Serial Number	
5	Type	Vertical single stage Centrifugal
6	Rating	4500 m3/hr x 155 m
7	Whether observed in running condition – yes / no	Yes
8	Any Major Repairs	No
9	Abnormal observations: vibration / high temp / corrosion etc	NA
10	General Condition	Good
11	**Driver**	Steam Turbine
12	Manufacturer / Frame Size	Shinko RS-700, vertical
13	Year of Manufacture	1979
14	Serial Number	49835/49836
15	Nameplate Details:	2500kw normal, Pmax 16bar Pnorm 14.5bar, 5864/1200rpm
16	Ballast Pump Instrumentation	Good
17	Ballast Pump Local Control Panel	Good
18	Ex Certification (if applicable)	NA
19	**Recommendation**	**Good**

17.4 CARGO AND BALLAST CONTROL SYSTEMS

In good working condition. Washing of two cargo tanks observed during inspection. COW header pressurized up to 10 bars. No leaks found. All COW machines are well maintained.

18.0 CRUDE OIL WASHING SYSTEM

In good working condition, COT 5P and 4S were crude oil washed during the inspection.

18.1 TANK CLEANING HEATER

In good working condition. Heating coil system for cargo and ballast tanks is in good working condition. Few heating coils are leaking. However, the percentage of such leaking coils is acceptable.

18.2 COW MACHINES

In good working condition, COT 5P and 4S were crude oil washed during the inspection

19.0 BILGE SYSTEM

19.1 BILGE PUMPS

Not inspected.

19.2 BILGE SEPARATOR

Vessel is fitted with a 15 ppm bilge separator. The unit looks to be fully functional however the unit has not been used on location. The unit was installed at Dubai drydock in 2004. The OB line and valve is in place but locked in closed position.

Mechanical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item description	Bilge Separator
2	Manufacturer	JOWA OIL-A TRIOSEP
3	Year of Manufacture	2003
4	Serial Number	MJT5396
5	Rating	10 m3/hr
7	Whether observed in running condition – yes / no	No
8	Oil Content Meter	JOWA M - 93
9	Any Major Repairs	No
10	Certification	Approved acc. IMO Res.MEPC 60 (33)
11	Abnormal observations: vibration / high temp / corrosion etc	NA
12	Oily Water Monitor	Good condition
13	Oily Water Monitor Valves	Locked closed
14	Oily Water Local Monitor Controls	Good condition
15	Other observations	

20.0 MAIN PROPULSION SYSTEM

The main engine external and internal visual condition appears to be in a very good condition considering the age. There were no signs of corrosion or major leaks.

The Main Engine has been kept on heating for the duration of the operation in Kola Bay. The engine is being turned using the turning gear on regular basis with the lube oil pumps running and with cylinder lubricators activated by hand.

Lube oil analysis has also been carried out on regular basis, and the oil is shown as being useable still, it is however recommended to operate the lube oil centrifuge for cleaning prior to start up.

Cooling water analysis showed good level of corrosion inhibitor.

The Main engine Lyngsoe control panel needs to be serviced, part of the power source has been disconnected. Alarms and shut downs needs to be confirmed functioning prior to commencing any sea journey.

The three turbochargers have been sitting in same position since 2004 and the bearings needs to be opened and inspected prior to start up. At the same time the lube oil naturally needs to be replaced on all three chargers.

The scavenge air receiver and a few scavenge air doors were opened for full port inspection of all cylinders. The scavenge air receiver and scavenge air spaces under the cylinders is relatively clean. The general cylinder condition was found fair to good, there were however a few problem areas found.

- Cylinder 12 has top ring broken and collapsed, the piston crown top has severe burn marks and needs replacing as well. Cylinder 12 needs to be pulled and overhauled.
- Cylinder 10 appear to have stuck top ring, fuel on piston crown top, and carbon deposits on ring land 1 and 2.

The scavenge air blowers was visual inspected, no comments. The scavenge air flaps were all in place and in good condition. The uptake from coolers was found quite dirty.

There are several pistons that has a Diesel oil on the top, cylinders 2, 3, 4, 7, 10, 11 and 12. This is not deemed critical in any way, however no leak from fuel oil valves needs confirmation through scav. Air port inspection with fuel system fully operational.

The piston rods has some scratches which is expected considering the age of the vessel, these are fit for use. No corrosion seen.

The main engine is not fitted with an oil mist detection system, instead it has bearing temperature monitoring on crankpin bearings, main bearings and crosshead bearings, these are all connected to the card type alarm system and all have slow down function for the main engine. These critical alarms also needs to be verified prior to any sea journey.

It is difficult to judge the cylinder liner condition, other than it can be mentioned that cylinder liner 5, 7 and 11 is in the best condition of the cylinders.

A crankcase inspection was carried out as well, the internal condition of the crankcase was found very good. There is little to no corrosion found, there were no traces of white metal in the bottom or protruding from any bearings. The crosshead guides were found in good condition. The crosshead trust pads appeared in good condition. Due to the prolonged stoppage of the engine it is however recommended to open and inspect one main bearing and crankshaft journal.

The chain drive was also opened and again found in very good condition, the sprockets are well lubricated and show no excessive wear. The chain appear in good condition as well as the guide bars visible at time of inspection. The chain tightener was visual inspected only.

Camshaft sections and roller guides Cyl. 1, 6, 8 and 11 were inspected and found in good condition.

There is quite a number of large main engine spares available.

- 7 exhaust valves, some of these look newly overhauled
- 3 cylinder liners – one new and two used with condition unknown – to be verified
- 2 piston rods with stuffing boxes, these rods have corrosion from lack of preservation
- 2 new piston rods on 1st deck level
- 4 new exhaust valve spindles and 2 used ones
- 3 cylinder heads and what appear to be one new cylinder head
- 3 used piston crowns that needs to be reconditioned or scrapped
- 1 reconditioned piston crown from Goltens Dubai
- 2 new piston crowns in boxes
- There are two sets of piston rings on 1st level
- There was NO spare fuel oil pump plunger/barrel
- Most ME special tools seem to be in place, it is expected hydraulic rings and back up rings on jacks needs to be replaced, also those in the build in cylinder head jacks.

Mechanical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item description	Main Engine
2	Manufacturer	Mitsui MAN B&W 12L90GFC
3	Year of Manufacture	1979
4	Running Hours	Not Confirmed, estimated 24 years of operation as trading tanker
5	MCR	40.900 BHP (30.102 kW) @ 94 rpm
6	**Other Specs**	
	1. Fuel	HFO & DO
	2. RPM	94
	3. Power	37.200 BHP (27.379 W) @ 91 rpm
	4. (any other)	Three ABB VTR turbochargers with internal lube oil system.
7	Whether observed in running condition – yes / no	No
8	If yes, at what % MCR	NA
9	Any Major Repairs	Cylinders overhauled at Dubai drydock
10	Any de-rating?	No
11	Abnormal observations: vibration/ high temp / corrosion	NA
12	Other observations	External condition very good, Port inspection condition fair (good considering age), crank case condition very good.

21.0 FUEL SYSTEM

21.1 FUEL PUMPS

The boiler FO supply pumps were in operation, the main engine FO supply pumps needs to be tested prior to journey. The fuel system for the Main engine was not in operation, the fuel inlet valves for ME fuel pumps were all closed. The Main engine was stopped on DO in 2004.

21.2 FUEL PURIFIERS

Vessel is fitted with three (3) off fuel purifiers and one (1) off LO purifier. The FO purifiers as given below.

Mechanical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item description	Fuel Purifiers 2 off
2	Manufacturer	Alfa Laval WHP/513TGD-24-66/88-1010-01-00
3	Year of Manufacture	1979
4	Running Hours	NA
5	Rating	
6	**Other Specs**	
	5. Fuel	NA
	6. RPM	Worm wheel shaft 1700-1800 rpm
	7. Power	
	8. Sludge disch	Automatic
7	Whether observed in running condition – yes / no	No
8	If yes, at what % MCR	
9	Any Major Repairs	No
10	Any de-rating?	No
11	Abnormal observations: vibration high temp / corrosion	No
12	Other observations	Good external condition, proven Alfa Laval design (with worn gear)

21.3 FUEL HEATERS

Not inspected, but vessel is fitted with fuel oil heaters for the main engine, boiler and generator engine, purifiers.

22.0 COOLING SYSTEMS

22.1 SEAWATER COOLING SYSTEM

The Seawater cooling system was in operation, no leaks observed.

22.2 CENTRAL FRESHWATER COOLING SYSTEM

The central cooling fresh water system was in operation, no leaks or abnormalities found. The SW temperature in the area was around 2 ºC, therefore any fouling affecting the coolers performance at higher ambient temperatures cannot be detected at this point.

22.3 COOLING SYSTEM PUMPS

The cooling system pumps were in operation, no abnormalities observed.

22.4 SEACHESTS

Conducted an external inspection of the sea chest on the engine room side. There was no evidence of corrosion. Overall condition looked good.

23.0 STEAM GENERATION

23.1 SHIP BOILERs

Vessel is fitted with two (2) ship boilers which cater to COPT and ballast turbines, steam heating in tanks, anchor winches and windlasses, FO heating, turbo generator steam turbine (decommissioned), slop tank heating, stripping pump, fresh water generators and other auxiliary services including IG uptake.

The boilers are operated on HFO 380 oil with steam atomizing. The STBD boiler No, 1 was opened for inspection in primary steam and water drums as well as furnaces of the boilers where open. The water side of the boiler was in good condition, there was a very minimum amount of scales inside the tubes. The fire side was somewhat dirty and needs cleaning. There were eight (8) steam generating tubes plugged, but this was in the hot gas section and therefore not critical. There was one water wall tube plugged, and this has cracked open on the fire side. This tube is part of the structure of the boiler, and it is therefore necessary to cover this tube with refractory to avoid further damage. The port boiler no. 1 has a similar tube plugged, so this must be inspected and repaired as necessary as well.

Gas side inspection: Traces of Soot deposits found all the way up to super heater coils, Worse parts furnace, and bottom of steam generating tubes stack (top of water drum). This can be one of the reason for so localized tubes failures (soot plus humidity creating extremely corrosive environment).

Refractory lining around burner swirler, should have 22.5 degree open cone shape, hardly can be noticed and need to be repaired

The boiler water records showed good boiler water treatment and management. Drew chemicals are used. A boiler water test was carried out, and results matched the records.

There is no conductivity measurements carried out.

Mechanical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item description	Ships Boiler
2	Manufacturer	Mitsui Double Evaporation Boilers
3	Year of Manufacture	July 1979
4	Pressure rating Prim/Sec	55/18 bar
5	Rating	70.000 kg/hr
6	Serial numbers	1305 (No. 2 Port) and 1306 (No. 1 STBD)
6	**Other Specs**	
	9. Fuel	IFO/FO

	10. Dimensions	
	11. Fuel consumption	15-18 T/day during normal hot layup, 40-45 T/day during cargo operations
7	Whether observed in running condition – yes / no	Port boiler yes, STBD boiler no. The boilers are changed over every two months of operation
8	If yes, at what % MCR	
9	Any Major Repairs	No info
10	Any de-rating?	No
11	Abnormal observations: vibration/ high temp / corrosion	NA
12	BMS & BAC Control System	**NA**
13	Boiler Instrumentation	OK
14	Other observations	**The boilers are in very good condition. There are a few minor repairs suggested**

23.2 DECK BOILERS

None

23.3 CARGO TANK HEATING SYSTEM

Operational. Heating coil system for cargo and ballast tanks is in good working condition. Few heating coils are leaking. However, the percentage of such leaking coils is acceptable.

24.0 COMPRESSED AIR SYSTEM

The vessel is fitted with seven (7) different air systems:

- The main starting air system, consists of three Tanabe reciprocating compressors and two large 30 bar starting air receivers.

- The Ship service air system, consists of one smaller Tanabe reciprocating compressor and one larger Reavell reciprocating compressor.

- The new service air system, with one Atlas Copco GA75 screw compressor fitted in 2004 and its dedicated service air receiver.

- The control air system, with a Nash screw compressor, a control air receiver and two sets of control air dryers.

- The exhaust valve sealing air system, with a Tanabe reciprocating compressor (four) Sperre piston compressors and some Tanabe Screw compressor units.

- The emergency diesel generator starting air system, which consists of a small Yanmar diesel engine driven compressor and its dedicated starting air tank, all located in the Emg gen room.

- The nozzle air injection blower system, this system is for use on the propeller nozzle.

The Main Start Air, control air, new service air, sealing air and service air receivers were all pressurized and in operation. Compressors in operation during the inspection were the three starting air compressors, the control air compressor and the new service air compressor.

All three starting air compressors were tested during the inspection with satisfactory result.

25.0 ELECTRICAL POWER SYSTEM

25.1 AXUILIARY DIESEL GENERATOR No. 1 & 2

The vessel is equipped with two auxiliary diesel generators located in the engine room stbd section on 3rd deck. The diesel generators appears in good condition, were clean and with no major leaks sighted. The Diesels are connected to Main switch board.

Both diesel generators were in operation during the inspection, load was observed ranging from 400 – 700 kw per unit and up to 1000kw on the MSB. Daily fuel consumption is in the range of 4m3. The generators are operated on diesel fuel only.

The generators are performance tested every 1 – 2 months, but only at around 50% load (700kw). A couple of performance test sheets were available and the figures looked good. The chief engineer reported max load operation at 800kw, if load increased above this the second generator was started. There was no reason mentioned for this practice.

The cooling water system corrosion inhibitor level was good.

The auxiliary diesels are fitted with Woodward UG-8 governors.

Lube oil consumption was reported to 800 – 825 ltrs per month which is normal level for a diesel engine this size. Lube oil analysis is carried out, water content was low and BN number around 13 which is also good.

The engines alarm and shut down functions were reportedly tested regularly, and it appears maintenance is carried out according to manual.

The aft engine has some fuel spillage in the fuel rack area, but nothing more than expected for this type of engine. It also has a fuel oil inlet pipe temporary repaired on cylinder #5, this has to be replaced with new org spare – no spare available.

Auxiliary engine major spares:

One complete used turbocharger, 3 complete overhauled cylinder heads, 2 new connecting rods, pistons rings. No cylinder liner nor piston complete was found.

Electrical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Auxiliary Diesel Generators
2	Manufacturer	Daihatsu 6DS-32
3	Year of Manufacture	Oct 1979
4	Serial Number	D632181/D632182
5	Running Hours	DG#1 112950 hrs, DG#2 113400 hrs
6	MCR	2100PS engine,
7	**Other Specs**	
	12. Fuel	Operated on DO, but FO/DO blending unit present, has been operated on blended fuel in the past.
	13. RPM	600
	14. Power	1400 kW / 1900 HP on MSB
	15. (any other)	6 Cyl Inline design. 320mm bore 380mm stroke. Single ABB VTR Turbocharger and charge air cooler.
8	Whether observed in running condition – yes / no	Yes both DG#1 and DG#2
9	If yes, at what % MCR	500 – 700 kw ~ approx. 50%

Electrical Inspection Report		
S/No.	**Particulars**	**Remarks**
10	Any Major Repairs	None observed
11	Any derating	None
12	Abnormal observations: vibration / high temp / corrosion etc	
13	General Condition	Good
14	**Alternator**	
15	Manufacturer / Frame Size	Mitsui Engineering and ship building, Type TWS 1703312
16	Year of Manufacture	Aug. 1979
17	Serial Number	12819
18	Nameplate Details:	
	• Voltage	450 V / 60 Hz
	• kW Rating	1400 kW / 1750 kVA
	• Full Load Current	2248 A
	• Power Factor	0.8
19	Genset Operation and Local control Panel	Controlled from ECR
20	Ex Certification (if applicable)	N/A
21	**Recommendation**	**Good condition**

25.2 ESSENTIAL DIESEL GENERATOR

NA

25.3 MAIN SWITCHBOARD

440 Volt Terasaki switchboard, serial number 79-0654, MFG number SM-6624. The switchboard has the two auxiliary generators and the turbo generator connected, further there is an option for parallel operation of the emergency generator with the auxiliary generators.

The Terasaki generator breakers for DG#1 and DG#2 was replaced recently due to recommendation from Terasaki.

Switch board was in full operation and looks to be in good condition.

Majority of Lighting and Motor control panel also found good condition.

Electrical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Main Switchboard
2	Manufacturer	Terasaki
3	Year of Manufacture	1979
4	Serial Number	
5	Rating	

Electrical Inspection Report		
S/No.	**Particulars**	**Remarks**
8	Whether observed in running condition – yes / no	Yes
9	General condition	OK
10	Operation and Controls on the panel SWBD	
11	**Recommendation**	**NA**

25.4 EMERGENCY DIESEL GENERATOR

The Emergency generator can be operated in two modes, one with the air cooled fan system and one with SW cooled system. The air cooled fan system is for emergency generator mode, in this mode the cooling capacity limits the output to 350 KVA / 280 kW. In SW cooled mode, designed for parallel operation with the main switch board auxiliary generators, the output is the full rated 850 KVA / 700 kW.
The emergency diesel is fitted with a Woodward UG-8 governor
The emergency diesel generator is tested weekly and appears in good condition.

Electrical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Emergency Diesel Generator
2	Manufacturer	Daihatsu 8PSHTb-26D
3	Year of Manufacture	1979
4	Serial Number	8262064
5	Running Hours	
6	MCR	1090 PS / 800 kW
7	**Other Specs**	
	16. Fuel	Diesel
	17. RPM	720 rpm
	18. Power	700 kW / 850 KVA
	19. (any other)	260mm bore, 320mm stroke
8	Whether observed in running condition – yes / no	No
9	If yes, at what % MCR	
10	Any Major Repairs	Some alignment job on generator air gap seems to have been conducted. There was no further info.
11	Any derating	No
12	Abnormal observations: vibration / high temp / corrosion etc	NA
13	General Condition	Good
14	**Alternator**	
15	Manufacturer / Frame Size	Mitsui Engineering and Shipbuilding
16	Year of Manufacture	1979

Electrical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Emergency Diesel Generator
17	Serial Number	12821
18	Nameplate Details:	Type EDS.1203610
	• Voltage	450 V
	• kW Rating	850 KVA / 700Kw
	• Full Load Current	1095 Amp
	• Power Factor	0.8
19	Local Control and Monitoring Equipment Status	
20	Ex Certification (if applicable)	N/A
21	**Recommendation**	**Good**

25.5 EMERGENCY SWITCHBOARD

Electrical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Emergency Switchboard
2	Manufacturer	Terasaki
3	Year of Manufacture	1979
4	Serial Number	79-0726
5	Rating	850 KVA
8	Whether observed in running condition – yes / no	Yes
10	Local Control and Monitoring Equipment Status	
11	General Condition	N/A
12	**Recommendation**	**Good**

25.6 Transformers:

No comments.

25.7 UPS and Battery Room:

Battery room is located on the port side sundeck outside captain's deck. The room houses all batteries for the vessel, emg phone system batteries, Fire alarm batteries, radio batteries, general service batteries, and engine alarm batteries.

The batteries are quite old, but appear in fair condition.

There are three battery charger systems, two in the engine control room and one in the accommodation on captain's deck. They are all three in operation.

25.8 STEAM TURBINE GENERATOR

There is a steam turbine generator. This generator is connected to MSB and the main ship boilers supply the steam. The turbine is out of class and has not been in use since the dry dock in Dubai – the condition is unknown. Unconfirmed reports states it is unable to produce more than 200 kW.

The turbine is fitted with A Woodward UG8 governor.

The turbine is rated at 1760 KVA / 1400 kW.

Electrical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Steam Turbine Generator
2	Manufacturer	Mitsui Brown Boveri
3	Year of Manufacture	1979
4	Serial Number	MTG 300
5	Running Hours	NA
6	MCR	1400 kW (MCR), 1200 kW (MER)
7	**Other Specs**	
	Press/Temp	6 bar 260 ºC
	RPM	8710/1800
	Vacuum	680 mm HG
8	Whether observed in running condition – yes / no	No
9	If yes, at what % MCR	
10	Any Major Repairs	None observed
11	Any derating	See comment on 200kW max
12	Abnormal observations: vibration / high temp / corrosion etc	See comment on 200kW max
13	General Condition	See comment on 200kW max
14	**Alternator**	
15	Manufacturer / Frame Size	Mitsui Engineering and SHipbuilding
16	Year of Manufacture	1979
17	Serial Number	12820
18	Nameplate Details:	
	• Voltage	450 V / 60 Hz
	• kW Rating	1750 kVA
	• Full Load Current	A
	• Power Factor	0.8
19	Genset Operation and Local control Panel	Controlled from ECR
20	Ex Certification (if applicable)	N/A
21	**Recommendation**	**See comment on 200kW max**

26.0 INERT GAS SYSTEM

Vessel is fitted with a traditional inert gas system with two fans, a scrubber, a demister, a deck seal, uptake from Main ship boilers. The inert gas system receives flue gas from the main ships boilers. The system is controlled from a dedicated inert gas control panel in the cargo control room, there is an indication panel on the bridge as well. The Two IG blowers are ships original equipment.

The inert gas system is in regular use and in fair condition given the age of the equipment. The scrubber has the top portion part cemented due to corrosion. This should be repaired.

There has been some corrosion on the IG lines on deck, approx. 10 pcs of pipes has either been patch repaired or replaced. The quality of the repairs are quite good and coating has been reinstated.

26.1 INERT GAS BLOWERS

Mechanical / Electrical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Inert Gas Blowers (2 off)
2	Manufacturer	Nishishiba TB 94
3	Year of Manufacture	1979
4	Serial Number	101810PKTA-2
5	Running Hours	NA
6	Rating	2 x 25000 m3/hr
7	Other	
8	Whether observed in running condition – yes / no	Yes
9	If yes, at what % MCR	NA
10	Any Major Repairs	Internal coating of fans
11	Any derating	No
12	Abnormal observations: vibration / high temp / corrosion etc	
13	General Condition	Fair
14	**Motor**	
15	Manufacturer / Frame Size	Nishishiba NTIKE
16	Year of Manufacture	1979
17	Serial Number	501373PM30 - 1
18	Nameplate Details:	
	• Voltage	450 V
	• kW Rating	250 kW
	• Full Load Current	375 A
	• Power Factor	0.8
	• Efficiency	

Mechanical / Electrical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item Description	Inert Gas Blowers (2 off)
19	Local Control and Monitoring Equipment Status	
20	Ex Certification (if applicable)	NA
21	**Recommendation**	**Good**

26.2 INERT GAS SCRUBBER PUMP

Not Inspected

26.3 INERT GAS DECK SEAL

The deck seal is located on main deck port side. The deak seal is steam heated and insulated. External visual appearance is good.

The deck seal was last inspected in 2014.

26.4 INERT GAS PV VALVES

Not Inspected.

26.5 INERT GAS CONTROL SYSTEM

The inert gas control panel has a dedicated control system which is located in the cargo control room.

27.0 FIRE SYSTEM

27.1 GENERAL

The fire system is the ships original system, it is located on the bridge and in the CCR.

The fire alarm system was briefly tested, the automatic doors shut closed and the ventilation system stopped as it should.

The engine room as well as the pump room was protected by a full flood CO2 system, the CO2 room was located on the starboard side upper deck in engine room casing. This is a high pressure bottle type system. The bottles are with current certificate.

27.2 FIRE PUMPS

There are two electric driven fire pumps of 200 kW each in the lower level of engine room Port side. Both pumps are regularly used and seem in good condition.

Fire/Foam monitors are located along the centre line on main deck, there are a couple of fire/foam monitors at Port and STBD side near accommodation. A couple of monitors were tested and found in good condition.

There is a smaller Ellehammer type emergency fire pump located in the foam room on upperdeck in the accommodation, this pump is also electrically driven and tested regularly.

The foam tank is a stainless steel tank fitted in 2004, the tank is full and the foam is regularly tested. There are two foam pumps and two 5% foam proportioner valves in the foam room. The system appear in good functional condition.

As a small side note there are several patch repairs carried out on the stainless steel foam tank, the steel appear to be of a poorer quality.

28.0 STEERING SYSTEM

The vessel steering gear appeared in good condition. The steering gear flat layout consists; the steering gear, three hydraulic units. The steering gear unit has been decommissioned under MO 99. However the lock was removed and the steering gear was tested successfully from bridge control as well as local control during the inspection.

All three hydraulic power units are fully functioning.

The hand powered phone connecting to the bridge was also functioning.

There had been one repair of hydraulic piping from the STBD hydraulic pump, the repair appear to be older and of good standard.

29.0 DISTILLED WATER AND FRESHWATER SYSTEM

The following tanks are available for FW storage:

Tank	Side	Fr Nos	100%	
			m^3	FW tonne
F.W. TK (P)	P	14 - 18	388.1	388.1
F.W. TK (S)	S	14 – 18	388.1	388.1
FEED WATER		55 - 58	82.6	82.6
FEED WATER BUFFER		34 - 38	92.2	92.2
DIST WATER TANK		34 - 38	92.2	92.2
COOLING WATER		14 - 17	47.9	47.9
TOTALS			**1091.1**	**1091.1**

29.1 FRESHWATER GENERATORS

Vessel is fitted with two (2) off fresh water generators shell and tube type, which work on the steam supply. The fresh water generators were not in service during the inspection, however is reportedly in operational condition and can produce 20-22 ton per unit per day. It is recommended testing both units prior to any sea journey and rectify any faults found.

The daily freshwater consumption on the entire vessel is around 20 ton/day.

Mechanical Inspection Report		
S/No.	**Particulars**	**Remarks**
1	Item description	Freshwater Generator
2	Manufacturer	Sasakura – Atlas Type AFG
3	Year of Manufacture	Apr. 1979
4	Serial number	2863
5	Rating	2 x 30 ton / day
6	Other	Unit No. N-10550

7	Whether observed in running condition – yes / no	No
8	If yes, at what % MCR	
9	Any Major Repairs	No info
10	Any de-rating?	No
11	Abnormal observations: vibration / high temp / corrosion etc	No
12	Local Control and Monitoring Equipment Status	
13	Other observations	**Fair condition**

29.2 POTABLE WATER SYSTEM

Vessel is fitted with a potable water system suitable for FSU operation, this is the ship original system. It is a basic layout of a hydrophore system with two FW pumps. There is a calorifier and a circulation pump as well. Steam is used for heating.

29.3 BOILER MAKE UP AND FEED SYSTEM

Operational.

30.0 SEWAGE SYSTEM

Vessel is fitted with a DETEGASA sewage plant supplied by Norsk Atlas AS. This unit is from 2003 and has a capacity of 2600ltr per day.

31.0 CORROSION PREVENTION SYSTEM

31.1 ICCP – IMPRESSED CURRENT CATHODIC PROTECION

The ICCP system was found switched off, and has reportedly not been in operation since Dubai dry-dock. There are 4 anodes in the engine room, and they still appear to be connected up.

31.2 MARINE GROWTH PREVENTION

Vessel is equipped with a single hypochlorite generator, the unit is in operation. This is a Chloropac system model SB1K, serial number 4531. The unit appear in fair condition.

31.3 TANK ANODES

See tank inspection section, no further information.

31.4 SEACHEST ANODES

Not reviewed at this time.

32.0 MACHINERY MECHANICAL HANDLING AND REMOVAL ROUTES.

32.1 MAIN ENGINE SPACE

The engine room is fitted with two overhead crane above the main engine to handle all main engine and machinery items for 3rd deck level and below. These are with current certificates.

32.2 PUMP ROOM

Not reviewed

32.3 EMERGENCY GENERATOR ROOM

NA

32.4 STEERING GEAR ROOM

NA

32.5 MATERIALS HANDLING

See Cranes

33.0 INSTRUMENTATION AND CONTROL

Instrumentation and control system not reviewed at this time.

34.0 TELECOMMUNICATIONS

All internal phones on the vessel appear functional, the hand/sound powered phones tested also worked.

34.1 UNINTERUPTIBLE POWER SUPPLY - UPS

NA.

34.2 BATTERIES

Battery room is located on the port side sundeck outside captains deck. The room houses all batteries for the vessel, emg phone system batteries, Fire alarm batteries, radio batteries, general service batteries, and engine alarm batteries.

The batteries are quite old, but appear in fair condition.

There are three battery charger systems, two in the engine control room and one in the accommodation on captain's deck. They are all three in operation.

34.3 CONDENSER BANK

There are three condenser banks behind the engine control room, they all appear in good condition.

35.0 NAVIGATION EQUIPMENT

The navigation bridge was found clean and tidy and appeared to be in almost fully operational condition. It seemed all original navigation equipment had been kept. Vessel sailed under own power from Dubai in 2004.

Both gyros are in good working condition. Repeaters on the bridge wings to be adjusted.

Magnetic compass is in working condition. However, deviation chart is out of calibration.

Both GPS's are in working condition. Self-test OK.

3cm radar is in working condition. Tested in operation. Screen for 10cm radar is out of service. Radar is out of use due to the same reason. Captain reported the STBD radars was recently renewed. The port radar is not functioning, but is planned for renewal 2015.

Navigational lights are in working condition. Navigational signs are in good shape & ready to be used. These needs to be tested prior to any journey. One navigation light cover on bridge tower is open – water ingress

Flags are in place.

Collection of Nautical Publications & charts is missing. Only couple of Russian charts for present location.

ECDIS is missing.

Echo sounder is in working condition. However, one recorder is out of service.

Speed log could not be tested. Reported to be in working condition.

NAVTEX receiver is in working condition. Weather facsimile station is not in use. Reported in working condition.

GMDSS plant is in compliance for A1 area only. MF/HF station is out of service. GMDSS log is up to date. VHF stations are in working condition. Both DSC are in working condition. Self-tests are OK.

EPIRB is valid until 2019. SART's are valid until 2018. Portable VHF stations are in working condition. Batteries are valid until 2017.

Steering gear controls are in working condition. Tested. One repeater on port bridge wing is not working.

Bridge controls of Main Engines reported in working condition. Not tested during inspection.

Internal communication facilities are in working condition, including emergency comms with Engine Room. Portable radios are OK. PA system is in working condition.

Fog horn is being tested regularly. Reported in working condition.

Full set of Procedures is available on board (issued by Rosneftflot in Russian). Familiarization sheets are properly completed.

ATTACHMENT-1: GENERAL SURVEY PHOTOGRAPHS

Location of Belokamenka

Deck Condition

FWD full

Marine Growth

Bridge

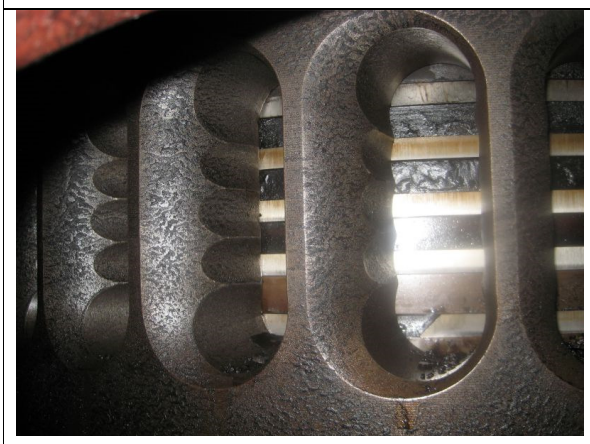
Cargo Control Room

Engine control room

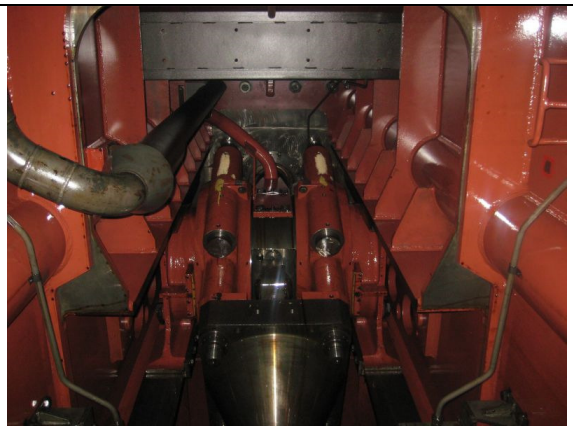
Main Engine control system

Main engine, engine room

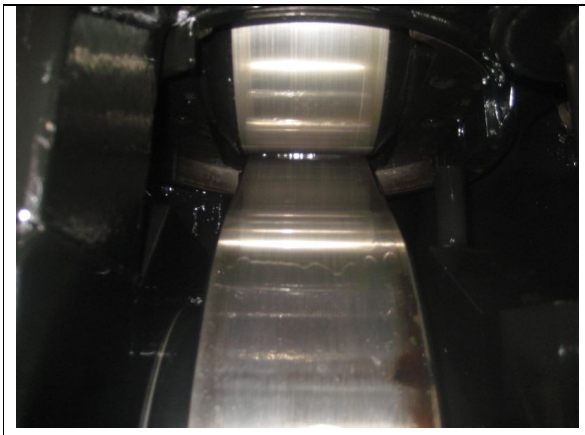
Auxiliary diesel



Main engine Cyl 12 broken top ring



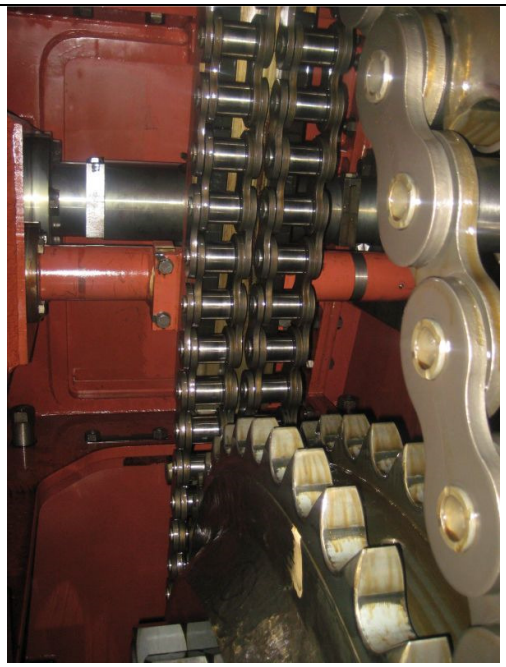
Main engine crankcase condition



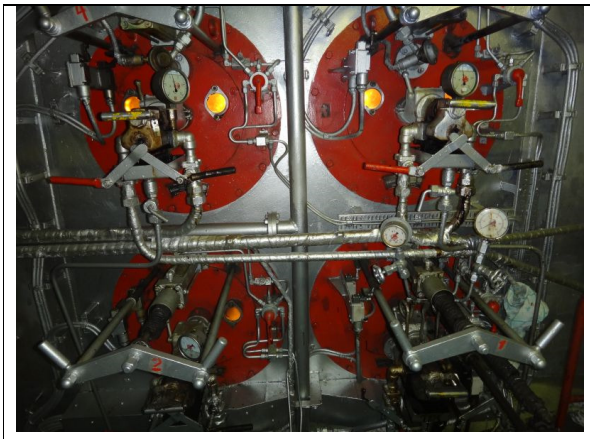
Main Engine Camshaft and roller guide condition

Fuel oil present on top of piston crowns on several cylinder units

Cargo turbine



Main engine chain condition



Boiler burners

Boiler Inspection

Steering gear

Aft Aux. Eng. Cyl#5 FO inlet line temp repair

Main Engine camshaft level

Spare Anchor on bow