



GACY MARINE SERVICE

SERVICE REPORT

Vessel name: CMA CGM ANDROMEDA

Owner: CMA CGM GROUP

Place of service: At sea- from XIAMEN to NANSHA

Date: 01.09.2018-19.09.2018

Engine Type: MAN 9L/27/38 Rhrs: 40000

No: A/E No 1

Reason : Planned overhaul

WORKING SCOPE

- 1.CRANKSHAFT DEFLECTION MEASURED BEFORE OVERHAULING
- 2.ALL CYL. HEADS HAVE BEEN REPALCED WITH RECONDITIONED CYLINDER HEADS
- 3.ALL CYLINDER LINERS WERE REPALCED WITH SPARE LINERS.
- 4.ALL PISTON AND CONNECTING RODS REPALCED WITH SPARE PISTONS AND CONNECTING RODS
- 5.ALL CRANK PIN BEARINGS SHELLS WERE REPALCED WITH SPARE
6. ALL MAIN BEARINGS AND THRUST BEARINGS WERE REPALCED WITH NEW ONES
- 7.CRANKPIN JOURNALS WERE MEASURED - ALL KEEP NORMAL.
- 8.ALL THE FUEL PUMPS WERE REPALCED WITH SPARE COMPLETE UNITS
- 9.ALL FUEL INJECTORS WERE REPALCED WITH SPARE COMPLETE UNITS
- 10.CAMSHAFT , CAMS AND V/VS CAMSHAFT INSPECTED CLEARANCE/ VISUALLY CHECKED- NO ANY ABNORM.
FOUND

GACY MARINE SERVICE CO., LTD

Tel: 0086-21-58480296/7 Fax: 0086-21-50725156

alex@gacymarine.com

tech@gacymarine.com

Purchase@gacymarine.com



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No:	AE1

WORKING SCOPE

11. LO SUMP TANK CLEANED ,AND RENEW FRESH LO.
 12. BOX UP ALL THE PARTS, ALL CONNECTING RODS BOLTS AND CRANK PIN BOLTS,CYLINDER HEAD BOLTS TIGHTENED WITH ACCORDANCE TO PROCEDURES.
 13. HT C.W.PUMP AND L.O. PUMP WERE REPLACED WITH SPARE ONES
 14. T/C WAS REPLACED WITH SPARE PARTS
 15. ADJUST THE V/V/S TOP CLEARANCE -0.7MM.
 16. CRANKSHAFT DEFLECTION MEASURED AFTER OVERHAULING AND ALSO FOR HOT ENGINE
 17. OPEN COOLING WATER,HFO,STARTING AIR,START LO PRIMARY PUMP,WARMING UP ENGINE AND NO LEAKAGE FOUND.
 18. ENGINE TEST AND TAKE THE ENGINE PERFORMANCE,WORKING SATISFIED.
-
- (1).AIR BLOW 2 TIMES,NO ABNORMAL FOUND,START ENGINE KEEP RUNNING 5MINS WITHOUT LOADING, STOP ENGINE,OPEN CRANKCASE DOOR,CHECK THE TEMP OF THE CRANKPIN BEARING AND MAIN BEARING THE MOVEMENT OF THE CRANKPIN BEARING KEEP FREE,CHECK THE LUBRICATION OF CYLINDER HEAD ROCKRAM,ALL KEEP NORMAL,COLSE THE CRANKCASE DOOR.
 - (2).STRT THE ENGINE AGAIN,KEEP RUUNING 30 MINS,STOP AND CHECK AGAIN THE TEMP OF BEARING, NO ANY ABNORMAL FOUND,NO ANY ABNORMAL NOSIE WHEN ENGINE RUNNING.
 - (3).START ENGINE,AFTER RUNNING 10 MINS ,START TRANSFER THE LOADING 25%/50% EVERY 2HOURS,AND PERFORMANCE. STOP ENGINE,OPEN CRANKCASE DOOR,CHECK THE WORKING CONDITION AGAIN,NO ABNO
 - (4) SUGGEST TO START TRANSFER THE LOADING 75%/100% EVERY 2HOURS AT SEA,AND TAKE THE PERFOMA

CONCLUSIONS & RECOMENDATIONS

- 1.AFTER 100 RUNNING HOURS : CHECK VALVES CLEARANCES.
- 2.AFTER 100 RUNNING HOURS : TAKE THE ENGINE PERFORMANCE AGAIN
- 3.CHECK OF VALVE ROTATORS AND CYLINDER HEAD NUTS RETIGHTENING AFTER 200 RUNNING HOURS.
- 4.RETIGHTENING OF CONNECTING ROD BOLTS AFTER 200 RUNNING HOURS.
- 5.ALL MAIN BEARING AND THRUST BEARING NEED INSPECTION NEXT OVERHAULING.

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List of carried works

Cylinder heads:	YES	NO	REMARK
Reconditioned	✓		
Valve clearances-adjusted	✓		0.7MM
Indicator valves inspected	✓		
Valve operating checked	✓		
Fuel injector overhauled	✓		
Additional :	No abnormal found		
Cylinder liners	YES	NO	REMARK
Spare unit O/H by shore company	✓		
Old ones installed		✓	
Spare liners installed	✓		
Visually checked	✓		
Additional :	No abnormal found		
Pistons:	YES	NO	REMARK
Spare unit O/H by shore company	✓		
Old ones installed		✓	
Additional :	No abnormal found		
Connecting rods:	YES	NO	REMARK
Spare unit O/H by shore company	✓		
Old ones installed		✓	
Additional :	No abnormal found		
Crankshaft:	YES	NO	REMARK
Crank pin checked	✓		
Measured	✓		
Crank pin bearings installed:	✓		new ones
Main bearing installed:	✓		new ones
Thrust bearings	✓		new ones
Deflection has been taken	✓		
Additional :	No abnormal found		

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Camshaft:	YES	NO	REMARK
Inspected	✓		
Abnormalities founded		✓	
Others		✓	
Additional :			No abnormal found

Others:	YES	NO	REMARK
Crankcase:			
Cleaned	✓		
Filled with fresh oil	✓		
Filters: checked/cleaned	✓		
Fuel pumps -replace with spare ones	✓		
Fuel v/vs -replace with spare ones	✓		
HT C.W.pumps - replace with spare o	✓		
L.O.pump - replaced with spare one	✓		
T/C -repalce with spare one	✓		
Air cooler-cleaned	✓		
Runnign test after O/H	✓		

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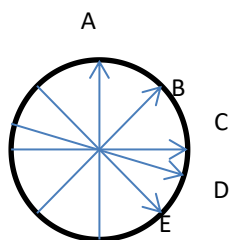
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(1). OLD MARINE HEADS

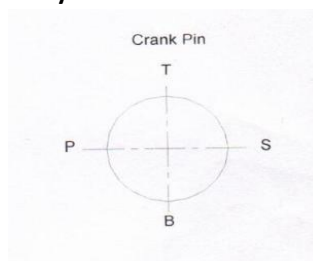
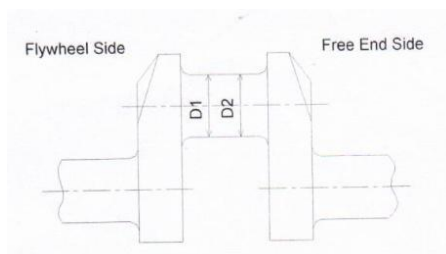


Condition	YES	NO	REMARK
new one		✓	
old one	✓		

Measurement clearance of connecting rod big end(without bearing) mm. Ovality limit: 0.08mm

	A	B	C	D	E	Ovality
Unit No. 1	0.04	0.01	0.04	0.03	0.01	0.03
Unit No. 2	0.04	0.01	0.02	0.02	0.01	0.03
Unit No. 3	0.04	0.02	0.04	0.04	0.01	0.03
Unit No. 4	0.05	0.02	0.05	0.06	0.02	0.04
Unit No. 5	0.05	0.02	0.05	0.05	0.02	0.03
Unit No. 6	0.05	0.03	0.04	0.05	0.02	0.03
Unit No. 7	0.05	0.02	0.04	0.04	0.02	0.03
Unit No. 8	0.05	0.01	0.02	0.04	0.02	0.04
Unit No. 9	0.03	0.05	0.04	0.04	0.00	0.05

(2). CRANK PIN BEARING JOURNAL MEASURING Ovality limit: 0.03mm



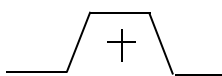
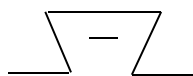
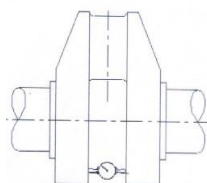
Size: 250mm mm

Unit	No 1		No2		No3		No4	
	T-B	P-S	T-B	P-S	T-B	P-S	T-B	P-S
D1	249.97	249.96	249.96	249.96	249.97	249.97	249.97	249.97
D2	249.97	249.97	249.96	249.96	249.97	249.98	249.97	249.97
Ovality	0.01		0.00		0.01		0.00	
Unit	No 5		No6		No7		No8	
	T-B	P-S	T-B	P-S	T-B	P-S	T-B	P-S
D1	249.97	249.97	249.97	249.98	249.97	249.96	249.97	249.97
D2	249.97	249.98	249.97	249.97	249.97	249.97	249.97	249.97
Ovality	0.01		0.01		0.01		0.00	

Unit	No 9	
	T-B	P-S
D1	249.96	249.97
D2	249.96	249.97
Ovality	0.01	

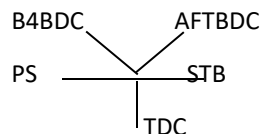
Remark: No abnormal found

(3). CRANKSHAFT DEFLECTION



EFORE OVERHAUL FOR COLD ENGINE

View from Fly-wheel end



in 1/100mm

position	NO.1	NO.2	NO.3	NO.4	NO.5	NO.6	NO.7	NO.8	NO.9
AFT BDC(X)	0	0	0	0	0	0	0	0	0
STB (P)	-1	3	-0.5	-0.5	-1	-0.5	-1	2	4
TD C (T)	-2	2	-2	-1	0	-2	-2	3	8
PS (S)	-1	-1	-2	1	1	1	2.5	3	4
B4BDC (Y)	0	0	-3	2	2	0.5	1	2	-1
$B=1/2*(X+Y)$	0	0	-1.5	1	1	0.25	0.5	1	-0.5
$V= T-B$	-2	2	-0.5	-2	-1	-2.25	-2.5	2	8.5
$H= P-S$	0	4	1.5	-1.5	-2	-1.5	-3.5	-1	0
$D= P+S$	-2	2	-2.5	0.5	0	0.5	1.5	5	8
$C=T+B$	-2	2	-3.5	0	1	-1.75	-1.5	4	7.5

AFTER OVERHAUL FOR COLD ENGINE

position	NO.1	NO.2	NO.3	NO.4	NO.5	NO.6	NO.7	NO.8	NO.9
AFT BDC(X)	0	0	0	0	0	0	0	0	0
STB (P)	0	1	0	0	0	0	-1.5	0	5
TD C (T)	1	3	-1	-2	-1	-3	-3	0	9
PS (S)	1.5	1	-2	-1.5	-1	-2	4	-1	5
B4BDC (Y)	0	1	-2	-2	-1	-1	0	-2	-1
$B=1/2*(X+Y)$	0	0.5	-1	-1	-0.5	-0.5	0	-1	-0.5
$V= T-B$	1	2.5	0	-1	-0.5	-2.5	-3	1	9.5
$H= P-S$	-1.5	0	2	1.5	1	2	-5.5	1	0
$D= P+S$	1.5	2	-2	-1.5	-1	-2	2.5	-1	10
$C=T+B$	1	3.5	-2	-3	-1.5	-3.5	-3	-1	8.5

AFTER OVERHAUL FOR HOT ENGINE

position	NO.1	NO.2	NO.3	NO.4	NO.5	NO.6	NO.7	NO.8	NO.9
AFT BDC(X)	0	0	0	0	0	0	0	0	0
STB (P)	1	1	2	1	2	0	-1	1	5
TD C (T)	2	1	2	1	3.5	2	1	2	9
PS (S)	1	0.5	2	0	2	1	-2	2	4
B4BDC (Y)	0	0	1	0	1	-1	0	1	0
$B=1/2*(X+Y)$	0	0	0.5	0	0.5	-0.5	0	0.5	0
$V= T-B$	2	1	1.5	1	3	2.5	1	1.5	9
$H= P-S$	0	0.5	0	1	0	-1	1	-1	1
$D= P+S$	2	1.5	4	1	4	1	-3	3	9
$C=T+B$	2	1	2.5	1	4	1.5	1	3.5	9



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(3). MAIN BEARINGS CLEARANCE (mm) Max:0.33mm

NO.	FWD(P)	FWD(MID)	FWD(S)	AFT(P)	AFT(MID)	AFT(S)
1	0.15	0.20	0.15	0.16	0.21	0.15
2	0.16	0.21	0.16	0.15	0.20	0.15
3	0.15	0.2	0.15	0.15	0.20	0.15
4	0.16	0.21	0.16	0.15	0.19	0.16
5	0.15	0.19	0.15	0.16	0.19	0.16
6	0.15	0.2	0.15	0.15	0.20	0.20
7	0.16	0.20	0.16	0.15	0.20	0.15
8	0.15	0.20	0.15	0.15	0.20	0.15
9	0.16	0.21	0.16	0.16	0.20	0.16
10	0.15	0.20	0.15	0.15	0.20	0.15
11	0.15	0.20	0.15	0.15	0.20	0.20

Remark: All main bearings shell were replaced by new ones

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Rhrs

40000

No:

AE1

SERVICE REPORT WITH PICTURES



Opened both doors



Removed covers



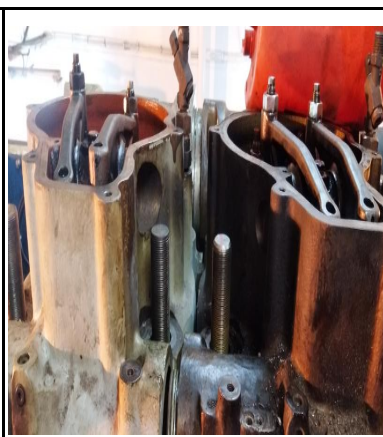
Crankshaft deflection before



Removed all attachments



Removed exhaust pipes



Loose nuts of cylinder heads



Lift up cylinder units



Lifted all cylinder units



Took out all marine heads

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Measured marine heads



Carried out main bearings changed



All main bearings changed



Thrust bearings changed



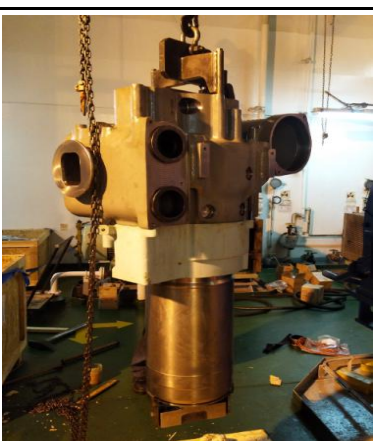
Cleaned each cylinder



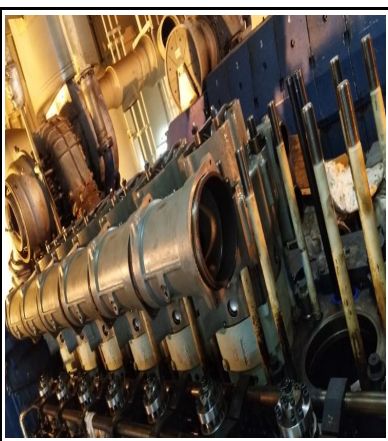
Check crankpin journal



Installed spare marine heads



Put back recondition cylinder unit



cylinders units on engine block

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Put back exhaust pipes



Put back exhaust pipes



Removed fuel pumps



Removed fuel pumps



Put all new pumps



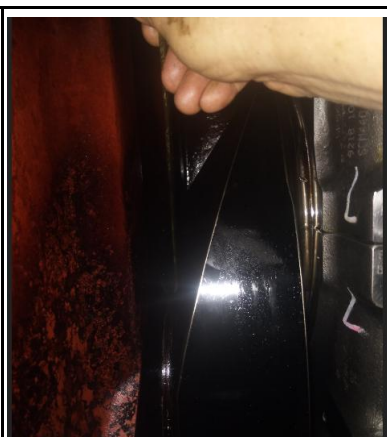
Cleaned sump tank



Camshaft checking



Check v/v clearance



Check main bearings clearance

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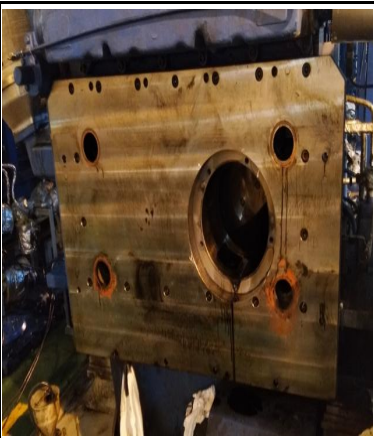
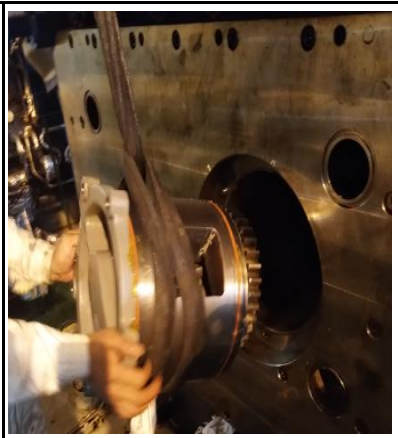
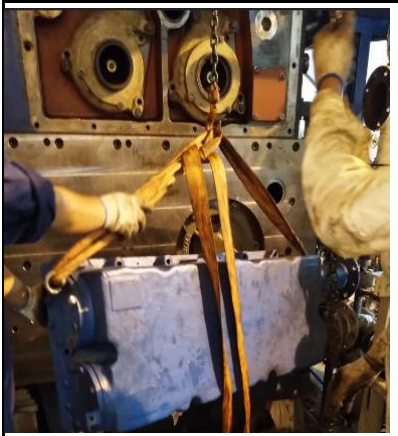





Rhrs

40000

No:

AE1

SERVICE REPORT WITH PICTURES

		
Removed out FW Cooler	Took out H.T.C.W PUMP	Installed new complete one
		
Removed out L.O. cooler	Took out L.O. pumps	New pumps
		
Installed new pumps	Installed L.O. Cooler	Installed F.W. Cooler

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<p>New complete rotors of T/C</p>	<p>housing and diffuser</p>	<p>Removed old silencer</p>
		
<p>Took out old housing</p>	<p>Took out old rotors</p>	<p>Installed T/C with spare parts</p>
		
<p>Checking during testing</p>	<p>Crankshaft deflection for hot engine</p>	

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Date: 19th-SEP.-2018