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**Engine Overhaul** .....

Customer name	: Tidewater Marine	Type	: 3516
Vessel Name	: Ken C Tamblyn	Service Reading	: 47237
S/N	: 09AN00260	W/O	: SO03613
Arr.No.	:	Service technician	: Edwin Brantjes/Herman Drost
Contact person	: Superintended Ray Monaghan	Date	: Location Durban South Africa.

**Work carried out** : Dismantle / remove engine , install / build up long block

People involved (Tidewater):  
 Super intendent : Ray Monaghan.  
 Chief engineer : Willy Courtney

**Dismantle engine partly  
 Inspect parts / components**

Partly dismantle engine , make engine ready to lift out of the engine room . Check for damaged / broken parts .

Parts removed from old engine to re-use on recon long block

Electrical wiring engine cleaned checked en tested .

After cooler group parts in good condition ,  
 Cooler cores 2 pcs cleaned and pressure tested in workshop Barloworld.  
 By Peter Wortmann..

Exhaust manifold parts in good condition, 5x exhaust bellows need replacement cracks

Water manifolds parts in good condition . .

Oil cooler and lines group , in good condition except of cooler core . Cooler core was in a poor condition. See appendix 1.

Oil and fuel filter base in good condition , duplex control valve and mechanism oil are damaged .

Turbo group parts in good condition , turbo exhaust housings tested on cracks , no cracks were found .

Camshafts , camshaft gears and lifters in good condition .

Valve mechanism , in a good condition. Bearings on Rockerarms and shaft in good condition.

Vulcan coupling element in poor condition.

HT cooling water compensators some are hard and cracked, replaced by Dormac yard.

Exhaust insulation is bad , need replacement .

Pre lubrication group , in good condition .

## Scope of work

All above mentioned parts from the old engine were cleaned and checked / measured to re-use on the recon long block .  
Parts found damaged / worn were replaced .

Install / re-use all lifters and camshaft LH – RH.  
Install 48 new buttons on rocker-arms  
Install 16 rebuild injectors with new injector harness (cable)  
Install 1 rebuild oil pump  
Install 1 rebuild fuel transfer pump  
Insert helicoil in rocker bases where appropriate,  
Mount / re-use exhaust manifolds 5x new bellow.  
Mount jacket water tank and modify the open HT cooling water system into a closed cooling water system under pressure .  
Install / re-use electrical wiring  
Install 4 new HT water temp regulators ( thermostats )  
Install 1 rebuild HT Jacket water pump  
Install 2 new HT bellow by Dormac  
Install 1 rebuild auxiliary LT water pump  
Install rebuild air starter motor  
Install 2 new LT water temp regulators (thermostats)  
Install new check valve in lub oil filter housing (Duplex) and Renew / modify control mechanism  
Check oil pressure relief valve in oil filter base and new spring.  
Mount / re-use lub oil and fuel oil filter base  
Mount / re-use oil cooler and lines with rebuild cooler core.  
Replace most vital pressure sensors for new sensors  
Mount turbo charger group with 2 rebuild turbo cartridges  
Mount after cooler group with the cleaned / pressure tested cooler cores (re-use) 2 pcs  
Renew hoses water ,fuel, oil and air on engine  
Renew Jacketwater heaters 2x delivered by Barloworld.  
Renew 4 breathers (crank case ventilation)  
Renew screen in main oil suction line  
Renew valves from explosion proof crank case covers  
Install exhaust manifold bellow protection shields (modification)  
Renew oil filters , fuel filters and air filters  
Mount anti spray caps and anti spray tape on fuel couplings  
Adjust inlet and exhaust valves , inlet valves **.020** inch exhaust valves **.040** inch  
Adjust timing for fuel injectors  
Start up engine  
Timing calibration.  
Test alarms.  
Test the Engine on max available load, and make a test rapport see attachment.

- Complete cylinder block (long block changed)
- Ht Regulators (248-5513)
- LT regulators (4P1505)
- Exhaust manifold shields (286-0285)
- .

**Partnumbers new/rebuild mainparts.**

- Engine parts changed by reconditioned parts:
- Turbo Cartridge (20R0596)
  - Water pump jacket (10R-1669)
  - Fuel injectors (20R1275)
  - Oil pump (0R4345)
  - Oil cooler (0R5544)
  - Air starter (0R9851)
  - Aux. water pump. (10R1072)
  - Fuel trans.pump (10R3938)

Modification:

- :Shield RH, LH on Exhaust manifold
- : Expantiontank welding a Neck and placed a cap to make the HT-watersystem A closed pressurized system.

Valve clearance adjustment after first 250 running hours

Endplay (axial clearance) crankshaft is 0,38 mm with alternator connected .

Alignment check and re-alignment of Alternator arranged by Dormac

Box coolers 1 in HT cooling system and 1 in LT cooling system was cleaned by shipyard Dormac

**Remarks**

All re-used , rebuild and new parts were installed with new seals and gaskets

Always use original Caterpillar-filters

Use always cooling water treatment in HT and LT cooling systems , engine is now filled with fresh water only

**Test trial**

See the attached test trial results