

INTRODUCTION

DYAR KIRKUK Company for General Trading and Engine Maintenance & Power Stations carried out by according to the contract of Operating and Maintenance the Power Plant belongs to KIRKUK CEMENT FACTORY signed with The Administration to make overhaul maintenance for the Engine 16M32C SR.NO. 34302 which are the major overhaul for the Engine, Generator and Turbocharger.

Mechanical works for the Engine and Turbocharger done by according to Caterpillar Company's recommendation, maintenance activity and measurements, All the maintenance works started at 18 / 12 / 2020 and completed at 23 / 01 / 2021 by an Iraqi-Turkish service staff under the direct supervision of Operating Manager Mr. RIDHA M.K. AL-BAYATI & Mech. Engineer MUAYAD M.F. AL-BAYATI.

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***ENGINE
MAINTENANCE
REPORT***

WORK DESCRIPTION

Dyar Kirkuk company representative reached at Kirkuk Cement Factory / Kirkuk on 18/12/2020 to carry out 24000 hrs.

Engine Overhauling of DG#1 which stopped on 18/12/2021 and carried out from 18/12/2020 till 23/01/2021 .

STEPS OF MAINTENANCE & REPAIR:

- ❖ **CAVERN MAINTENANCE**
- ❖ **PISTON MAINTENANCE**
- ❖ **INJECTOR MAINTENANCE**
- ❖ **FUEL PUMP MAINTENANCE**
- ❖ **BLOCK CARE & CLEANING**
- ❖ **GOVERNOR MAINTENANCE**
- ❖ **WATER PUMP MAINTENANCE**
- ❖ **FLUID JONITE & AIR COOLER**
- ❖ **SEPARATORS MAINTENANCE**
- ❖ **LINER MAINTENANCE**
- ❖ **FILLTERS**
- ❖ **MAIN BEARING & ARM BEARING MAINTENANCE**

❖ **CAVERN MAINTENANCE:**

1. *Dismantling over Of Machine.*
2. *Dismantling The Ex Seat & Inlet Valves.*
3. *Dismantling The A-Bank Starting Valves.*
4. *Welding & Pulling The Ex Seat.*
5. *Dismantling Injectors Over The Machine.*
6. *Cleaning The Cover Seat Places.*
7. *Renewing The Ex Seats (32 Pcs Ex Seat New).*
8. *Grinding The Inlet Seats.*
9. *Renewing The Ex Valves (32 Pcs New Valves).*
10. *Renewing The A-Bank Starting & Acclimatization.*
11. *Making Cavern Water Test (16 Cover – 10 Bar Test).*
12. *Renewing The Cavern Set (O-Ring, Steel Gasket, Etc...).*
13. *Montaging 16 Cavern Machines (850 Bar Tightening).*



❖ **PISTON MAINTENANCE:**

1. *Pulling The Pistons.*
2. *Dismantling & Cleaning The Piston Gudgeon Pins.*
3. *Dismantling & Cleaning The Gudgeon Bearings.*
4. *Dismantling The Piston Segments.*
5. *Cleaning The Pistons.*
6. *Gathering The Piston Gudgeon Pins & Bearing.*
7. *Measuring The Piston Segments.*
8. *Adding 16 Sets Of Segments (Original – Max).*
9. *Assembling 16 Pistons To The Machine.*



❖ **INJECTOR MAINTENANCE:**

1. *Dismantling & Cleaning The Injectors.*
2. *Renewing The Injector Parts (16 Pcs New).*
3. *AcclimizationThe Injector.*
4. *Gathering The Injector.*
5. *TestingThe Injector Under (360 Bar)*
6. *Assembling The Injectors On The Machine & Making A Torque.*
7. *Renewing The Oil Pumps (16 New Pcs).*



❖ **FUEL PUMP MAINTENANCE:**

1. *Renewing All Of Fuel Pass & Inlet Circuits.*
2. *Dismantling The Oil Pumps (Over The Machine 16 Pcs).*
3. *Cleaning & Dismantling The Oil Pumps.*
4. *Renewing The 16 Sets (O-Ring, Felt & Balls).*
5. *Renewing The Barrel Plunger.*
6. *Renewing The Pump Barrel & Head Gaskets.*
7. *Renewing The Rack & Worms (16 Pcs).*
8. *Torqueing & Assembling The Fuel Pump On The Machine.*
9. *Renewing The Oil Inlet & Outlet (Felt&O-Ring).*
10. *Assembling The Oil Pipes On The Machine.*



❖ **BLOCK CARE & CLEANING:**

1. *Disassembling The Layner.*
2. *Cleaning The Jackets.*
3. *Cleaning The Block Surface.*
4. *Assembling The Layner Jackets & Renewing The Gaskets.*
5. *Cleaning The Glass Shab.*
6. *Cleaning The Cartel & Samtak.*
7. *Renewing The Machine Oil.*
8. *Controlling The Ex-In Oil Pump Roller.*
9. *Controlling The Ex Ecpesins.*



❖ **GOVERNOR MAINTENANCE:**

- 1. Disassembling The Governor & Sending It To Istanbul.*
- 2. Disassembling & Renewing The Governor Care Set.*
- 3. Assembling & Testing The Governor.*
- 4. Renewing Oil.*
- 5. Adding The New Rack Push Arm (16 Pcs).*



❖ **WATER PUMP MAINTENANCE:**

- 1. Disassembling The Electric Wires From HT-LT Motors.*
- 2. Renewing The Roller Of The Electrical Motors.*
- 3. Disassembling The HT-LT Pumps.*
- 4. Renewing & Gathering The Mechanic Seal Of The HT Pump.*
- 5. Renewing The Shaft & Impel Of The LT Pump.*
- 6. Assembling & Gathering The HT-LT Pumps.*



❖ **RUBBER JOINTS& AIR COOLER:**

1. *Dismantling The Rubber Joints (12 Pcs).*
2. *Cleaning TheRubberJointsPlaces.*
3. *Renewing The HT-LT Rubber Joints Place & Assembling.*
4. *Renewing & Assembling Of The Oil Rubber Joints.*
5. *Cleaning The Water Crossing Of Air Cooler.*
6. *Renewing The Gaskets Of Air Cooler.*



❖ **SEPARATORS MAINTENANCE:**

- 1. Dismantling The Separator Shabs& Rollers.*
- 2. Dismantling The Separator & Cleaning.*
- 3. Dismantling The Separator Electric Motor & Changing Linings.*
- 4. Renewing The Shab, Roller, O-Ring & Strap.*



❖ **LINER MAINTENANCE:**

1. *Dismantling & Cleaning Of Liner.*
2. *Honing Of Liner.*
3. *Measuring Of Liner After Honing.*
4. *Mounting On The Machine Of Liner (16 Units).*



❖ **FILLTERS:**

1. *Dismantling The 2 Pcs Of Duplex Filters.*
2. *Dismantling The 1 Pc Of Auto Filter.*
3. *Dismantling, Renewing & Gathering The Fuel Filters.*
4. *Renewing & Assembling The 2 Pcs Of Duplex Filters Candles*
5. *Renewing & Assembling The 1 Pc Auto Filter Candle.*



❖ MAIN BEARING & ARM BEARING MAINTENANCE:

- 1. Loosening Side Counts.**
- 2. Loosening Main Bearing Nuts.**
- 3. Main Bearing Changing Respectively.**
- 4. Controlling Main Bearing Crank.**
- 5. Renewing 9th Team Main Bearing (Brand New Bearing).**
- 6. Tightening Side Counts.**
- 7. Tightening Main Bearing Buts (400 To 1050 Bar).**
- 8. Loosening Arm Bearing.**
- 9. Controlling Crank, Bearing & Rot Removal.**
- 10. B1, A4, B8 Removal Rots & Controlling Bearing.**
- 11. Tightening Opened Rots (400 To 1250 Bar)& Making Excursions.**
- 12. Gathering Rot & Piston Gaskets And Making Torque.**







***MEASUREMENT
RECORDS***



***RUNNING-IN
PROGRAM***

TEST PROCEDURE

- + Adding Water To The Machine (HT-LT) Tanks.**
- + HT Taking Pre-Heating.**
- + Taking Pre-Lubricating.**
- + Controlling The Haynar Arm & Mani Bearing.**
- + Controlling The Cover Oil Control.**
- + Operate The Machine For 5 Minutes.**
- + Controlling The Heat Of The Hayner And Bearing.**
- + Operate The Machine At 500 KW For 1 Hr.**
- + Increasing The Operation Of Machine From 500KW Till 1 MW For 2 Hrs.**
- + Increasing The Operation Of Machine From 1MW Till 2MW For 3 Hrs.**
- + Increasing The Operation Of Machine From 2 MW Till 5.5 MW For 4 Hrs.**
- + Letting The Machine Running At The Normal Values.**