# SPECIFICATIONS FOR FY26 REPAIRS TO P/B "HOCKING"

## Description of Project:

The U.S. Army Corps of Engineers, New York District is issuing this Statement of Work to contract for all supply and services related to overhauling the Detroit Diesel Main Propulsion Engines, Twin Disc Marine Transmissions, and Detroit Diesel Ships Service Generators for the P/B HOCKING. The HOCKING is owned and operated by the U.S. Army Corps of Engineers, New York District. The Government intends to award a firm fixed price contract for this work.

The Starboard Main Engine suffered an engine casualty and damaged one of the main journals on the crank shaft. The Port Main Engine, both marine transmissions, and both Ships Service Generators are due for an overhaul. In order to minimize the time, the vessel is in a shipyard, the Contractor shall perform the work in the following sequence:

1. Procure all new Detroit Diesel Certified (DDC) parts, gaskets, etc. necessary for a complete teardown and overhaul of each engine to include the Contractor's removal of major components such as cylinder heads and blowers from the HOCKING needed for procurement of DDC remanufactured parts.
2. Perform all overhaul work and testing of the engines
3. Transport the engines to the Government Shipyard for reinstallation

No work will commence on the overhaul until all new DDC or DDC certified remanufactured parts necessary for the overhaul work are in hand and the vessel has been placed into a shipyard for removal of the engines.

## SCOPE OF WORK

### SW-1 Description of Work

The work consists of furnishing all labor, materials, fittings, equipment, tools, etc., and performing all work on the USACE Patrol Boat HOCKING main propulsion equipment and ships service generators as specified herein. The principal dimensions and physical data for the vessel are identified below.

**Principal Vessel Dimensions:**

Length Overall.....64'-9"
Breadth, Molded.....16'-3"
Weight……..35.35 Long Tons
Material.....All Welded Aluminum
Displacement, light.....213 short tons
Propellers (2).....….....64"Dx52"P, 4 blade
Draft, loaded, aft.....….5'-6”
Hull Form.....Monohull
Engine……..Two (2) 12V-71, GM Detroit Diesel
Horsepower……..340 S.H.P. per engine / 640 B.H.P. total

## Machinery Data:

| | | | |
|---|---|---|---|
| Propulsion Engines | | | |
| Detroit Diesel | | | |
| Port Main Engine | Model No. | 12V-71 71223000 | |
| | Serial No, | 12VA15162 | |
| | | | |
| STBD Main Engine | Model No. | 12V-71 71223000 | |
| | Serial No, | 12VA18153 | |
| | | | |
| Marine Transmissions | | | |
| Twin Disc | Data plate photos below | | |
| Port Transmission | Model No. | MG 312 - Ratio 2.1:1 | |
| | Serial No, | | |
| | | | |
| STBD Transmission | Model No. | MG 312 - Ratio 2.1:1 | |
| | Serial No, | | |
| | | | |
| Ships Service Diesel Generators (SSDG) | | | |
| Detroit Diesel | | | |
| Port SSDG | Model No. | 2-53 20 kVA 240V | |
| | Serial No, | 875125422 | |
| | | | |
| STBD SSDG | Model No. | 2-53 20 kVA 240V | |
| | Serial No, | CWC51254422-108 | |
| | | | |
| STBD Generator End | Model No. | 284PSL28063 | |
| Magnaplus | Serial No, | MT-0023423-0415 | |
| | Frame – 284 | RPM – 1800 | |
| | 240V 60 Hz 20kVA 83.5A | | |
| | | | |
| Port Generator End | Model No. | 284PSL28063 | |
| Magnaplus | Serial No, | Data plate missing | |
| | Frame – 284 | RPM – 1800 | |
| | 240V 60 Hz 20kVA 83.5A | | |
| | | | |

**Machinery Data Plates:**

**CLIN 0001 <u>Procurement of Engine Parts Necessary for Overhaul</u>**

a. Procurement of Overhaul Parts and Materials

Upon award of this contract and Notice to Proceed, the Contractor shall procure all DDC new or DDC certified remanufactured cylinder heads, blowers, crank shafts, cylinder kits, connecting rods, injectors, pumps, gasket kits, hoses, clamps, etc. necessary to perform a complete teardown and overhaul of both main engines, reduction gears, and generator sets.

The Contractor may refer to the parts list in Appendix A for a list of DDC parts that were used during the last engine overhaul of the main propulsion engines and generators. The Contractor shall replace both 12V71 crank shafts with new crank shafts.

Long lead parts: For the purposes of this specification, Long Lead components shall be defined as any part or component that has a delivery time greater than or equal to eight (8) weeks or longer.

Core Charges: Any part or component supplied by the Contractor that has a core charge from DDC, the Contractor will be granted access to the HOCKING to remove any components from the engines that can be removed in-frame.

For these components, the Contractor shall provide all labor and material and travel to the Caven Point Marine Terminal to remove these components from the main propulsion engines and generators, and any other major component with a core charge that can be removed with the engines still in place on the vessel to facilitate the procurement of these long lead components and components that must be DDC remanufactured parts.

The contractor shall provide the Government with a complete list of all of the long lead components and the anticipated delivery time at the time of order.

**CLIN 0003 <u>Main Propulsion Engine Overhaul Detroit Diesel 12V71</u>**

Upon receipt of the main propulsion equipment from the Government's contracted shipyard, the Contractor shall separate the Twin Disc marine Transmissions from the engines for overhaul under Appendix A. The Contractor shall perform a complete tear down and overhaul of both the Port and Starboard main propulsion engines.

The Contractor shall provide the following services for each engine:

The Contractor shall perform all required repairs including teardown engine, clean and inspect block, line bore the main journals, deck surface, and cylinder counter bores. The blocks shall be "hot tanked" or equivalent to remove all soot, debris, baked in sludge and any foreign materials from the engine block oil passages. The Contractor shall notify the COR of any condition found within five (5) business days of the discovery.

The contractor shall remove and replace the following for each engine:

- Remove and Replace (12) Piston/ Cylinder liner kits with new ***Aftermarket Replacement***
- Remove and Replace (12) Connecting Rods with new ***Aftermarket Replacement***
- Remove and Replace (12) Connecting Rod bearing sets with DDC new.
- Remove and Replace Main Bearings and all thrust washers
- Remove and Replace Main Engine Crank Shaft
- Remove and Replace (2) Cylinder heads with DDC Reman Remove and Replace (12) Fuel Injectors with DDC Reman units Remove and Replace Oil Pump with DDC Reman
- Remove and Replace Oil Pressure Regulator/Relief valve Remove and Replace all Fuel Jumper Lines with new.
- Remove and Replace Fuel Pump assembly with DDC Reman. Remove and Replace (2) Blowers with ***Aftermarket Reman***
- Remove and Replace Water Pump assembly with DDC Reman Remove and Replace Thermostat and gasket kit
- Remove and Replace coolant hoses on engine
- Remove and Replace flexible fuel lines on engine using USCG fire resistant hose and new fittings.
- Remove and Replace the crank shaft main bearings and thrust washers
- Remove and Replace the camshaft and bearing set
- Remove and inspect the cam gears, idler gear, and bull gear for wear, provide a Condition Found Report for any gear train components that need to be replaced. Re-install the gear train components if inspection is satisfactory
- Remove and replace the governor with DDC Reman
- Remove and Replace the front engine oil seal
- Remove and Replace the vibration damper
- Remove and replace the crankshaft rear main oil seal.
- Remove and Replace starter motor with Delco remanufactured starter
- Remove and replace all magnetic switches
- Remove and Replace the oil cooler core and gasket kit.
- Remove and Replace the battery charging alternator with a remanufactured alternator.
- Remove and replace the raw-water pump and impeller.
- Inspect the Drive Coupling, provide a Condition Found Report to the COR within five (5) business days.

The Contractor shall replace with new, all sensors, soft components, including all hoses, gaskets, seals, and provide a new coating of DDC paint on each engine when completed, such that the engine is in a “like new” condition when returned.

The contractor shall install new engine oil and filter kit, removing and replacing the air filter. The contractor shall disassemble the heat exchanger, clean, and check all cooler plates and assemble with new seals.

Upon reassembly, the Contractor shall place the engine on an engine test stand and perform a full operational test to insure proper full load operation of the engine.

**CLIN 0004 <u>Twin Disc Marine Transmission Overhaul</u>**

a. Twin Disc Model MG 512

The Contractor at the beginning of this contract shall procure all bearings, gaskets kits, and wear components, etc. necessary to perform a complete teardown and overhaul of both marine transmissions prior to the receipt of the transmission in order to minimize the actual overhaul time while waiting on long lead components.

a. Transmission Overhaul

Upon receipt of the Main Propulsion Engines and marine transmissions, the Contractor shall transport two (2) Twin Disc MG 512 Marine Transmissions to/from a licensed Twin Disc service representative for tear down and overhaul. The Contractor shall replace all normal wear components as required. The Contractor shall notify the COR of any condition found within five (5) business days of the discovery.

The contractor shall perform the following on each MG 512 transmission:

- Teardown, inspect and overhaul
- Install new bearing Kit
- Install new Clutch Kit
- Install new Seal and Gasket Kit
- Install Lube oil and oil filter
- Spin test for 20 hours.

**CLIN 0005 <u>Detroit Diesel 2-53 20 kVA Ships Service Generators Overhaul</u>**

Detroit Diesel 2-53 Generators

a. Engine Overhaul

Upon receipt of the ships service generator engines from the Government's contracted shipyard, the Contractor shall perform a complete tear down and overhaul of both the Port and Starboard

ships service generator engines. The Contractor shall provide the following services for each engine:

The Contractor shall separate the generator end from the engine and send out to an electrical shop for repairs and inspection.

The Contractor shall perform all required repairs including teardown engine, clean and inspect block, deck surface, and cylinder counter bores. The blocks shall be "hot tanked" or equivalent to remove all soot, debris, baked in sludge and any foreign materials from the engine blocks. The Contractor shall notify the COR of any condition found within five (5) business days of the discovery.

The contractor shall remove and replace the following for each engine:

- Remove and Replace (2) Piston/ Cylinder liner kits with new ***Aftermarket Replacement***
- Remove and Replace (2) Connecting Rods with new ***Aftermarket Replacement***
- Remove and Replace (2) Connecting Rod bearing sets with DDC new.
- Remove and Replace Main Bearings and all thrust washers
- Remove and Replace (1) Cylinder heads with DDC Reman Remove and Replace (2) Fuel Injectors with DDC Reman units Remove and Replace Oil Pump with DDC Reman
- Remove and Replace Oil Pressure Regulator/Relief valve Remove and Replace all Fuel Jumper Lines with new.
- Remove and Replace Fuel Pump assembly with DDC Reman. Remove and Replace (1) Blower with ***Aftermarket Reman***
- Remove and Replace Water Pump assembly with DDC Reman Remove and Replace Thermostat and gasket kit
- Remove and replace the governor with DDC Reman
- Remove and Replace coolant hoses on engine
- Remove and Replace flexible fuel lines on engine using USCG fire resistant hose and new fittings.
- Remove and Replace the crank shaft main bearings and thrust washers
- Remove and Replace the camshaft and bearing set
- Remove and inspect the cam gear, idler gear, and bull gear for wear, provide a Condition Found Report for any gear train components that need to be replaced. Re-install the gear train components if inspection is satisfactory
- Remove and Replace the front engine oil seal
- Remove and Replace the vibration damper

- Remove and replace the crankshaft rear main oil seal.
- Remove and Replace starter motor with Delco remanufactured starter
- Remove and replace all magnetic switches
- Remove and Replace the oil cooler core and gasket kit.
- Remove and Replace the battery charging alternator with a remanufactured alternator.
- Remove and replace the raw-water pump and impeller.
- Inspect the Drive Coupling, provide a Condition Found Report to the COR within five (5) business days.

The Contractor shall replace all sensors, soft components, including all hoses, gaskets, seals, and provide a new coating of DDC paint on each engine when completed, such that the engine is in a "like new" condition when returned.

The contractor shall install new engine oil and filter kit, removing and replacing the air filter. The contractor shall disassemble the heat exchanger, clean, and check all cooler plates and assemble with new seals.

b. Generator End:

The Contractor shall provide the labor, material and services to disassemble, clean and inspect, dip and bake the generator end of each diesel generator. The Contractor shall inspect all electrical components, replace all bearings, and notify the COR of any findings beyond this scope. Following the reassembly of each generator end, the Contractor shall test the generator end to ensure proper functionality.

LOADBANK TESTING

Upon completion of the rebuilding of each engine and generator end, the Contractor shall reassemble each generator set and perform load bank testing of the generator to Detroit Diesel specifications.

# Appendix A

## Detroit Diesel 12V71Parts List from Previous Overhaul

a. Port Main Engine

Model No. 12V-71 712230000
Serial No. 12VA15162

| QTY | PART NUMBER | DESCRIPTION |
|---|---|---|
| 2 | R5102770N | CYL HEAD |
| 12 | R5228770 | INJECTOR N70 |
| 2 | R5103533 | REMAN BLOWER |
| 1 | DS-23502165 | Crankshaft Assy - 12V71 |
| 12 | 23522947 | CYL KIT X HEAD #3 |
| 7 | 5149565 | MAIN BRG STD SLOTTED |
| 12 | 5149572 | ROD BRG STD |
| 4 | 5117005 | THRUST WASHER STD |
| 1 | 23512681 | O/H GASKET KIT |
| 1 | 5103377 | BLOWER COUPLING FINE |
| 1 | R5199735 | FUEL PUMP HI CAP |
| 1 | R23506763 | WATER PUMP |
| 24 | 5148373 | X HEAD BOLT |
| 24 | 5144846 | X HEAD SPACER |
| 2 | 5104019 | VALVE COVER GSKT |
| 12 | 23533307 | FUEL PIPE, SHORT |
| 12 | 23533308 | FUEL PIPE, LONG |
| 4 | 23503826 | THERMOSTAT |
| 2 | 23504701 | EXH OUTLET GSKT |
| 2 | 5126327 | SPRING |
| 2 | 8922740 | VALVE |
| 24 | 5199569 | LINER SHIM |
| 2 | 5145235 | STRIKER GASKET |
| 1 | 23515243 | OIL TUBE |
| 1 | 5132331 | BREATHER GASKET |
| 1 | 5117636 | BREATHER GASKET |
| 1 | 5122975 | H/E OUTLET GSKT |

| | | |
|---|---|---|
| 12 | 82606 | PARTS CLEANER |
| 1 | 81724 | RTV SILICONE |
| 2 | | STICK SIL HOSE FT 1.00 |
| 1 | | STICK SIL HOSE FT 1.75 |
| 1 | | STICK SIL HOSE FT 2.00 |
| 1 | | STICK SIL HOSE FT 2.25 |
| 1 | | STICK SIL HOSE FT 2.50 |
| 1 | | STICK SIL HOSE FT 2.75 |
| 1 | | STICK SIL HOSE FT 3.00 |
| 10 | | #16 CLAMP |
| 10 | | #28 CLAMP |
| 10 | | #36 CLAMP |
| 10 | | #40 CLAMP |
| 10 | | #44 CLAMP |
| 10 | | #48 CLAMP |
| 10 | | #52 CLAMP |
| 2 | 23530407 | OIL FILTER |
| 1 | 23530643 | FUEL FILTER |
| 2 | | K4 ADAPTOR SEAL INNER |
| 2 | | K4 ADAPTOR SEAL OUTER |
| 12 | X00AK9800004 | Detroit Diesel Spray Can Paint |

b. STBD Main Engine

Model No. 12V-71 71223000
Serial No. 12VA18153

| **QTY** | **PART NUMBER** | **DESCRIPTION** |
|---|---|---|
| 2 | R5102770N | CYL HEAD |
| 12 | R5228770 | INJECTOR N70 |
| 2 | R5103533 | REMAN BLOWER |
| 1 | DS-23502165 | Crankshaft Assy - 12V71 |
| 12 | 23522947 | CYL KIT X HEAD #3 |
| 7 | 5149567 | MAIN BRG .010 SLOTTED |
| 12 | 5149575 | ROD BRG 010 |
| 4 | 5117005 | THRUST WASHER STD |
| 1 | 23512681 | O/H GASKET KIT |

| | | |
|---|---|---|
| 1 | 5103377 | BLOWER COUPLING FINE |
| 1 | R5199735 | FUEL PUMP HI CAP |
| 1 | R23506763 | WATER PUMP |
| 24 | 5148373 | X HEAD BOLT |
| 24 | 5144846 | X HEAD SPACER |
| 2 | 5104019 | VALVE COVER GSKT |
| 12 | 23533307 | FUEL PIPE, SHORT |
| 12 | 23533308 | FUEL PIPE, LONG |
| 4 | 23503826 | THERMOSTAT |
| 2 | 23504701 | EXH OUTLET GSKT |
| 2 | 5126327 | SPRING |
| 2 | 8922740 | VALVE |
| 24 | 5199569 | LINER SHIM |
| 2 | 5145235 | STRIKER GASKET |
| 1 | 23515243 | OIL TUBE |
| 1 | 5132331 | BREATHER GASKET |
| 1 | 5117636 | BREATHER GASKET |
| 1 | 5122975 | H/E OUTLET GSKT |
| 12 | 82606 | PARTS CLEANER |
| 1 | 81724 | RTV SILICONE |
| 2 | | STICK SIL HOSE FT 1.00 |
| 1 | | STICK SIL HOSE FT 1.75 |
| 1 | | STICK SIL HOSE FT 2.00 |
| 1 | | STICK SIL HOSE FT 2.25 |
| 1 | | STICK SIL HOSE FT 2.50 |
| 1 | | STICK SIL HOSE FT 2.75 |
| 1 | | STICK SIL HOSE FT 3.00 |
| 10 | | #16 CLAMP |
| 10 | | #28 CLAMP |
| 10 | | #36 CLAMP |
| 10 | | #40 CLAMP |
| 10 | | #44 CLAMP |
| 10 | | #48 CLAMP |
| 10 | | #52 CLAMP |
| 2 | 23530407 | OIL FILTER |
| 1 | 23530643 | FUEL FILTER |
| 2 | | K4 ADAPTOR SEAL INNER |

| | | |
|---|---|---|
| 2 | | K4 ADAPTOR SEAL OUTER |

# Detroit Diesel 2-53 Parts List from Previous Overhaul

a. STBD Ships Service Generator Engine

Model No. 2-53 20 kVA 240V
Serial No. CWC51254422-108

| QTY | PART NUMBER | DESCRIPTION |
|---|---|---|
| 2 | R5228773 | N45 INJECTOR |
| 4 | 23511852 | FUEL PIPE |
| 2 | 5198899 | CYLINDER KIT |
| 2 | R5121262 | CONN. ROD |
| 2 | 5149452 | ROD BEARING |
| 1 | 5199809 | HEAD SET |
| 1 | X 5196033 | CYLINDER HEAD |
| 1 | 5196058 | PAN GASKET |
| 1 | 5127175 | ORING |
| 1 | 5133172 | BELT SET |
| 1 | 5153898 | GASKET |
| 1 | 23509675 | GASKET |
| 1 | 5116092 | GASKET |
| 1 | 5130451 | ELBOW |
| 1 | 5130394 | BOOT |
| 1 | 5156147 | GASKET |
| 1 | 3249110 | GASKET |
| 1 | 23530409 | P947 OIL FILTER |
| 1 | 8529617 | CORE, HEAT EXCHANGER |
| 2 | 5126635 | SEAL RING |
| 1 | 3041379 | THERMOSTAT |
| 10 | 76028 | CLAMP, SS |
| 2 | 76016 | CLAMP, SS |
| 1 | 24214 | HOSE |
| 1 | 24228 | HOSE |
| 1 | 24232 | HOSE |
| 1 | 5121204 | HOSE |
| 1 | 82180 | SEALANT |

| | | |
|---|---|---|
| 3 | SHELLZONE | ANTIFREEZE, GALS. |
| 1 | B6000-1/2 | BALL VALVE |
| 1 | 5P561 | BUSHING |
| 1 | 5P650 | NIPPLE |
| 1 | 911-010-F8 | ADAPTER |
| 2 | 22617-10 | ORING |
| 20 | FIG3350 1/4X3 | PIN |
| 20 | 98401A595 5/16X3 | PIN |

b. PORT Ships Service Generator Engine
Model No. 2-53 20 kVA 240V
Serial No. 875125422

| QTY | PART NUMBER | DESCRIPTION |
|---|---|---|
| 2 | R5228773 | N45 INJECTOR |
| 4 | 23511852 | FUEL PIPE |
| 2 | 5198899 | CYLINDER KIT |
| 2 | R5121262 | CONN. ROD |
| 2 | 5149452 | ROD BEARING |
| 1 | 5199809 | HEAD SET |
| 1 | X 5196033 | CYLINDER HEAD |
| 1 | 5196058 | PAN GASKET |
| 1 | 5127175 | ORING |
| 1 | 5133172 | BELT SET |
| 1 | 5153898 | GASKET |
| 1 | 23509675 | GASKET |
| 1 | 5116092 | GASKET |
| 1 | 5130451 | ELBOW |
| 1 | 5130394 | BOOT |
| 1 | 5156147 | GASKET |
| 1 | 3249110 | GASKET |
| 1 | 23530409 | P947 OIL FILTER |
| 1 | 8529617 | CORE, HEAT EXCHANGER |
| 2 | 5126635 | SEAL RING |
| 1 | 3041379 | THERMOSTAT |

| | | |
|---|---|---|
| 10 | 76028 | CLAMP, SS |
| 2 | 76016 | CLAMP, SS |
| 1 | 24214 | HOSE |
| 1 | 24228 | HOSE |
| 1 | 24232 | HOSE |
| 1 | 5121204 | HOSE |
| 1 | 82180 | SEALANT |
| 3 | SHELLZONE | ANTIFREEZE, GALS. |
| 1 | B6000-1/2 | BALL VALVE |
| 1 | 5P561 | BUSHING |
| 1 | 5P650 | NIPPLE |
| 1 | 911-010-F8 | ADAPTER |
| 2 | 22617-10 | ORING |
| 20 | FIG3350 1/4X3 | PIN |
| 20 | 98401A595 5/16X3 | PIN |