दूरभाष: २३०६/ Tele: 2306

सम्मिश्र जांच दल/ Composite Trials Team
द्वारा नौसेना कार्यालय/ c/o Navy Office
मुख्यालय/ Headquarter
अन्डमान एवं निकोबार कमान/
Andaman & Nicobar Command
पोर्ट ब्लेयर ७४४ १०२/ Port Blair 744 102

CTT/300/03/11/TECH

16 अक्टूबर २३/ Oct 23

प्रधान सेनापति/ The Commander-in-Chief
{(कृते कमान तकनीकी अधिकारी (समुद्री)/ for CTO(Marine)}
मुख्यालय/ Headquarters
अन्डमान एवं निकोबार कमान/ Andaman and Nicobar Command
द्वारा नौसेना कार्यालय/ c/o Navy Office
पोर्ट ब्लेयर ७४४ १०२/ Port Blair 744 102

**DEHMI OF DA NO. 2 (250 KW) - *IN* LCU L-53**

1. Refer to following: -

   (a) HQANC/ SSO (ME-II) letter ANC/42002/EG/11/1 dated 06 Sep 23.

   (b) IN LCU L-53 letter 300/3/6 dated 06 Jul 23.

2. **Background**. DEHMI including performance, vibration and attenuation checks of DA no. 2 of IN LCU L-53 was undertaken on 29 Sep 23. DA was loaded upto 100% (250 kW) on load bank and sustained for a duration of two hours.

3. **Performance Parameters**. A detailed report is placed at **Enclosure I**. The salient parameters are as follows: -

| Ser | Parameter | Range | Actual Values | Remarks |
|---|---|---|---|---|
| (a) | Lub Oil Pressure | 1.2 - 5.0 | 2.9 | Sat |
| (b) | Lub Oil Temperature | 80 - 116 | 102 | |
| (c) | Fresh Water Temperature | 75 - 94 | 86 | |
| (d) | Exhaust Temperature | 575°C | 564°C | |

4. **Vibration Analysis**. Vibration trials of DA no.2 were undertaken at 60% and 100% of rated load. Vibration found to be within permissible limits. **SAT**.

5. **Observations**.

   (a) Coolant leakage observed from thermostat bypass line in static condition.

   (b) Mounts not preserved with nicol laquer.

   (c) Three durettes and two clamps in sea water system found deteriorated.

   (d) Three mounts deterioted / rusted. However, attenuation found **SAT**

(e) Fuel seepage observed from system lines.

(f) Random checks of corrosion plugs revealed that more than 95% of zinc has been consumed.

(g) Securing brackets fitted without rubber inserts.

(h) Condition of rubber durites in fuel system lines and lub oil breather detoriated (photographs placed at **Enclosure III**.)

(j) SPM of alternator drive end and free end at 100% in Yellow zone.

6. **Recommendations**. In view of the above, following is recommended:-

(a) Liquidation of defects / observations mentioned at para 5.

(b) DA be cleared for exploitation upto 100% of rated load for independent operation post liquidation of observations at para 5 ibid.

16/10

(एस सी विलियम/ SC William)
कमांडर/ Commander
प्रभारी अधिकारी/ Officer-in-Charge

**Encl** : - As above

**Copy to** : -

नौसेना खण्ड सेनापति/ The Naval Component Commander
{कृते वरिष्ठ कर्मचारी अधिकारी (यांत्रिकी)/ for SSO(Tech)}
मुख्यालय नौसेना खण्ड/ Headquarters Naval Component
द्वारा नौसेना कार्यालय/ c/o Navy Office
पोर्ट ब्लेयर ७४४१०२/ Port Blair 744 102

कमान अधिकारी/ The Commanding Officer
*आई एन* एल सी यू एल-५३/ *IN* LCU L-53
द्वारा नौसेना कार्यालय/ c/o Navy Office
पोर्ट ब्लेयर ७४४ १०२/ Port Blair 744 102

**Enclosure I to CTT letter**
**CTT/300/03/11 dated 16 Oct 23**

## DEHMI OF DA NO.2 (250 kW) - *IN* LCU L-53

1. Trial Inspector : (a) Patro Ashok, ERA-IV
   (b) P S Tomar, LME

2. Date and Time : 29 sep 23 (1045 -1600 hrs)

3. Equipment used for trials :
   (a) SPM T-30
   (b) Temperature Gun
   (c) Camera

4. Details of trials are as follows:-

(a) **Safety Device Checks**.

| Ser | Description | Unit | Design Value | DA No.2 |
|---|---|---|---|---|
| (i) | Low LO Pr Alarm | $Kg/cm^2$ | 1.2+0.2 | 1.1 |
| (ii) | Low LO Pr Trip | $Kg/cm^2$ | 0.8+0.2 | 0.9 |
| (iii) | High FW temp Alarm | °C | 93+2 | 94 |
| (iv) | High FW temp Trip | °C | 97+2 | 97 |
| (v) | High LO temp Alarm | °C | 120 | 118 |
| (vi) | Over speed Trip | RPM | 1650 | 1650 |
| (vii) | Crash stop Local | - | Ops/ Non-ops | Ops |
| (viii) | Crash stop Remote | - | Ops/ Non-ops | Ops |
| (ix) | Exhaust tempreture Alarm | °C | 575 | 578 |

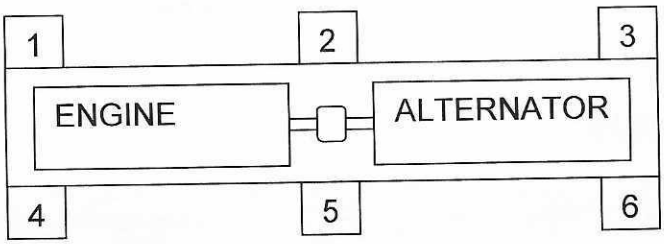
(b) **Performance Parameters at 60% and 100% Load**.

| DA No.2 | | | | | |
|---|---|---|---|---|---|
| Ser | Description | Unit | Design values | Parameters recorded at (60% and 100% rated load) | |
| | | | | 150 kW | 250 kW |
| (i) | RPM | RPM | 1500 | 1500 | 1500 |
| (ii) | Lub Oil Pressure | $Kg/cm^2$ | 2.5-6.0 | 3.2 | 2.9 |
| (iii) | Sea Water Pressure | $Kg/cm^2$ | 0.1-0.4 | 0.4 | 0.4 |
| (iv) | Lub Oil Temperature | °C | 80-120 | 81 | 102 |
| (v) | Fresh water Temperature | °C | 75-97 | 83 | 86 |
| (vi) | Exhaust Temperature | °C | 575 | 480 | 564 |

(c) **Vibration Trials**. Vibration trials of DA no. 2 was undertaken at load 150 kW (60% of rated load) and 250 kW (100% of rated load), overall vibration found within permissible limit. Details are as follows:-

| Ser | Description | 250 KW DA No.2 | | | | | | Remarks (Limit 16 mm/sec) |
|---|---|---|---|---|---|---|---|---|
| | | At 60 % load (150 KW) | | | At 100% load (250 KW) | | | |
| | | H | V | A | H | V | A | |
| (i) | Engine FE | 9.1 | 9.5 | 7.9 | 9.6 | 11.4 | 10.7 | SAT |
| (ii) | Engine DE | 10.4 | 8.2 | 7.7 | 12.4 | 11.6 | 9.1 | |
| (iii) | Alternator DE | 10.7 | 8.0 | 7.8 | 14.3 | 14.4 | 10.5 | |
| (iv) | Alternator FE | 9.1 | 10.6 | 6.7 | 10.2 | 11.1 | 7.9 | |

(d) **Attenuation checks**.




| Position | DA No.2 | | | | | |
|---|---|---|---|---|---|---|
| | 150 kW (60 % load) | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Top | 2.8 | 12.0 | 13.0 | 11.4 | 7.3 | 14.0 |
| Bottom | 0.7 | 0.7 | 1.2 | 0.6 | 1.4 | 2.7 |
| Atten.(%) | 75 | 94 | 90 | 94 | 80 | 80 |
| Remarks | SAT | | | | | |

| Position | 250 kW (100 % load) | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Top | 9.8 | 12.1 | 14.8 | 13.8 | 9.0 | 19.0 |
| Bottom | 0.9 | 1.8 | 2.5 | 0.6 | 1.8 | 5.0 |
| Atten. | 93 | 85 | 83 | 97 | 80 | 73 |
| Remarks | SAT | | | | | |

**Note**: - Attenuation lesser than 70% indicates overloaded/over tightened mounts. All SV mounts to be loosened and torque tightened as per OEM specified values.

(e) **SPM Readings**.

| Ser | Description | At 0% load Dbm/dbc | At 60% load Dbm/dbc | At 100% load Dbm/dbc | Remarks |
|---|---|---|---|---|---|
| (i) | Alternater Driven End | 15/03(green) | 16/05(green) | **28/18(yellow)** | - |
| (ii) | Alternater Free End | 18/12(green) | 20/11(green) | **29/21(yellow)** | - |

Enclosure II to CTT letter
CTT/300/03/11 dated 16 Oct 23

## DIESEL ENGINE HEALTH MONITORING INSPECTION (DEHMI) DA NO.2 – IN LCU L-53

1. **Status of Documents and Engine Data**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Diesel Service Log Book | NA | |
| (b) | EMAPS/ Kalamazoo | ✓ | |
| (c) | Running Log Book | ✓ | |
| (d) | Engine Serial No. | 25397947 | |
| (e) | RH Since Installation | 13364.10 | |

2. **External State of Engine**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Condition of durites/ compensators | SAT | |
| (b) | Condition of SV mounts & application of Necol Lacquer | UNSAT | |
| (c) | System Pipelines well supported and free of leaks | UNSAT | |
| (d) | Filter Drains clear | SAT | |
| (e) | Status of bilge platform in the immediate of vicinity of engine | UNSAT | |

3. **Status of Air Intake**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Cleanliness of air intake filter | SAT | |
| (b) | Perforated sheet for corrosion and intactness of securing (where applicable) | SAT | |
| (c) | Cleanliness of air intake trunking | UNSAT | |
| (d) | Intake drain clear | SAT | |
| (e) | Air Intake restriction measuring instrument | SAT | |
| (f) | Status of Vacuum Indicators | SAT | |
| (g) | Status of durites/ compensators | SAT | |

4. **Status of Exhaust System**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Securing of exhaust trunking supports and load hangers | SAT | |
| (b) | Intactness of hot tagging | SAT | |
| (c) | Status of corrosion on exhaust funnel/flap/ball valve | SAT | |
| (d) | Condition of Exhaust drain pipeline | SAT | |
| (e) | Intactness of exhaust trunking | SAT | |
| (f) | Exhaust back pressure measuring point accessible | SAT | |

5. **Starting Air System**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Condition of durites/ braided hoses | NA | |
| (b) | Status of air starting valve | NA | |
| (c) | Working of auto/ manual drain valve of air compressor | NA | |

6. **Fuel System**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Condition of fuel filters | SAT | |
| (b) | Status of fuel centrifuge | SAT | |
| (c) | Fuel leakages | SAT | |
| (d) | Condition of wire-braided hoses | SAT | |

7. **Lub Oil System**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Outcome of last lub oil analysis | | |
| | Basic | SAT | |
| | Advanced | - | Not Held |
| (b) | Status of lub oil Centrifuge | OPS | |
| (c) | Oil leakages | SAT | |
| (d) | Date of last cooler cleaning | JAN 23 | |
| (e) | Status of durites/ compensators | SAT | |
| (f) | Lub Oil Test Kit status | SAT | |

8. **Coolant/ Fresh Water System**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Outcome of last coolant analysis | SAT | |
| (b) | Condition of Gauge glass of expansion tank | SAT | |
| (c) | Status of Coolant system | SAT | |
| (d) | Date of last cooler cleaning | JAN 23 | |
| (e) | Coolant Test Kit status | SAT | |

9. **Sea Water System**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Status of sea water system | SAT | |
| (b) | Condition of durites/ compensator | SAT | |
| (c) | Status of suction Strainer | SAT | |
| (d) | Status of Zinc plugs | UNSAT | |

10. **Tappet Clearance Check**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Intake Valve (limit :0.2) | 0.28 | |
| (b) | Exhaust Valve (limit :0.5) | 0.58 | |

11. **Instrumentation & Control Check**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Insulation of control system panels | SAT | |
| (b) | Status of calibration of all instrumentation | SAT | |
| (c) | Status of thermometer/ thermocouples/ pressure sensors | SAT | |
| (d) | Thermometer- Total Non-Ops | SAT | |
| (e) | Thermocouples - Total Non-ops | SAT | |
| (f) | Pressure gauge - Total Non-ops | UNSAT | |
| (g) | Number of faulty Alarms/ Relays | SAT | |
| (h) | Blowby measurement tool/ provision | SAT | |

12. **Ventilation System**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Status of compartment Ventilation | SAT | |
| (b) | Average compartment Temperature at four corners/ Ambinent air temperature | $30^0$C | |
| (c) | Status of compartment/ bilge coolers | NA | |
| (d) | Date of last cooler cleaning | | |
| | (i) Compartment cooler | NA | |
| | (ii) Bilge cooler | NA | |

13. **Fire Fighting System**.

| Check | DA No.2 | Remarks |
|---|---|---|
| Status of machinery compartment firefighting system | OPS | |

14. **Performance Trials Details**.

| Ser | Check | DA No.2 | Remarks |
|---|---|---|---|
| (a) | Max load achieved during CST | 250 KW | |
| (b) | Date of last SDC | 07 Jul 23 | |