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Andaman & Nicobar Command
पोर्ट ब्लेयर/ Port Blair - 744 102

CTT/300/02/06/TECH (i)

23 May 23

The Commander-in-Chief
{for CTO(Marine)}
Headquarters
Andaman and Nicobar Command
Port Blair - 744 102

RUNNING HOURS EXTENSION OF M1 & M2 DA – INS KESARI

1. Refer to HQANC fax ANC/42000/EG/5/3 dated 10 May 23.

2. **Background**. Running hour extension trials including performance, vibration and attenuation checks of M1 & M2 DA onboard INS Kesari were undertaken on 17 May 23. M1 DA was loaded up to 82% (410 kW) and M2 DA loaded up to 86%(432kW) on load bank and sustained for a duration of two hours. Further loading of M1 & M2 DA was limited view high fresh water temperature alarm activating.

3. **Performance Parameters**. A detailed report w.r.t engineering and performance trial is placed at **Enclosure 1**. The salient observations are as follows: -

(a) **Lub Oil Pressure**. Lub oil pressure of M1 DA at 82% and M2 DA at 86% of rated load was found to be 4.0 and 3.9 bar respectively and is **SAT**.

(b) **Lub Oil Temperature**. Lub oil temperature of M1 and M2 DA at various loads was found to be in the range of 78-95 ^{0}C and is **SAT**.

(c) **Fresh Water Temperature**. Fresh water temperature of M1 and M2 DA was found to be in the range of 75-89^{0}C and is **SAT**.

(d) **Exhaust Temperature**. At 82% of rated load (410 kW) on M1 DA exhaust temperature was observed to be 496 ^{0}C and M2 DA at 86% of rated load (433 kW) observed to be 470 ^{0}C (alarm at 507 ^{0}C) and is **SAT**.

4. **Vibration Parameters: -** Overall vibration level of the M1 & M2 DA was found **SAT**.

5. **Observations**. Salient observations/ defects observed during the trials are as follows: -

(i) **M1 DA**.

(a) Fresh water high temperature alarm activated when increasing load above 410kW.

(b) Sea water leakage from sea water pump gland packing.

(c) Salt deposit near fresh water expansion tank durite.

(d) Sea water inlet and outlet line thermometer not working.

(e) Lub oil leakage from left bank crankcase breather.

(ii) **M2 DA**.

(a) Fresh water high temperature alarm activated when increasing load above 433 kW.

(b) Sea water leakage from sea water pump gland packing.

(c) Local fuel pressure gauge glass broken.

(d) Lub oil leakage from left bank crankcase breather.

6. **Recommendations**. Following recommended: -

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

(a) Extension of running hours may be accorded for normal exploitation of M1 DA up to 82% (410kW) and M2 DA up to 86% (433kW) post liquidation of above observations by SS.

G. Jagannath 23/05

(जगन्नाथ गूरुमूर्ति /Jagannath Gurumurthy)
लेफ़्टिनेंट कमांडर / Lieutenant Commander
प्रभारी अधिकारी/ Officer-in-Charge (AOL)

Encl: - As above

Copy to: -

The Naval Component Commander
{for SSO(Tech)}
Headquarters Naval Component
C/o Navy Office
Port Blair – 744 102

The Commanding Officer
INS Kesari
c/o Navy Office
Port Blair - 744 102

Enclosure 1 to CTT(PBR) letter
CTT/300/02/06 dated 23 May 23

RUNNING HOURS EXTENSION OF M1& M2 DA - INS KESARI

1. Trial Inspector : (a) Sarv Jeet Singh, ERA3
   (b) Sanjay Yadav, LME

2. Date and Time : (a) 17 May 23 (1500- 1800 Hrs)

3. Equipment used for Performance trials : (a) SPM T-30
   (b) Temperature gun

4. Details of trials are as follows: -

(a) **Safety Device Checks**

SER	DESCRIPPTION	UNIT	DESIGNED LIMIT	M1 DA	M2 DA
1.	LOW L.O PRESSURE ALARM	KG/CM²	1.0-1.2	1.2	1.2
2.	LOW L.O PRESSURE TRIP	KG/CM²	0.7-0.9	0.8	0.8
3.	HIGH F.W. TEMP TRIP	^{0}C	89-93	91	91
4.	HIGH F.W. TEMO TRIP	^{0}C	95-99	97	97
5.	OVERSPEED TRIP	RPM	1650	1650	1650
6.	HIGH EXHAUST TEMP	^{0}C	495-505	500	500
7.	LOW FW LEVEL WARNING		50% of Volume of tank	SAT	SAT

(b) **Performance Trials**.

M1 DA									
PARAMETER READINGS - LOCAL CONTROL PANEL									
SER	DESCRIPTION	UNIT	RANGE	IDLE	25%	50%	60%	80%	82 %
1.	RPM	RPM		1105	1490	1490	1485	1490	1489
2.	L.O. PRESSURE	KG/CM²		4.5	4.3	4.4	4.2	4.1	4.0
3.	S.W. PRESSURE	KG/CM²		1.1	1.6	1.6	1.6	1.6	1.6
4.	F.W. PRESSURE	KG/CM²		1.2	1.1	1.1	1.1	1.1	1.0
5.	L.O. TEMP.	°C		60	88	94	98	104	104
6.	F.W. TEMP	°C		64	80	83	84	88	88
7.	EXHT. TEMP	°C		180	320	420	450	490	496
8.	LOAD	KW	-	00	125	250	300	410	410
9.	VOLT	V	-	415	415	415	415	415	415
10.	CURRENT	AMPS	-	-	169	354	411	572	573
11.	RPM (BY STROBE)	RPM	-	-	-	-	-	-	-
PARAMETER READINGS – REMOTE PANEL (MCR)									
1.	RPM	RPM	1500	1502	1503	1504	1505	1505	1504
2.	L.O. PRESSURE	KG/CM²	-	5.0	48	4.6	4.0	3.8	3.7
3.	S.W. PRESSURE	KG/CM²	-	-	-	-	-	-	-
4.	L.O. TEMP.	°C		74	83	90	96	101	101.1
5.	F.W. TEMP	°C		76	80	81.5	82	84	84.6
PARAMETERS BY NON CONTACT TEMPERATURE GUN									
1.	F.W. COOLER IN TEMP	°C	-	54	64	67	71	74	75

2.	F.W. COOLER OUT TEMP	°C	-	40	52	56	59	62	62
3.	SW IN TEMP TO F.W. COOLER	°C	-	33	33	33	33	32	32
4.	SW OUT TEMP FW COOLER	°C	-	36	37	36	36	36	36
5.	L.O. COOLER IN TEMP.	°C	-	59	77	80	84	87	88
6.	L.O. COOLER OUT TEMP.	°C	-	55	68	74	77	80	81
7.	FW IN TEMP. (L.O. COOLER)	°C	-	60	64	65	66	68	68
8.	FW OUT TEMP. (L.O. COOLER)	°C	-	63	33	67	68	72	72

M2 DA

PARAMETER READINGS - LOCAL CONTROL PANEL

SER	DESCRIPTION	UNIT	RANGE	IDLE	25%	50%	60%	86%
1.	RPM	RPM		1490	1485	1480	1480	1475
2.	L.O. PRESSURE	KG/CM²		4.4	4.4	4.2	4.2	3.9
3.	S.W. PRESSURE	KG/CM²		2.2	2.2	2.1	2.1	2.1
4.	F.W. PRESSURE	KG/CM²		1.3	1.2	1.2	1.2	1.2
5.	L.O. TEMP.	°C		75	76	80	84	89
6.	F.W. TEMP	°C		75	79	81	82	85
7.	EXHT. TEMP(LB/RB)	°C		231/ 252	283/ 286	400/ 406	450/ 470	450/ 470
8.	LOAD	KW	-	-	125	250	300	433
9.	VOLT	V	-	415	415	415	415	415
10.	CURRENT	AMPS	-	-	170	350	410	600
11.	RPM (BY STROBE)	RPM	-	-	-	-	-	-
12.	RPM	RPM	1500	1480	1480	1460	1458	1450
13.	L.O. PRESSURE	KG/CM²	-	4.4	4.41	4.4	4.4	3.9
14.	S.W. PRESSURE	KG/CM²	-	-	-	-	-	-
15.	L.O. TEMP.	°C		72	75	76	81	85
16.	F.W. TEMP	°C		76	79	79	81.7	83
17.	F.W. COOLER IN TEMP	°C	-	61	63	65	68	73
18.	F.W. COOLER OUT TEMP	°C	-	48	51	51	55	62
19.	SW IN TEMP TO F.W. COOLER	°C	-	33	33	33	34	34
20.	SW OUT TEMP FW COOLER	°C	-	35	36	38	41	41
21.	L.O. COOLER IN TEMP.	°C	-	73	76	79	83	87
22.	L.O. COOLER OUT TEMP.	°C	-	70	72	76	78	79
23.	FW IN TEMP. (L.O. COOLER)	°C	-	63	65	66	67	69
24.	FW OUT TEMP. (L.O. COOLER)	°C	-	64	66	68	69	70

Ser.	Parameter readings	Unit	Parameters recorded at 410KW (82% rated load)
			M1 DA
(i)	Max. sustained Load	KW	410
(ii)	RPM	RPM	1489
(iii)	L.O. Pressure	Kg/cm²	4.0
(iv)	S.W. Pressure	Kg/cm²	1.6
(v)	L.O. Temp.	°C	104
(vi)	F.W. Temp	°C	88
(vii)	Exhaust Temp LB/ RB	°C	490/496

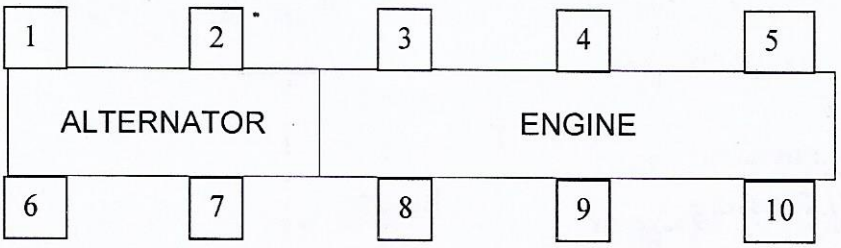
Ser.	Parameter readings	Unit	Parameters recorded at 433KW (86% rated load)
			M2 DA
(i)	Max. sustained Load	KW	433
(ii)	RPM	RPM	1475
(iii)	L.O. Pressure	Kg/cm²	3.9
(iv)	S.W. Pressure	Kg/cm²	2.1
(v)	L.O. Temp.	°C	89
(vi)	F.W. Temp	°C	85
(vii)	Exhaust Temp LB/ RB	°C	450/470

(c) **Vibration trials**. Vibration trials of M1 & M2 DA was undertaken at load 300 KW (60% of rated load) of both Das and 410 KW (82% of rated load) of M1 and 433 KW (86% of rated load) of M2. Overall vibration readings of DAs at monitoring points found within permissible limit and is Sat. The details of trials are as follows: -

M1 DA								
Ser.	Measuring Points	At 60% (300 KW) load			At 82% (410 KW) load			Remarks (Limit 16 mm/sec)
		V	A	H	V	A	H	
(i)	Engine free end	4.0	5.7	5.9	8.8	7.2	6.9	SAT
(ii)	Engine drive end	4.8	5.8	2.8	6.7	8.6	3.3	
(iii)	Alternator drive end	4.0	1.9	1.5	7.1	2.0	1.3	
(iv)	Alternator free end	2.4	1.5	2.5	3.1	3.3	1.6	

M2 DA								
Ser.	Measuring Points	At 60% (300 KW) load			At 86% (433 KW) load			Remarks (Limit 16 mm/sec)
		V	A	H	V	A	H	
(i)	Engine free end	5.4	6.4	5.8	6.0	7.1	7.4	SAT
(ii)	Engine drive end	7.0	6.2	2.3	8.3	8.5	3.4	
(iii)	Alternator drive end	2.2	1.4	1.6	3.0	1.8	1.7	
(iv)	Alternator free end	2.8	2.0	1.5	3.7	2.1	1.4	

5. **Attenuation Checks**. DA attenuation checks were carried out of M1 and M2 DA.



M1 DA										
Position	Vibration readings of SV mounts at 60 % Load									
	1	2	3	4	5	6	7	8	9	10
Top	12.7	6.7	2.6	2.4	7.4	12.3	6.9	3.1	5.1	5.3
Bottom	0.2	0.2	0.8	0.8	0.7	0.4	0.3	0.4	0.2	0.2
Attenuation % age (Limit 70 – 90%)	98	97	77	74	91	96	97	87	96	97
Remarks	SAT									

M1 DA										
Position	Vibration readings of SV mounts at 82 % Load									
	1	2	3	4	5	6	7	8	9	10
Top	12.3	8.4	3.5	3.1	8.2	12.6	10.1	3.3	6.2	7.5
Bottom	0.2	0.2	0.8	0.8	0.7	0.4	0.3	0.4	0.2	0.2
Attenuation % age (Limit 70 – 90%)	98	97	77	74	91	96	97	87	96	97
Remarks	SAT									

M2 DA										
Position	Vibration readings of SV mounts at 60 % Load									
	1	2	3	4	5	6	7	8	9	10
Top	12.2	6.6	2.0	2.6	2.8	2.7	4.6	7.3	10.1	3.4
Bottom	1.0	0.2	0.2	0.4	0.3	0.5	0.2	0.5	0.4	0.2
Attenuation % age (Limit 70 – 90%)	91	96	90	84	89	81	95	93	96	94
Remarks	SAT									

M2 DA										
Position	Vibration readings of SV mounts at 86 % Load									
	1	2	3	4	5	6	7	8	9	10
Top	14.8	8.9	2.8	3.4	3.6	11.7	9.5	6.4	4.0	3.9
Bottom	1.2	0.4	0.4	1.0	0.5	0.8	1.0	0.4	0.2	1.0
Attenuation % age (Limit 70 – 90%)	91	95	85	70	86	93	89	93	95	74
Remarks	SAT									

6. **SPM Readings**.

M1 DA				
Ser.	**DESCRIPTION**	**0 % LOAD dbm/dbc**	**60 % LOAD dbm/dbc**	**95 % LOAD dbm/dbc**
(a)	Alternator driven end	19/7(Green)	19/7(Green)	18/9(Green)
(b)	Alternator free end	-7/-9(Green)	-6/-8(Green)	-2/-9(Green)

M2 DA				
Ser.	**DESCRIPTION**	**0 % LOAD dbm/dbc**	**60 % LOAD dbm/dbc**	**86% LOAD dbm/dbc**
(c)	Alternator driven end	19/6(Green)	18/3(Green)	19/6(Green)
(d)	Alternator free end	3/8(Green)	4/5(Green)	14/-7(Green)