

दूरभाष: २३०६/ Tele: 2306

सम्मिश्र जांच दल/ Composite Trial Team  
द्वारा नौसेना कार्यालय/ c/o Navy Office  
मुख्यालय/ Headquarter  
अन्डमान एवं निकोबार कमान/  
Andaman & Nicobar Command  
पोर्ट ब्लेयर ७४४१०२/ Port Blair 744 102

CTT/300/04/04/TEC (iii)

11 नवम्बर २३/ Nov 23

प्रधान सेनापति/ The Commander-in-Chief  
{कृते कमान तकनीकी अधिकारी (समुद्री विद्युत)/ for CTO (ML)}  
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

**END OF REFIT TRIALS OF HPAC NO. 1, 2 AND LPAC - INS KARMUK (NR-23)**

1. Refer to INS Karmuk Fax 343/3/3 dated 08 Nov 23.
2. **Background** Performance, vibration, attenuation and capacity trials of HPAC No.1, 2 and LPAC were carried out on 13 & 14 Nov 23. Detailed reports are placed at **Enclosure I & II** respectively. HPAC 1 was replaced as part of ABER during the refit.
3. **Performance trials.** Operating parameters of HPAC No.1, 2 and LPAC were found within operating limit.
4. **Vibration trials.** Overall vibration of HPAC No. 01, 02 and LPAC were found within limit.
5. **Observation.**  
**HPAC No.1.**
  - (a) **Sub-optimal** performance of HPAC No.1 (Capacity achieved 22.71 m<sup>3</sup>/hr against designed capacity of 25 m<sup>3</sup>/hr).
  - (b) Vibration at MFE(V) and MDE(V) **found beyond acceptance** limit of new fit equipment.
  - (c) Combistate (temp.cutout) not calibrated.
  - (d) SV mount no.03 corroded.
  - (e) Bilge plates not secured.

## **HPAC No.2.**

- (a) **Sub-optimal** performance of HPAC No.2 (Capacity achieved 20.34 m<sup>3</sup>/hr against designed capacity of 25 m<sup>3</sup>/hr ).
- (b) III<sup>rd</sup> stage relief valve drain line not fitted.
- (c) Air bottle relief valve line not secured.
- (d) Air bottle pressure testing certificate not held.
- (e) Instrumentation cables not secured.
- (f) Vibration mounts corroded.
- (g) L/O drain line from sump corroded.
- (h) Securing clamp broken.

## **LPAC**

- (a) **Suboptimal** performance of LPAC (Capacity achieved 11.8 m<sup>3</sup>/hr against designed capacity of 16 m<sup>3</sup>/hr).
- (b) Air leakage from II<sup>nd</sup> stage discharge line and pressure switch inlet line.
- (c) Auto cut in/ out pressure switch not secured.
- (d) Attenuation of mount no.03 and 04 found **UNSAT**.
- (e) Portable extinguishers not placed in designated stands.
- (f) SPM checks of motor not offered.

## 6. **Recommendations.**

- (a) Liquidation of defects/ observations mentioned at Para 5 ibid.
- (b) Vibration trials of HPAC. No.1 to be re-offered post identification/ rectification.
- (c) Capacity trials of all three compressors to be re-offered.



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

**Encl:-** As above

**Copy to:-**

कोमोडोर अधीक्षक/ The Commodore Superintendent  
{कृते उप महाप्रबंधक (मरम्मत)/ for DGM (Refit)}  
नौसेना पोत मरम्मत यार्ड/ Naval Ship Repair Yard  
द्वारा नौसेना कार्यालय/ c/o Navy Office  
पोर्ट ब्लेयर ७४४ १०२/ Port Blair 744 102

कमान अधिकारी/ The Commanding Officer  
भा. नौ. पो. कार्मुक/ INS Karmuk  
द्वारा नौसेना कार्यालय/ c/o Navy Office  
पोर्ट ब्लेयर ७४४ १०२/ Port Blair 744 102

**END OF REFIT TRIALS OF HPAC NO. 1 AND 2 - INS KARMUK (NR-23)**

1. Trial Inspectors : (a) Pankaj Rawat, ERA III  
(b) Patro Ashok, ERA IV  
(c) Bharat, LME
2. Date and Time : 13 & 14 Nov 23 (1100 -1500Hrs)
3. Equipment used for Trials : (a) SPM T-30  
(b) Temperature Gun.  
(c) Camera

4. **Safety device checks.**

Ser	Description	Unit	Design Value	HPAC No.1	HPAC No.2
(a)	1 <sup>st</sup> Stage Relief valve	Bar	10	10	10
(b)	2 <sup>nd</sup> Stage Relief valve	Bar	55	55	52
(c)	3 <sup>rd</sup> Stage Relief valve	Bar	245	240	240
(d)	Cooling water outlet temp.	°C	40	35	38
(e)	Starting Current	Amps	130	46	48
(f)	Running Current	Amps	19.5	8.6	10.6
(g)	Insulation	MΩ	≥2	∞	∞
(h)	Auto Drain Mechanism	-	Ops/ Non Ops	Ops	Ops

5. **Performance trials.**

Ser	Description	Unit	HPAC No.1	HPAC No.2
(a)	Compressor starting time	hrs	1002	1230
(b)	Compressor stopping time	hrs	1144	1525
(c)	Time taken	Min	42	175
(d)	Bottle capacity	ltrs	0.106	0.258
(e)	Bottle air pressure.	Bar	100	230
(f)	Compressor capacity achieved	m3/hr	<b>22.71</b>	<b>20.34</b>

6.

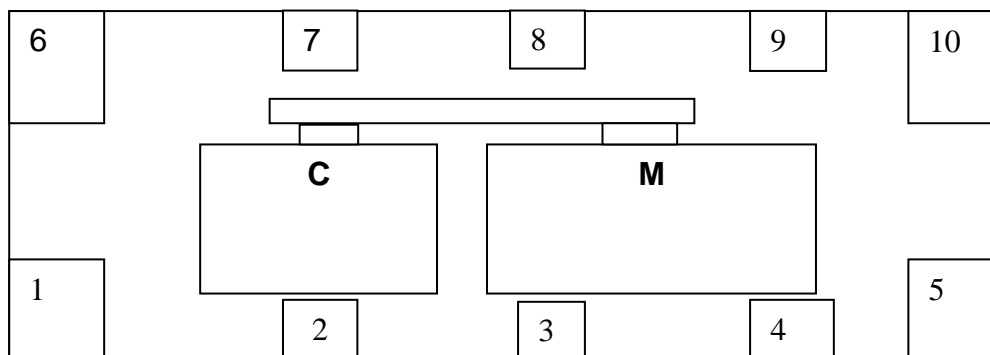
Ser	Description	HPAC No.1			Remarks
		V	A	H	
(a)	MFE	12.6	2.3	4.9	UNSAT
(b)	MDE	9.2	3.2	3.5	UNSAT
(c)	CDE	5.2	1.6	2.9	SAT
(d)	CFE	4.6	2.7	1.8	SAT

**\*(Limit 8 mm/sec for new fit equipment)**

Ser	Description	HPAC No.2			Remarks
		V	A	H	
(a)	MFE	9.8	4.5	2.7	SAT
(b)	MDE	5.7	3.9	4.0	SAT
(c)	CDE	2.4	5.0	3.7	SAT
(d)	CFE	7.9	2.7	2.8	SAT

**\*(Limit 15 mm/sec)**

7.



Ser	Position	HPAC No.1									
		1	2	3	4	5	6	7	8	9	10
(a)	Top	11.4	8.5	7.9	9.0	8.1	8.4	8.7	7.1	9.0	8.6
(b)	Bottom	0.5	0.6	0.4	1.4	1.8	0.6	0.6	0.9	1.4	2.1
(c)	Attenuation% (Limit above70%)	95	89	94	84	77	92	93	87	84	75
(d)	Remarks	SAT									

Ser	Position	HPAC No.2									
		1	2	3	4	5	6	7	8	9	10
(a)	Top	4.9	4.0	4.6	5.9	10.3	8.6	5.7	4.4	5.7	9.7
(b)	Bottom	0.2	0.2	0.7	0.2	0.4	0.6	0.4	0.5	0.4	0.4
(c)	Attenuation% (Limit above70%)	96	95	85	96	96	93	92	88	92	95
(d)	Remarks	SAT									

8. **SPM Levels.**

<b><u>Description</u></b>	<b><u>HPAC No.1 Dbm/Dbc</u></b>	<b><u>HPAC No.2 Dbm/Dbc</u></b>
Motor FE 6309	2/-3	12/-6
Motor DE 6309	15/-1	8/-2
<b>Remarks</b>	Green	Green

**END OF REFIT TRIALS OF LPAC - INS KARMUK (NR-23)**

1. Trial Inspectors : (a) Patro Ashok, ERA IV  
(b) Bharat, LME
2. Date and Time : 13 Nov 23 (1100 -1500 Hrs)
3. Equipment used for Trials : (a) SPM T-30  
(b) Temperature Gun  
(c) Camera

4. **Safety device checks.**

Ser	Description	Unit	Designed Value	Observed Value
(a)	1 <sup>st</sup> stage Relief valve	Bar	10	10
(b)	2nd stage Relief valve	Bar	35	35
(c)	Auto cut off.	Bar	30	30
(d)	Auto cut in	Bar	22	21.5
(e)	Manual drain	Bar	Ops/ Non Ops	Ops
(f)	Auto drain	-	Ops/ Non Ops	NA
(g)	Low L/O level trip	-	1/2	Sat

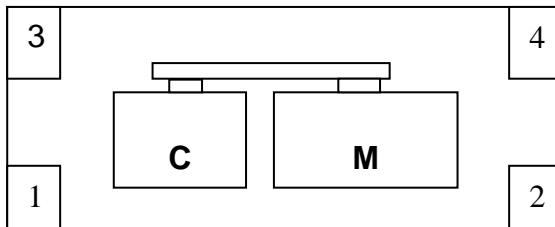
5. **Performance trials.**

Ser	Description	Unit	LPAC
(a)	Compressor starting time	hrs	1418
(b)	Compressor stopping time	hrs	1437
(c)	Time taken	Min	19
(d)	Bottle capacity	ltrs	125
(e)	Bottle air pr.	Bar	30
(f)	Compressor capacity achieved	m <sup>3</sup> /hr	<b>11.8</b>

6. **Vibration trials.**

Ser	Description	LPAC			Remarks (Limit 18 mm/sec)
		V	A	H	
(a)	MFE	6.1	7.2	12.9	SAT
(b)	MDE	7.1	8.2	13.8	SAT
(c)	CDE	2.3	8.8	17.5	SAT
(d)	CFE	2.7	3.2	17.8	SAT

7. **Attenuation checks.**



Ser	Position	LPAC			
		1	2	3	4
(a)	Top	4.8	5.0	2.7	3.9
(b)	Bottom	0.8	1.2	1.1	1.7
(c)	Attenuation% (Limit above 70%)	83	76	59	56
(d)	Remarks	SAT		UNSAT	

9. **SPM Levels.** Pending / Not offered.