

WORTHINGTON HIGH PRESSURE AIR COMPRESSOR LOG

FOR WORTHINGTON CLASS AA, 13 0 CFH 4500 PSI AIR COMPRESSOR TECH MANUALS NAVSEA 0349-LP-073-0000 AND NAVSEA 0949-LP-005-6000

DATE	USS	SSN/SSBN	HPAC NO.	HRS BRIGHT FWD	RUN TODAY	TOTAL OP. HRS.
		SHUT-DN/REL	MIN	NORMAL	MAX	00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23
FRAME OIL PRESSURE, HOT, (PSIG), WARM		14 ^A	25	40-50		
PRESSURE 1st STAGE		60 ^B		40-45		
(PSIG) 2nd STAGE		330 ^B		255-275 ^M		
3rd STAGE		1225 ^B		1030-1110		
4th STAGE		4700 ^A , 5290 ^B	4200 ^C	4200-4500 ^L		
TEMP 1st STAGE-SUCT			40	86 ^J	122	
°F 1st STAGE-DISCH		430 ^A		320-370	415	
2nd STAGE-SUCT				122 ^J		
2nd STAGE-DISCH		430 ^A		370-400	415	
3rd STAGE-SUCT				119 ^J		
3rd STAGE-DISCH		430 ^A		340-390	415	
4th STAGE-SUCT				120 ^J		
4th STAGE-DISCH		430 ^A		365-410	415	
FINAL DISCH				120 ^J		
CLG WTR OUTLET TEMP		125 ^A		95I-115		
CLG WTR INLET TEMP			28	K	95	
CLG WTR PRESS		185 ^B	50	K	175	
CRANKCASE OIL TEMP				125 ^I -170		
CRANKCASE OIL LVL			LOW	MIDDLE	HIGH	
CYL LUBE OIL LVL			1/2	K	FULL	
LUB FLOW RATE 1st STAGE			10 ^D	11	15 ^E	
(DROPS/MIN) 2nd STAGE			10 ^D	11	15 ^E	
3rd STAGE			10 ^D	11	15 ^E	
4th STAGE			10 ^D	11	15 ^E	
CUNO FILTER		DRAIN EVERY 1/2 HR DURING CHARGE ^G				
CUNO FILTER		REPLACE ELEMENT - PERIODICITY NOTE ^F				
MOISTURE SEP FLASK		DRAIN EVERY 1/2 HR DURING CHARGE ^G				
CONDENSATE DRAINAGE		OBSERVE 8 MIN CYCLE EVERY 4 HRS				

^A AUTOMATIC SHUTDOWN. 4TH STG SHUTDOWN PRESS 4650 ON SSBN 640 CLASS
^B RELIEF VALVE LIFTS; SEE 6000 MANUAL FOR EXCEPTIONS 4TH STG RELIEF PRESSURE
^C MIN NOMINALLY 4000-4200 DEPENDING ON DEHYDRATOR IN USE
^D INADEQUATE LUBRICATION BELOW THIS RATE
^E CAUSES EXCESS CARBON & OIL CARRYOVER ABOVE THIS RATE
^F REPL ELEMENT EVERY 200 HRS. HPAC USE OR MONTHLY, WHICHEVER FIRST. RECORD WHEN REPL
^G A DIFFERENT PERIODICITY MAY BE SPECIFIED ON SOME SHIPS

^H RECORD HPAC OPERATING HOURS IN TABLE
^I TEMPERATURES MAY BE LOWER WHEN COOLING WATER INLET TEMPERATURES LOW; REFER TO HPAC TECH MANUALS SECT 6.2.7
^J NORMAL TEMP VARIES WITH AIR & COOLING WATER TEMP. CHECK FOR CHANGES FROM NORMAL
^K NORMAL WITHIN MIN/MAX RANGE
^L MAY BE EXCEEDED WHEN CHARGING AIR BANKS TO 4500 PSI
^M UPPER 2ND STAGE PRESSURE 265 FOR HPAC'S COVERED BY NAVSEA 0349-LP-073-0000 MANUAL

REMARKS

0000--0600

0600--1200

**TRAINING SUMMARY FOR SMMSO HP AIR
COMPRESSOR LOG SHEET FOR USE ON
SSN 637, SSN 688, AND SSBN 640 CLASS SUBMARINES**

The following summary will discuss selected values on the new HP Air Compressor Log Sheets which may be of concern to an operator. Values which fall outside the normal range indicate a problem may be developing.

TEMP COOLING WATER OUT

Values lower than 95°F can cause condensation within the cylinders, interference with piston ring and valve lubrication, contamination of crankcase oil with water carried past the piston ring, and erratic or incomplete operation of the automatic separator drains. Maintaining 105°F outlet temperature by adjusting the water outlet throttle valve will provide for the most efficient compressor operation. Do not reduce water flow sufficiently to drive any stage discharge temperature above 415°F. With low inlet water temperatures, and with maximum throttling, it may not be possible to maintain cooling water outlet temperature, and crankcase oil temperature above the lower values of the normal range. REFER TO HPAC TECH MANUALS SECT 6--2--7.

PRESSURE 4TH STAGE DISCHARGE

Minimum 4th stage pressure is established by the dehydrator back pressure valve. Check Tech Manual for the dehydrator coupled to the HPAC for correct setting and insure back pressure valve is set correctly. Operation at reduced pressures can cause saturation of desiccant and high air bank dew points.

SIGNATURE:

SIGNATURE:

1200--1800

1800--2400

**2ND, 3RD & 4TH STAGE SUCTION AND FINAL DISCHARGE
TEMPERATURES**

These readings may vary considerably because they are a function of the cooling water inlet temperature and the amount of fouling in the coolers. Any sudden or unusual change from the temperatures previously logged under similar operating conditions should be investigated.

HIGH CYLINDER DISCHARGE TEMPERATURES

High Cylinder discharge temperatures can be caused by:

- a. Fouled coolers
- b. Faulty suction or discharge valves or valve gaskets
- c. Leaking piston ring in stages measured (may cause low temperatures or pressures)

For additional causes and the effect of internal air leaks on interstage pressure and temperatures see Table 5--2--1 in the compressor Tech Manual. The cause of temperatures approaching 415° should be investigated and corrected. Any sudden or unusual change from temperatures previously logged under similar operating conditions should be investigated.

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