

BASIC CONDITIONS of "COMPACT Seal" BONDING REPAIR AFT (Afloat)
(AFT seal only)

1. Scope of Service

- 1) Overhauling seals and inspection.
- 2) Bonding sealing ring(s) by using KEMEL's special compound 'A + B' and the device.
- 3) Assembling seals and witness oil pressure test.

2. Ship/Shipyard Assist – to be arranged by the order party**AFT Seal**

- 1) Work permission by port authorities and related organizations.
- 2) Oil pollution measures such as oil tray/oil fences. (Possible to have oil drips while working.)
- 3) Trimming ship, the assembly to be completely out of water approx. 1M above water.
- 4) Set-up proper stage around propeller/stern tube area. (See sketch attached.)
- 5) Removal rope guard.
- 6) Installation lifting gears (chain block - 1 ton) above the seal.
- 7) Furnish power supply (220V/1KW AC, single phase) for the bonding device at the propeller/stern tube area.
- 8) Supply working lights, general tools, cleaning oil, rags (5 kg), lighting etc. at the work site.
- 9) Full time labor assists. (2 – 3 persons)

3. Draining stern tube oil

- 1) Drain out stern tube oil completely by the ship before overhauling AFT

4. Weather/Sea conditions may cause a delay of the work.**5. Working hours, 15 - 20 hours/AFT for our scope of services, without interruption.****6. Safety Work – to be organized by the order party**

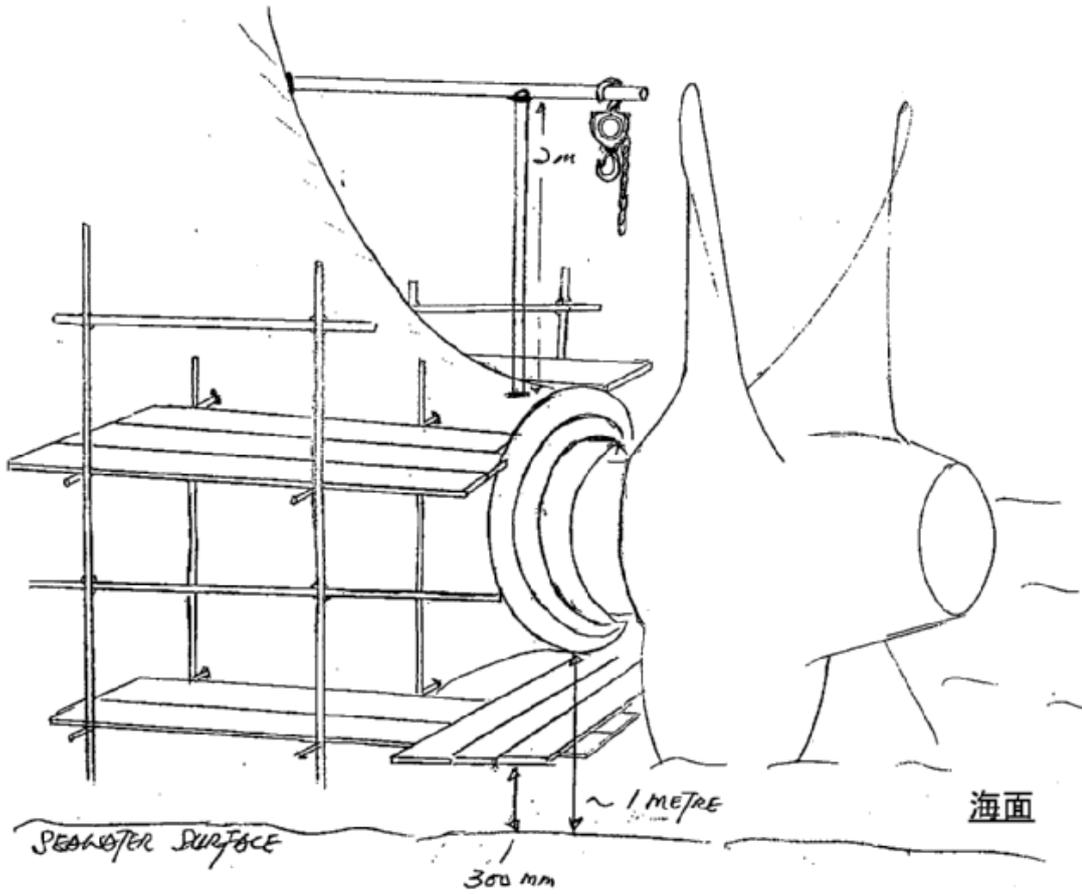
- 1) Prohibit turning tail shaft while bonding work in progress.
- 2) Establish communication methods for notifying turning shaft in case necessary.
- 3) Establish electrical grounding for bonding device and for other electrical equipment.
- 4) Deploy full time safety watches till the work completed.
- 5) Provide sufficient numbers of safety/working lights.
- 6) Maintain communication methods for emergency situation.
- 7) Instruct ship's safety rules/regulations for service engineer and labors.
- 8) Provide safety handrails on the stage for AFT seal work.
- 9) Prohibit propeller repair, sand blasting and spray painting around stern area for AFT seal work.
- 10) Supply sufficient numbers of life jackets and life buoys for service engineers and labors, for AFT seal work.
- 11) Maintain free access all the time to shore or to the ship for emergency evacuation from the working area, for AFT seal work.

7. Others

- 1) Arrange transports from shore to the ship and back to shore if required.
- 2) Arrange ship's cabin for service engineer, by request, in case of the work overnight/over 8 hours and no facility available near-by.
- 3) Provide meals/water for service engineer/labors, by request, in case of no facility available near-by.
- 4) The service engineer is authorized to interrupt AFT seal work for safety or quality reasons at his judgment during the work, due to sudden change of weather/sea conditions till it recovers. (Guideline for interruption; Wind force 4 & above by Beaufort scale attached.)
- 5) Service engineer makes proper protections of stem tube from splashing water entering into the system when leaving the work site.

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STAGING SKETCH - PLEASE ERECT STAGING AS PER SKETCH BELOW:



Beaufort wind force scale

Specifications and equivalent speeds

Beaufort wind scale	Mean Wind Speed		Limits of wind speed		Wind descriptive terms	Probable wave height in metres*	Probable maximum wave height in metres*	Seastate	Sea descriptive terms
	Knots	ms ⁻¹	Knots	ms ⁻¹					
0	0	0	<1	<1	Calm	-	-	0	Calm (glassy)
1	2	1	1-3	1-2	Light air	0.1	0.1	1	Calm (rippled)
2	5	3	4-6	2-3	Light breeze	0.2	0.3	2	Smooth (wavelets)
3	9	5	7-10	4-5	Gentle breeze	0.6	1.0	3	Slight
4	13	7	11-16	6-8	Moderate breeze	1.0	1.5	3-4	Slight-Moderate
5	19	10	17-21	9-11	Fresh breeze	2.0	2.5	4	Moderate
6	24	12	22-27	11-14	Strong breeze	3.0	4.0	5	Rough
7	30	15	28-33	14-17	Near gale	4.0	5.5	5-6	Rough-Very rough
8	37	19	34-40	17-21	Gale	5.5	7.5	6-7	Very rough-High
9	44	23	41-47	21-24	Severe gale	7.0	10.0	7	High
10	52	27	48-55	25-28	Storm	9.0	12.5	8	Very High
11	60	31	56-63	29-32	Violent storm	11.5	16.0	8	Very High
12	-	-	64+	33+	Hurricane	14+	-	9	Phenomenal