



Activity 6

Technical upgrading and life extension of the icebreakers

ALTLE, FREJ, YMER and ALE are all old icebreakers build in the seventies.

The objective of Activity 6 is to carry out a life extension program in order to ensure sufficient icebreaking capacity for the next 10-15 years.



ATLE, FREJ & YMER Displ ton 8000 Built 1974-77 Length 104m Breath 23,8m 16200 kW



ALE Displ ton 1500 Built 1973 Length 47m Breath 13m 3500 kW





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The life extension program consist of a large number of measures

Activity 6																													_
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Upgrading electric propulsion engines			XIA																										1
Oil mist detector			XX																										1
Upgrading of pipe system																													1
Ballast water treatment plant																						C	2	2	E		L E		1
Upgrading of exhaust system																										\square			1
Upgrading of lubrication system							XX	1/1/				12	12/1				X X	121											1
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YMER		_		_	-	_		_	_	_		_		_	\rightarrow	_		_		_	_	_		_	-	\rightarrow	_		_
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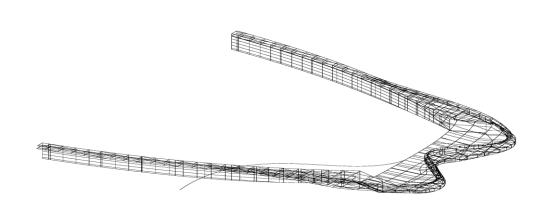


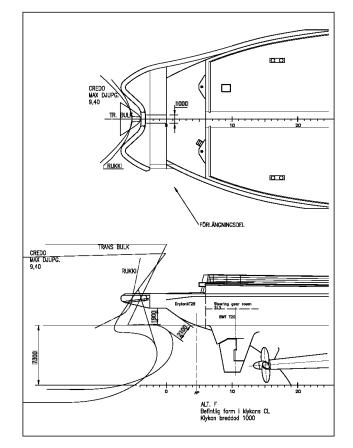


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ATLE, YMER and FREJ have ben equipped with new towing winches and towing notches to meet a new an increased average size and displacement of ships











Technical upgrading and life extension of the icebreakers

Water pipes in the sea water cooling system are replaced by glass fiber reinforced epoxy pipes.





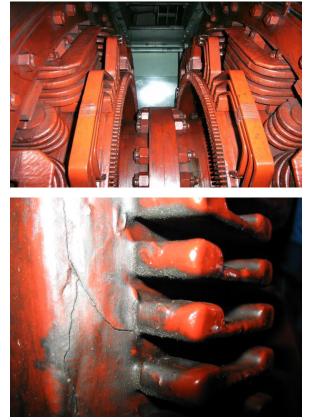


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The electric propulsion machineries have been overhauled to new condition on all 4 IB.











Technical upgrading and life extension of the icebreakers

The old icebreakers can now be in operation for 10 -15 years more meanwhile the new building program of the next generation icebreakers is executed.