



Infrastructure name	NAUTILE
Code	
Owner/Institution	Ifremer (Genavir) France
Manager	Jean Xavier Castrec (Jean.Xavier.Castrec@ifremer.fr)
Equipment type	Manned Submersible
System description	6000m Manned Submersible
WEB LINK	http://www.ifremer.fr/fleet/systemes_sm/engins/nautile/nautile.htm
WEB LINK TECH SPECS	http://www.ifremer.fr/fleet/systemes_sm/engins/nautile/nautile.htm#caracteristiques
Vessels normally used	Atalante, Pourquoi pas?.
Ship requirements	Handling systems :A- frame CMU 25 T, with 5 winches for handling the sub. 5 spare places for 20" containers
Technical specifications	refer to : "Guide d'exploitation du Nautile", référence : GENAVIR - DEE-ESM/SEH/05.123
Weight	18,5 T 19,5 T ready to dive
Battery :	
Technology	Lead-Acid Battery
Charging time	8 hours
Voltage, capacity	240 V, 230 A/h - 38,5 kWh normal use 28 V, 330 A/h - 5 kWh normal use
Dives	
People inside the sub	3 : One pilot, one co-pilot, one passenger
Duration	min 5 hours of work at 6000 m depth -
Speed	ahead max speed : 1 m/s To reach the bottom, down speed : 0.7 m/s To go back to surface, up speed : 0.9 m/s
Up and down technology (surface to bottom)	Disposable Weight (one shoot)
periodicity	every day
Autonomy in rescue mode	5 / 6 days
Technical requirements	
Power	
Frequency	50Hz
Voltage	400Vac-3 phases and 240Vac-2phases / no neutral distributed 400Vac supply: containers 3*20KVa, cradle 25KVa
KVA	240Vac 5*7KVa
Hydraulic	
Pressure	
Flow rate	
Compressed air requirements	8 bars
Cooling water	2m3/heure sea or fresh water/ 3 bars

Subsea positioning requirements	
Compatible USBL systems	USBL Ixsea system POSIDONIA
Vessel GPS Feed or other requirements	
	GPS or DGPS
Networking requirements	
	http://www.ifremer.fr/fleet/systemes_sm/images/victor6000/vem_o.jpg
No. of System configurations possible	
Configuration 1	Normal configuration: complete scientific mission in total autonomy (far from home harbour)
Configuration 2	
Configuration 3	
Configuration 4	
Deck Layout Drawing	
Configuration 1	
Configuration 2	
Configuration 3	
Configuration 4	
System weight/COG in each configuration	
Configuration 1	Sub with support (27T) fixed on rails on main deck - 20' mechanical work shop container (10,5 T) on main deck - 20' electric workshop container (9 T) on main deck 20' Sub positioning Container (8 T) - 20' Spare parts container (8,7 T) 20' hyperbaric chamber container (5,2T) 1 ton of steel shot for each dive
Configuration 2	
Configuration 3	
Configuration 4	
Number of containers/Items, Footprint Area required	
Configuration 1	5 standard 20' containers + other items listed before - according configuration drawing mentionned above
Configuration 2	
Configuration 3	
Configuration 4	
Deck securing arrangements	
Configuration 1	Containers twist locked into standard iso 20' + chain ratcheted down, rails for repository support bolted on deck or on welded - Sub and support strapped to deck
Configuration 2	
Configuration 3	
Configuration 4	
Deck strength/Deck loading	
Configuration 1	According configuration drawing mentionned above
Configuration 2	
Configuration 3	
Configuration 4	
Transportation requirements (total weight and number of loads)	
Configuration 1	90 t in 7 containers (5x20' standard - 2x20' Open top) + 20 t Nautilie + 8 t Sub support (Nautilie and support are not transportable by container)
Configuration 2	

Configuration 3	
Configuration 4	
V.A.T. + Customs clearance practice	To be confirmed (TBC)
Mobilisation Details	
Typical Mobilisation duration	2 to 4 days for configuration 1 (and usual ship)
Typical Mobilisation cost	Crane hire (4 to 6000 €) - Truck hire (10 to 12000 € for config.1 and far from home port - 2000 € for config.1 home port)
Typical Demobilisation duration	2 days for configuration 1
Typical Demobilisation cost	Crane hire (4 to 6000 €) - Truck hire (10 to 12000 € for config.1 and far from home port - 2000 € for config.1 home port)
Insurance arrangements	
Own use	Ifremer is its own insurer
Barter	
Charter	To be discussed with the charterer
Co-operation	Ifremer is its own insurer
Transportation insurance	Covered for all risks
Technicians	
Number and type of technicians required to operate system in various scenarios	day operations: 8 technicians comprising 1 sub supervisor, 2 pilot, 2 co-pilot, technicians, scuba-divers with experience manned sub, mechanic, electric and electronic systems, positioning and data processing, and scuba-divers
System payloads	
Total maximum payload	in air = 300 daN / in water = 200 daN
Existing specific payloads	various tools