

Config 1, Long Range Open ocean, science or oil

No multibeam sonar, no whisker box, no DUSBL, no AviBeaconINS and 900 Hz nav powered off,

Whiskerbox, DUSBL, 10 kHz modem/receive array, 900 kHz, Avi Beacon, short antenna, camera

Freshwater in Great Lakes requires removal of camera and addition of 100m depth-rated foam packs

Whiskerbox, DUSBL, 10 kHz modem/receive array, 900 kHz, Avi Beacon, short antenna

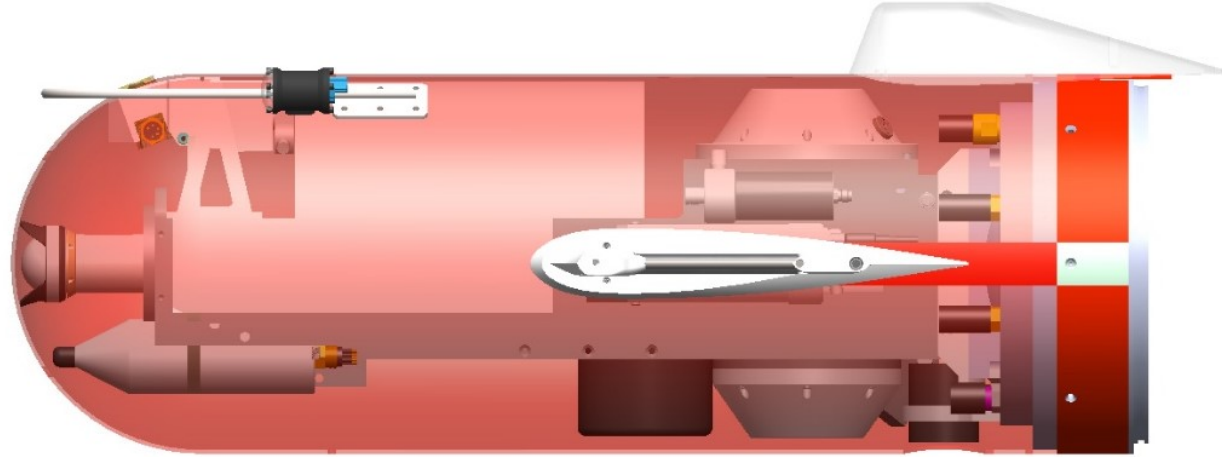
No Chelsea, Soundscape, camera, or PAR

Downward looking Norbit WBMS, INS, 10 kHz modem/receive array, Tall antenna, Soundscape

No whiskerbox, DUSBL, camera, Chelsea, avi beacon or soundscape

Name	Description	Example	Sensors:																	
			Seabird CTD/DO	SeaOWL	PAR	Up/dowl DVL	10 kHz A-coms	Whiskerbox	DUSBL	Multibeam	INS	IP Camera	tall antenna	Short Antenna	900 Hz A-nav	Chelsea UV	AviBeacon	Soundscape		
Config 1	Open ocean Sci/oil	Squid cruise & Santa Barbara	x	x	x	x	x					x	x			x		x	xx long nose	
Config 2	Under-ice Long Range	Great Lakes, Barrow	x	x	x	x	x	x	x			x		x	x	x	x		xx long nose	
Config 3	Under-ice mapping		x	x	x	x	x	x	x	x	x			x	x		x			
Config 4	Seafloor mapping		x	x	x	x	x			x	x		x							
* INS, Backseat Computer, 10 kHz Micromodem and 900 Hz micromodem are all installed inside Stella's hull																				
** Upward DVL is only used for under-ice																				
Name	Description	Example	Sensors:																	
			Seabird CTD/DO	SeaOWL	PAR	Up/dowl DVL	10 kHz A-coms	Whiskerbox	DUSBL			GoPro Camera	tall antenna	Short Antenna	900 Hz A-nav		AviBeacon			
Config 1	Open ocean science	Squid cruise, Santa Barbara	x	x	x	x	x					x	x						- shorter nose	
Config 2	Under-ice Long Range	Great Lakes, Barrow	x	x	x	x	x	x	x			x		x	x		x		- medium nose with cutouts	

Config 1: Long Range Open Ocean



Core Science: CTD, DO, PAR, Chl/OBS/Oil

Camera

Soundscape

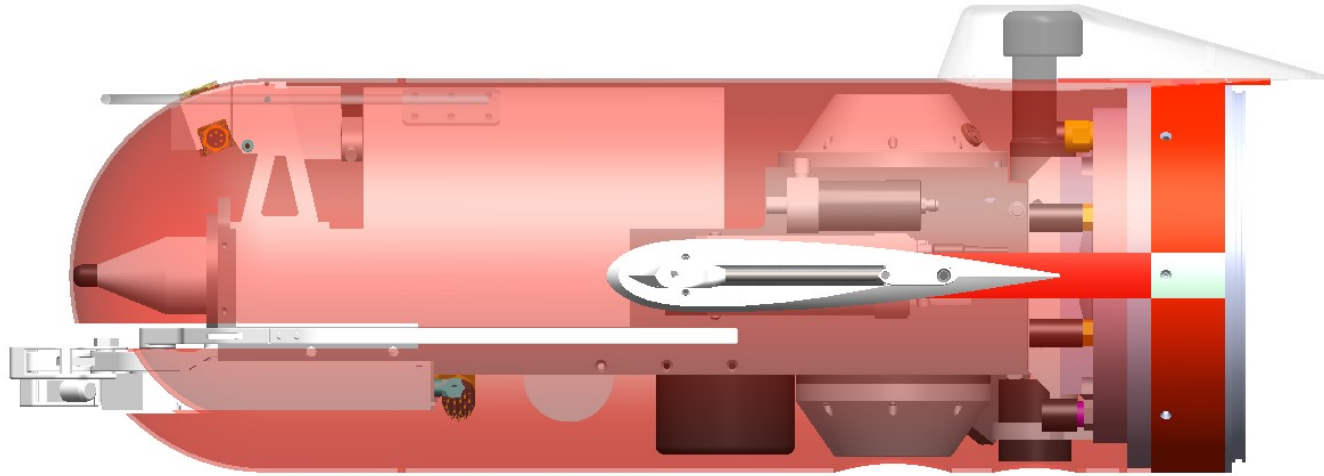
Chelsea UV oil

10 kHz Comms/Nav with receive array in tail

Optional INS

Config 1, open ocean science		Components added			Components removed			
	Displacement	weight (lbs)	Net buoyancy (lb)	Net Buoyancy (kg)	Displacement	weight	Net buoyancy (lb)	Net Buoyancy (kg)
Baseline is existing nose, with 1.76lbs (800g) of ballast weights								
	minus existing foam		0	0	14.6	5.4	9.2	4.1768
	Remove whiskerbox				7.8	12.7	-4.9	-2.2246
	add CTD-DO and pump		-0.88	-0.39952				
	add BSC in hull	1	-1	-0.454			0	0
	Add 900 Hz in hull	1	-1	-0.454			0	0
	add INS (Phins C3) in hull		-3.7	-1.6798			0	0
	add soundscape		0	0			0	0
	add camera	0.55	1.4	-0.85	-0.3859			
	add lights	0.225	0.46	-0.235	-0.10669			
	Add top foam	14.6	5.4	9.2	4.1768		0	0
	add side foam	5.2	1.8	3.4	1.5436		0	0
	add longer shell		1	-1	-0.454		0	0
			3.935	1.78649			4.3	1.9522
	Net change:	-0.365						

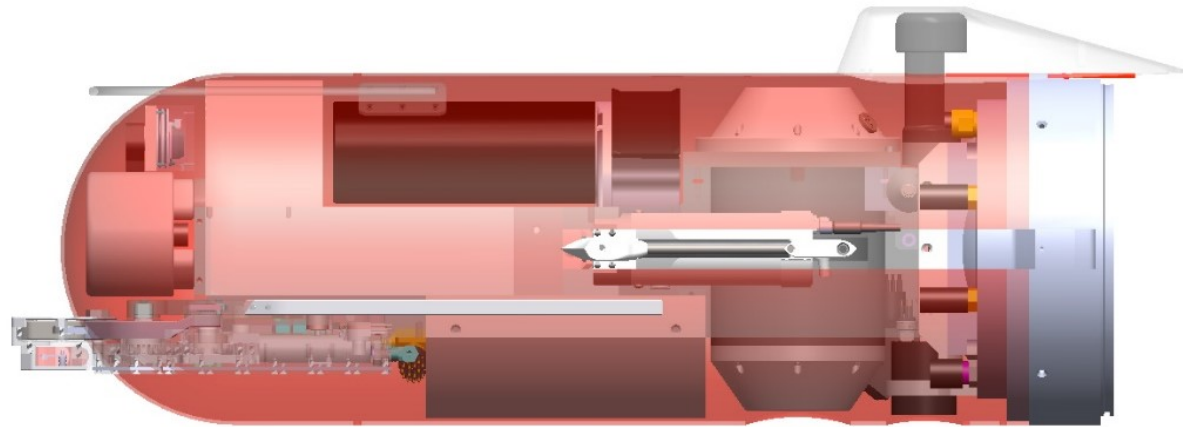
Config 2: Long Range Under-ice



Core Science: CTD, DO, PAR, Chl/OBS/Oil
 Line Capture with Acoustic Homing
 10 kHz Comms/Nav with receive array in tail
 900 Hz Long Range Navigation
 Soundscape acoustic recorder
 Chelsea UV oil
 Avalanche Beacon
 Short Antenna

Config 2, under-ice LR		Components added			Components removed				
	Displacement	weight (lbs)	Net buoyancy (lb)	Net Buoyancy (kg)	Displacement	weight	Net buoyancy (lb)	Net Buoyancy (kg)	
Baseline is existing nose, with 1.76lbs (800g) of ballast weights									Net Buoyancy (kg)
	minus existing foam		0	0	14.6	5.4	9.2	4.1768	
	add CTD-DO and pump		-0.88	-0.39952				0	0
	add BSC in hull	1	-1	-0.454			0	0	0
	Add 900 Hz in hull	1	-1	-0.454				0	0
	add INS (Phins C3) in hull		-3.7	-1.6798			0	0	0
	add avi-beacon	1.4	1.1	0.3				0	0
	add UV sensor	1.43	1.76	-0.33				0	0
	add soundscape	1.1	1.1	0			0	0	
	add lights	0.225	0.46	-0.235					
	Add top foam	14.6	5	9.6			0	0	0
	add side foam (2)	5.2	1.8	3.4			0	0	0
	add front foam	8.2	3	5.2			0	0	0
	add longer shell		1	-1			0	0	0
			17.22	10.355			9.2	4.1768	1.8962672
									0
	Net change:	1.155							
	*Positive is more buoyant								1.8962672

Config 3: Under-ice Mapping



Core Science: CTD, DO, **No PAR**, Chl/OBS/Oil
 Line Capture with Acoustic Homing
 10 kHz Comms/Nav with receive array in tail
 900 Hz Long Range Navigation
 Upward looking Multibeam mapping
 Avalanche Beacon
 Short Antenna

Config 3, under-ice mapping		Components added			Components removed			
	Displacement	weight (lbs)	Net buoyancy (lb)	Net Buoyancy (kg)	Displacement	weight	Net buoyancy (lb)	Net Buoyancy (kg)
Baseline is existing nose, with 1.76lbs (800g) of ballast weights								
minus existing foam			0	0	14.6	5.4	9.2	4.1768
remove al whiskers			0	0	0.254	0.66	-0.406	-0.184324
add CTD-DO and pump			-0.88	-0.39952				0
add BSC in hull		1	-1	-0.454			0	0
Add 900 Hz in hull		1	-1	-0.454				
add INS (Phins C3) in hull		3.7	-3.7	-1.6798			0	0
add G-10 whiskers	0.254	0.44	-0.186	-0.084444			0	0
add avi-beacon								
Add bottom foam	7.8	2.6	5.2	2.3608			0	0
add side foam	5.2	1.8	3.4	1.5436			0	0
add nose foam2	14	5	9	4.086				
add longer shell		1	-1	-0.454			0	0
add C-DUSBL			0	0			0	0
		16.54	9.834	4.464636			8.794	3.992476
Net change:	1.04							
	*Positive is more buoyant							

