Sample SPAR Cost Model Cost Estimating Reports

Sample 150 Meter Offshore Patrol Vessel

Special Note: The sample reports contained in this presentation do NOT necessarily apply to any actual ship design, only to a fictitious design developed for this presentation

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The SPAR Cost Model generates cost estimates for the following:

- 1. Non-Recurring Design, Production Engineering & Detail Production Planning
- 2. Lead Ship Construction
- 3. Follow Ships Construction

Details of the estimates are generated at approximately SWBS 3-digits levels.

The cost model is very easy to use and offers many options to specify ship systems and equipment. The cost model allows users to add and modify systems, equipment and costing information to suit any special requirements.

All cost for a particular cost estimate are generated for a specific base year. Labor rates are entered as input. Material costs are all catalogued by date of entry into the model and automatically adjusted by commodity-based escalation tables to produce material costs appropriate for the specified base year.

While the cost model is based on standard U.S. labor and material costs, an option is provided to specify foreign currency reports.

Special factors may be defined to adjust costs for anticipated specific shipbuilding level of productivity and for estimated level of design producibility.

As the estimate evolves, the cost model automatically generates a comprehensive set of reports.

LEAD SHIP

- 1. Non-Recurring Design, Production
 Engineering & Detail Production Planning
 ("NRE")
- 2. Lead Ship Construction

Summary "Should Cost" Estimate for Lead Ship & NRE

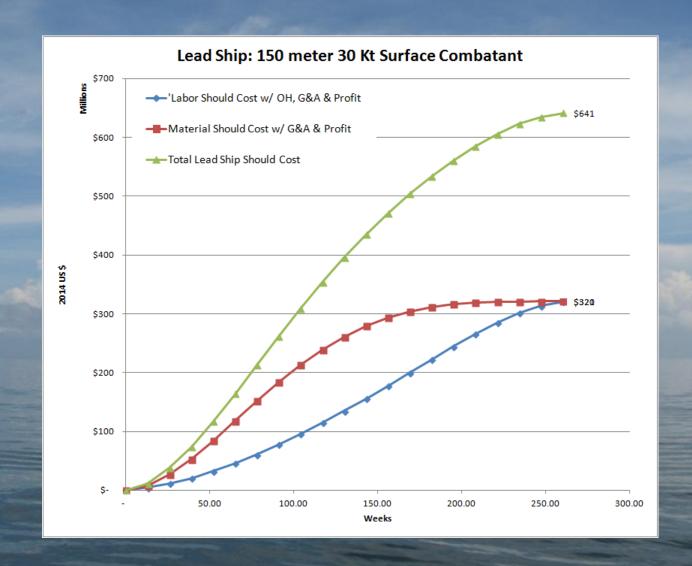
		100	-											
	% Margin	-	Mono Hull Patrol Boat/Cutter/Frigate			ate			NON	I-RECURRING CO	STS			
	% Mark-Up	-	%		(Mode	I Version January	2015)				Basic Research - Concept Design		\$	-
% C	hange Orders	-	%							Preliminary Design		\$	671,009	
% Program Costs - %		%	Ship Type	<u>::</u>		Version:	Α			Contract Design		\$	8,052,104	
% Contingencies 15.00 %		%	150 me	150 meter 30 Kt Surface Combatant			06-Aug-15	ASSOC	PAR LATES, INC.	Detail Design & 0	Construction Engine	\$	43,615,565	
											Production Planning & Scheduling		\$	8,723,113
	Pricing:										Purchase Specs	& Support	\$	2,684,035
Shipbuilder Economic N	lark-Up/Down:	0.0%				Non-Recurring Eng	gineering & Production Plann		ing		ILS, Spares & Lo	ad Items	\$	6,710,087
Technica	al Wage \$/Mhr:	\$ 38.01	\$ 85.51	w/ overhe	ad	Standard Work Wee	ek:		40.00	hours/week	Contract Engine	ering Management	\$	8,723,113
Productio	n Wage \$/Mhr:	\$ 30.43	\$ 68.48	w/ overhe	ead	Labor Rates:					Contingency Lab	oor:	\$	10,065,130
	% Overhead:	125.00	%		125%	Senior Professio	nal/Manager		\$ 85.51	per hour	Data Rights Pack	age	\$	-
	% G&A Labor:	-	%		125%	Engineer			\$ 85.51	per hour	Miscellaneous N	Material & Support:	\$	-
%	G&A Material:	6.00	%		125%	Designer/Draftsp	erson/Planner		\$ 85.51	per hour	Production Jigs,	Cradles, & Templa	\$	333,709
l	abor % Profit:	10.00	%		125%	Clerical			\$ 85.51	per hour	TOTAL NON-REC	URRING COSTS:	\$	89,577,865
Ma	terial % Profit:	10.00	%		125%	Contingency (we	ighted average)		\$ 85.51	per hour		G&A & Profit		8,979,811
												Total NRE	\$	98,557,676
	Navy C4ISR	Yes												
Jones Act Premium M	laterial Factor:	No	1.00				Shipyard	Fab/Assy Mo						
	Current Year:	<u>2014</u>		Ship		pport Labor Factor:	1.0000	No Ext.Modu			Estimated Sch	1		
	ency Exchange	1.0000	<u>1.000 = none</u>			Productivity Factor:	1.3500	1.000		ngineering Time:	36.00	Months		_
Shipyard Materia		1.0000	MILSPEC Pren	n.=1.21		Productivity Factor:	1.7053	1.000		nstruction Time:	60.00	Months		_
Combined Material	Cost Factor:	1.0000			On	-Block Paint Factor:	0.9500	40 % Hours C		Overlap:	10.00	Months	16.7%	
							RMS Men/Mo		RMS Men/Month:	416	0.94	Months	1.6%	
	SWBS	Weight	M-Hrs	Modular	Production	\$	\$	\$ G&A	2014	\$ G&A	\$ Profit	\$		\$
Observations	Group	MTons	Per Mton	M-Hrs	M-Hrs	Labor	Overhead	\$ G&A Labor Only	2014 \$ Material	\$ G&A Material Only	\$ Profit Labor + Material	\$ Total		s n.Total
Structures	Group 1	MTons 2,266.7	Per Mton 142.83	M-Hrs	M-Hrs 323,753	Labor 9,853,374	Overhead 12,316,718	\$ G&A Labor Only	2014 \$ Material 2,829,371	\$ G&A Material Only 169,762	\$ Profit Labor + Material 2,516,922	\$ Total 27,686,147		•
Propulsion	Group 1 2	MTons 2,266.7 753.8	Per Mton 142.83 268.03	M-Hrs - -	M-Hrs 323,753 202,055	Labor 9,853,374 6,149,505	Overhead 12,316,718 7,686,881	\$ G&A Labor Only - -	2014 \$ Material 2,829,371 62,075,750	\$ G&A Material Only 169,762 3,724,545	\$ Profit Labor + Material 2,516,922 7,963,668	\$ Total 27,686,147 87,600,349		•
Propulsion Electrical	Group 1 2 3	MTons 2,266.7 753.8 321.1	Per Mton 142.83 268.03 909.69	M-Hrs - -	M-Hrs 323,753 202,055 292,070	9,853,374 6,149,505 8,889,095	Overhead 12,316,718 7,686,881 11,111,368	\$ G&A Labor Only - - -	2014 \$ Material 2,829,371 62,075,750 7,693,923	\$ G&A Material Only 169,762 3,724,545 461,635	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602	\$ Total 27,686,147 87,600,349 30,971,624		•
Propulsion Electrical Electronics & Navigation	Group 1 2 3 4	MTons 2,266.7 753.8 321.1 269.3	Per Mton 142.83 268.03 909.69 1,907.57	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705	Labor 9,853,374 6,149,505 8,889,095 15,634,521	Overhead 12,316,718 7,686,881 11,111,368 19,543,151	\$ G&A Labor Only - - - -	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147	\$ G&A Material Only 169,762 3,724,545 461,635 7,089	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199		•
Propulsion Electrical Electronics & Navigation Auxiliary Systems	Group 1 2 3 4 5	MTons 2,266.7 753.8 321.1 269.3 732.9	Per Mton 142.83 268.03 909.69 1,907.57 1,297.95	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734	\$ G&A Labor Only - - - -	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199 131,169,822		•
Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings	Group 1 2 3 4 5	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2	Per Mton 142.83 268.03 909.69 1,907.57 1,297.95 1,179.49	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256	\$ G&A Labor Only - - - - -	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199 131,169,822 68,880,032		•
Propulsion Electrical Electronics & Navigation Auxiliary Systems	Group 1 2 3 4 5	MTons 2,266.7 753.8 321.1 269.3 732.9	Per Mton 142.83 268.03 909.69 1,907.57 1,297.95	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005 7,251,777	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734	\$ G&A Labor Only - - - -	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199 131,169,822		•
Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings Armament	Group 1 2 3 4 5 6 7	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2 187.7	Per Mton 142.83 268.03 909.69 1,907.57 1,297.95 1,179.49 1,269.50	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089 238,272	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256 9,064,722	\$ G&A Labor Only - - - - - -	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821 1,631,650	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199 131,169,822 68,880,032 17,948,149		•
Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings Armament Technical Support	Group 1 2 3 4 5 6 7 8	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2 187.7 10.0%	Per Mton 142.83 268.03 909.69 1,907.57 1,297.95 1,179.49 1,269.50 61.65	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089 238,272 309,227	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005 7,251,777 11,752,317	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256 9,064,722 14,690,396	\$ G&A Labor Only	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142 - 250,000	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809 - 15,000	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821 1,631,650 2,670,771	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199 131,169,822 68,880,032 17,948,149 29,378,484		•
Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings Armament Technical Support Shipyard Services	Group 1 2 3 4 5 6 7 8 9	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2 187.7 10.0% 25.0%	Per Mton 142.83 268.03 909.69 1,907.57 1,297.95 1,179.49 1,269.50 61.65	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089 238,272 309,227	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005 7,251,777 11,752,317 23,528,166	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256 9,064,722 14,690,396	\$ G&A Labor Only	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142 - 250,000 10,176,629	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809 - 15,000 610,598	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821 1,631,650 2,670,771 6,372,560	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199 131,169,822 68,880,032 17,948,149 29,378,484 70,098,160	Cur	•
Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings Armament Technical Support Shipyard Services argin, Bonds & Insurance	Group 1 2 3 4 5 6 7 8 9	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2 187.7 10.0% 25.0%	Per Mton 142.83 268.03 909.69 1,907.57 1,297.95 1,179.49 1,269.50 61.65 154.12	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089 238,272 309,227 773,067	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005 7,251,777 11,752,317 23,528,166	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256 9,064,722 14,690,396 29,410,208	\$ G&A Labor Only	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142 - 250,000 10,176,629 118,982,502	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809 - 15,000 610,598 7,138,950 \$ 16,520,662	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821 1,631,650 2,670,771 6,372,560 12,612,145	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199 131,169,822 68,880,032 17,948,149 29,378,484 70,098,160 138,733,597	Cur	n.Total
Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings Armament Technical Support Shipyard Services argin, Bonds & Insurance Lead Ship Totals:	Group 1 2 3 4 5 6 7 8 9 10	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2 187.7 10.0% 25.0% - 5,016 Ship G1-7	Per Mton 142.83 268.03 909.69 1,907.57 1,297.95 1,179.49 1,269.50 61.65 154.12	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089 238,272 309,227 773,067 - 4,174,560	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005 7,251,777 11,752,317 23,528,166 \$ 129,393,147 \$ 89,244,156	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256 9,064,722 14,690,396 29,410,208	\$ G&A Labor Only	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142 - 250,000 10,176,629 118,982,502 \$ 275,344,361	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809 - 15,000 610,598 7,138,950 \$ 16,520,662 \$ 20,023	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821 1,631,650 2,670,771 6,372,560 12,612,145 58,299,960 8,959,789	\$ Total 27,686,147 87,600,349 30,971,624 38,633,199 131,169,822 68,880,032 17,948,149 29,378,484 70,098,160 138,733,597 \$ 641,299,563	Cur	n.Total
Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings Armament Technical Support Shipyard Services argin, Bonds & Insurance Lead Ship Totals:	Group 1 2 3 4 5 6 7 8 9 10	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2 10.0% 25.0% - 5,016 Ship G1-7 Techni	Per Mton 142.83 268.03 909.69 1,907.57 1,297.95 1,179.49 1,269.50 61.65 154.12 - 832.23	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089 238,272 309,227 773,067	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005 7,251,777 11,752,317 23,528,166 \$ 129,393,147 \$ 89,244,156 \$ Costs	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256 9,064,722 14,690,396 29,410,208	\$ G&A Labor Only	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142 250,000 10,176,629 118,982,502 \$ 275,344,361 \$ 333,709	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809 15,000 610,598 7,138,950 \$ 16,520,662 \$ 20,023 e Contractor Man	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821 1,631,650 2,670,771 6,372,560 12,612,145 58,299,960 8,959,789	\$ Total 27,686,147 87,600,349 30,971,624 38,633,199 131,169,822 68,880,032 17,948,149 29,378,484 70,098,160 138,733,597 \$ 641,299,563 \$ 98,557,676	Cur	n.Total
Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings Armament Technical Support Shipyard Services argin, Bonds & Insurance Lead Ship Totals:	Group 1 2 3 4 5 6 7 8 9 10	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2 187.7 10.0% 25.016 Ship G1-1 Techni	Per Mton 142.83 268.03 909.69 1,907.57 1,297.95 1,179.49 1,269.50 61.65 154.12 832.23 7 Man-Hours: ical Support:	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089 238,272 309,227 773,067 4,174,560 1,043,640 Production	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005 7,251,777 11,752,317 23,528,166 \$ 129,393,147 \$ 89,244,156 \$ Costs \$ Costs	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256 9,064,722 14,690,396 29,410,208	\$ G&A Labor Only	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142 - 250,000 10,176,629 118,982,502 \$ 275,344,361 \$ 333,709 ded Cost for Primer-All Program N	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809 15,000 610,598 7,138,950 \$ 16,520,662 \$ 20,023 e Contractor Man	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821 1,631,650 2,670,771 6,372,560 12,612,145 58,299,960 8,959,789 agement Team: 0.0%	\$ Total 27,686,147 87,600,349 30,971,624 38,633,199 131,169,822 68,880,032 17,948,149 29,378,484 70,098,160 138,733,597 \$ 641,299,563 \$ 98,557,676 \$	Cur	n.Total
Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings Armament Technical Support Shipyard Services argin, Bonds & Insurance Lead Ship Totals:	Group 1 2 3 4 5 6 7 8 9 10	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2 187.7 10.0% 25.0% - 5,016 Ship G1-7 Techni Shipy Feet	Per Mton	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089 238,272 309,227 773,067 - 4,174,560 1,043,640 Production Production Production Production	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005 7,251,777 11,752,317 23,528,166 \$ 129,393,147 \$ 89,244,156 \$ Costs \$ Costs \$ Costs	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256 9,064,722 14,690,396 29,410,208 - \$ 161,741,434 \$ -	\$ G&A Labor Only	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142 - 250,000 10,176,629 118,982,502 \$ 275,344,361 \$ 333,709 ded Cost for Primer-All Program N	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809 - 15,000 610,598 7,138,950 \$ 16,520,662 \$ 20,023 e Contractor Manlanagement Fee: th Prime Contract Estimate	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821 1,631,650 2,670,771 6,372,560 12,612,145 58,299,600 8,959,789 agement Team: 0.0% cor Management:	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199 131,169,822 68,880,032 17,948,149 29,378,484 70,098,160 138,733,597 \$ 641,299,563 \$ 98,557,676 \$ - \$ 739,857,239 \$ 47,132,448	\$ 6 \$ 7	n.Total 41,299,563 39,857,239
Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings Armament Technical Support Shipyard Services argin, Bonds & Insurance Lead Ship Totals: Non-Recurring Costs:	Group 1 2 3 4 5 6 7 8 9 10	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2 187.7 10.0% 25.0% - 5,016 Ship G1-7 Techni Shipy Feet	Per Mton	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089 238,272 309,227 773,067 - 4,174,560 1,043,640 Production Production Production	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005 7,251,777 11,752,317 23,528,166 \$ 129,393,147 \$ 89,244,156 \$ Costs \$ Costs \$ Costs	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256 9,064,722 14,690,396 29,410,208 - \$ 161,741,434 \$ -	\$ G&A Labor Only	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142 - 250,000 10,176,629 118,982,502 \$ 275,344,361 \$ 333,709 ed Cost for Primer-All Program Inter-All	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809 - 15,000 610,598 7,138,950 \$ 16,520,662 \$ 20,023 e Contractor Management Fee: th Prime Contract Estimate Est. Eng'r'g Overl	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821 1,631,650 2,670,771 6,372,560 12,612,145 58,299,960 agent Team: 0.0% or Management: ad CER Cost Risk ap Rework Risk:	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199 131,169,822 68,880,032 17,948,149 29,378,484 70,098,160 138,733,597 \$ 641,299,563 \$ 98,557,676 \$ - \$ 739,857,239 \$ 47,132,448 \$ 469,892	S 6 \$ 7	n.Total 441,299,563 239,857,239
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Propulsion Electrical Electronics & Navigation Auxiliary Systems Outfit & Furnishings Armament Technical Support Shipyard Services argin, Bonds & Insurance Lead Ship Totals: Non-Recurring Costs:	Group 1 2 3 4 5 6 7 8 9 10	MTons 2,266.7 753.8 321.1 269.3 732.9 484.2 187.7 10.0% 25.0% - 5,016 Ship G1-7 Techni Shipy Feet	Per Mton	M-Hrs	M-Hrs 323,753 202,055 292,070 513,705 951,324 571,089 238,272 309,227 773,067 - 4,174,560 1,043,640 Production Production Production Production	Labor 9,853,374 6,149,505 8,889,095 15,634,521 28,953,388 17,381,005 7,251,777 11,752,317 23,528,166 \$ 129,393,147 \$ 89,244,156 \$ Costs \$ Costs \$ Costs	Overhead 12,316,718 7,686,881 11,111,368 19,543,151 36,191,734 21,726,256 9,064,722 14,690,396 29,410,208 - \$ 161,741,434 \$ -	\$ G&A Labor Only	2014 \$ Material 2,829,371 62,075,750 7,693,923 118,147 51,037,897 22,180,142 - 250,000 10,176,629 118,982,502 \$ 275,344,361 \$ 333,709 ted Cost for Primer-All Program IV Total Price wit 7.3% 0.1% 57.8%	\$ G&A Material Only 169,762 3,724,545 461,635 7,089 3,062,274 1,330,809 - 15,000 610,598 7,138,950 \$ 16,520,662 \$ 20,023 e Contractor Man lanagement Fee: th Prime Contract Estimate Est. Eng'r'g Overl Est. Eng'r'g Pe	\$ Profit Labor + Material 2,516,922 7,963,668 2,815,602 3,530,291 11,924,529 6,261,821 1,631,650 2,670,771 6,372,560 12,612,145 58,299,960 8,959,789 agement Team: 0.0% tor Management: ad CER Cost Risk ap Rework Risk: arformance Risk:	\$ Total 27,686,147 87,600,349 30,971,624 38,833,199 131,169,822 68,880,032 17,948,149 29,378,484 70,098,160 138,733,597 \$ 641,299,563 \$ 98,557,676 \$ - \$ 739,857,239 \$ 47,132,448 \$ 469,892 \$ 165,088,318 \$ 219,668,720	S 6 \$ 7	141,299,563 339,857,239
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NOTE

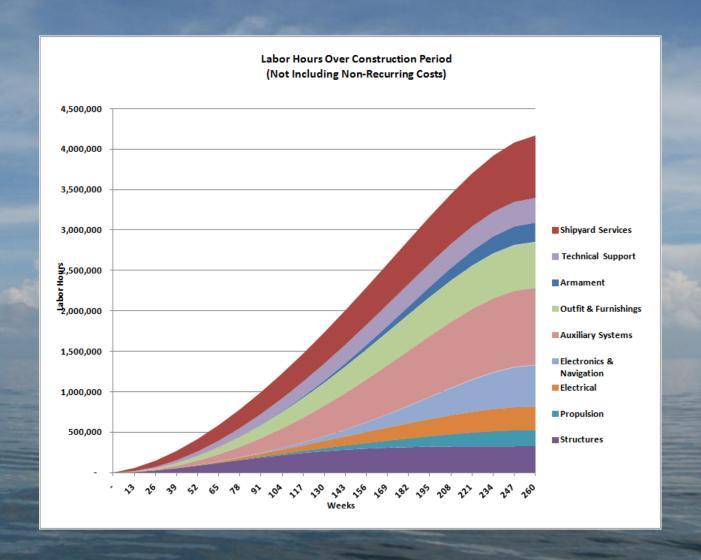
This notional ship estimate does not include costs for advanced electronics and communications (C4) nor weapons systems.

The user may add these costs as required to the cost model.

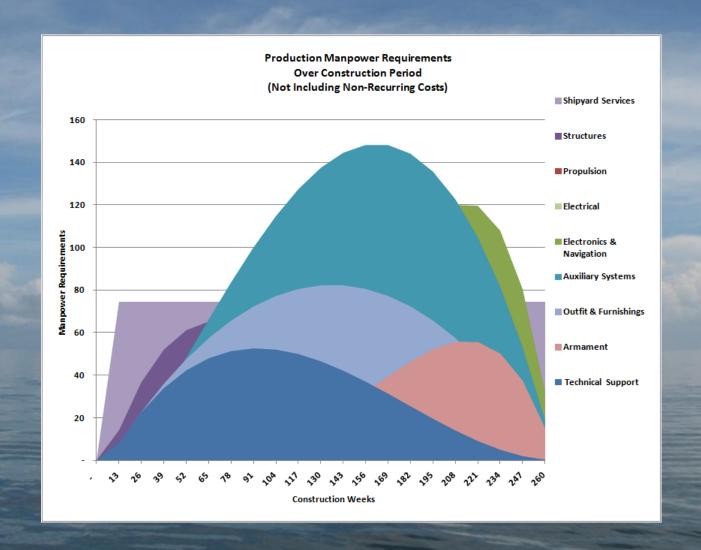
Summary "Should Cost" Estimate for Lead Ship



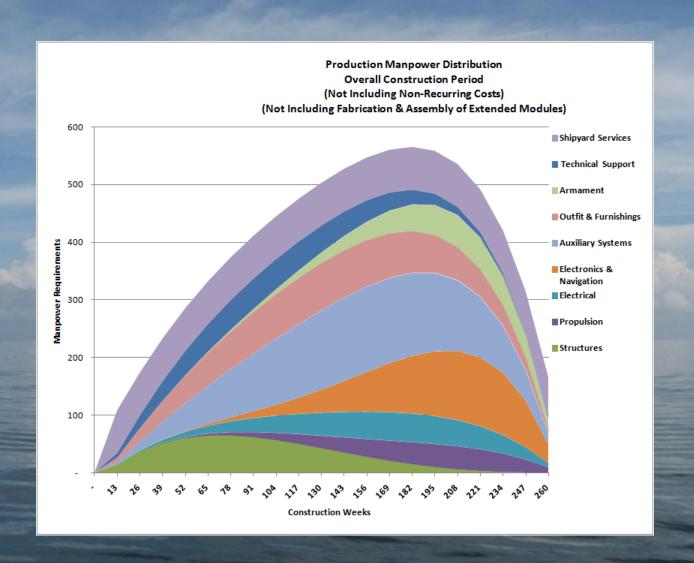
Time Distribution of Lead Ship Labor Hours



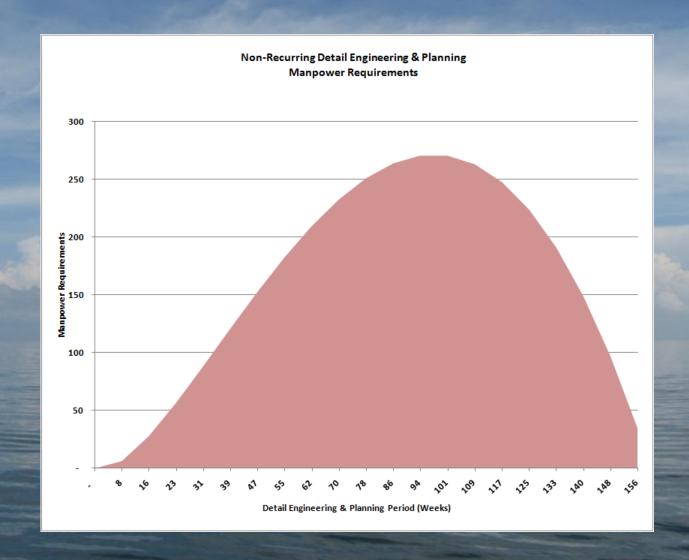
Estimated Lead Ship Manpower Requirements



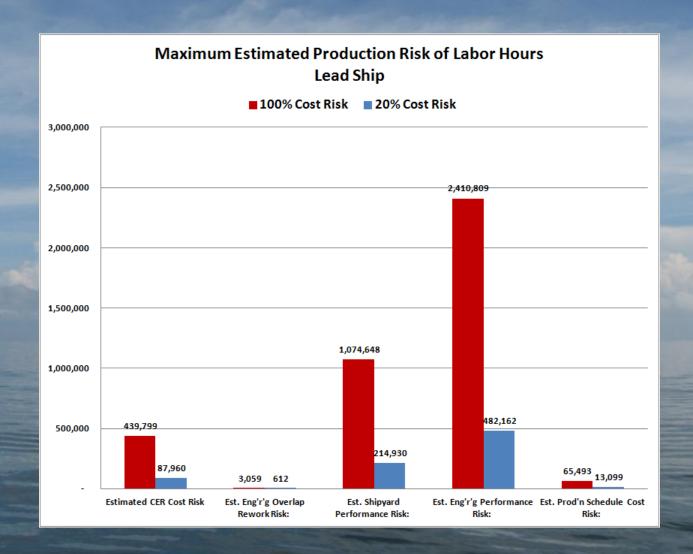
Estimated Total Lead Ship Manpower Requirements



Estimated NRE Manpower Requirements



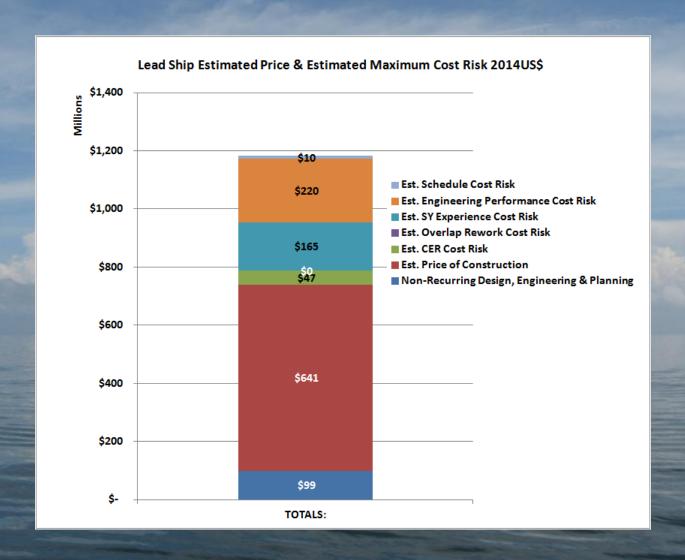
Estimating Potential Impact of Cost Risk Labor Hours



Estimating Potential Impact of Cost Risk on Schedules

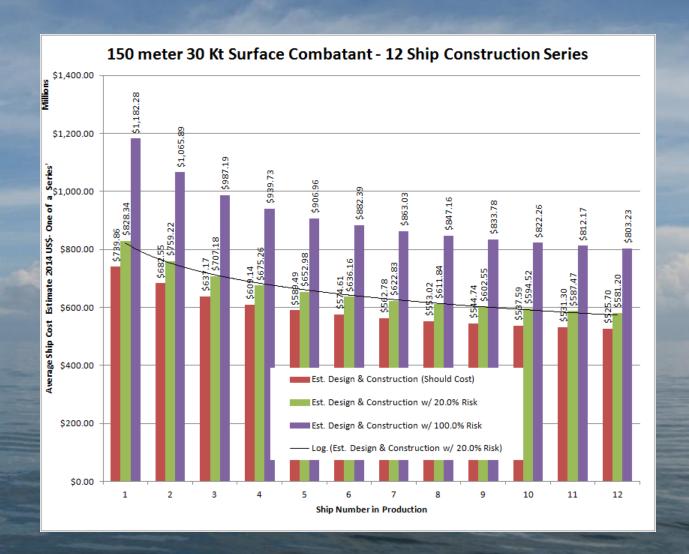


Estimating Potential Impact of Cost Risk on Total Cost

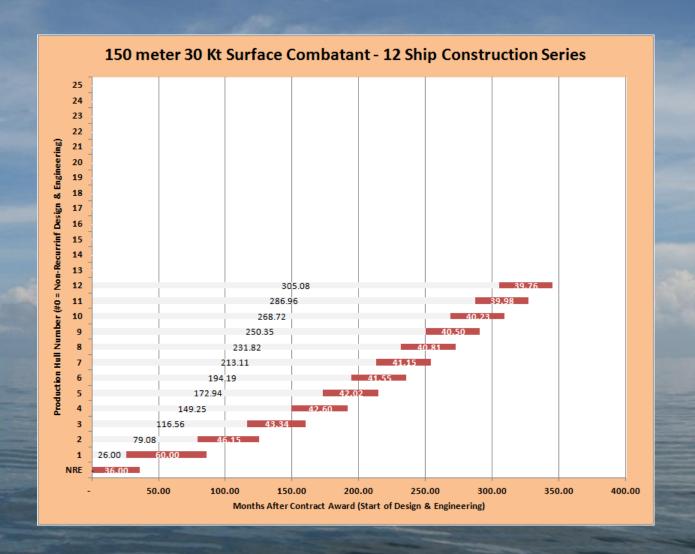


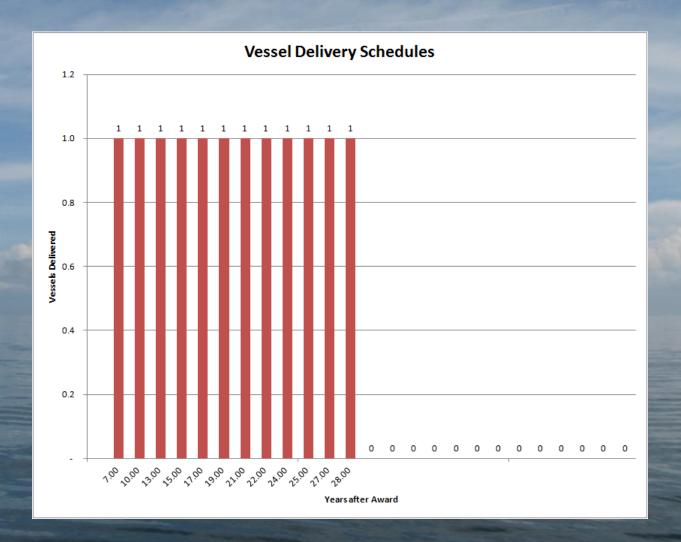
FOLLOW SHIPS

The cost model can be easily set to generate costs for just a lead ship or a series of ship for a multi-ship construction program

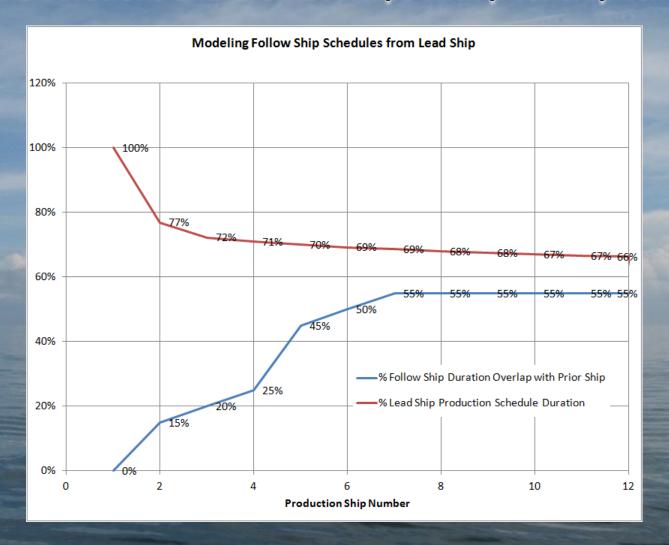


Estimated Follow Ship Production Schedules

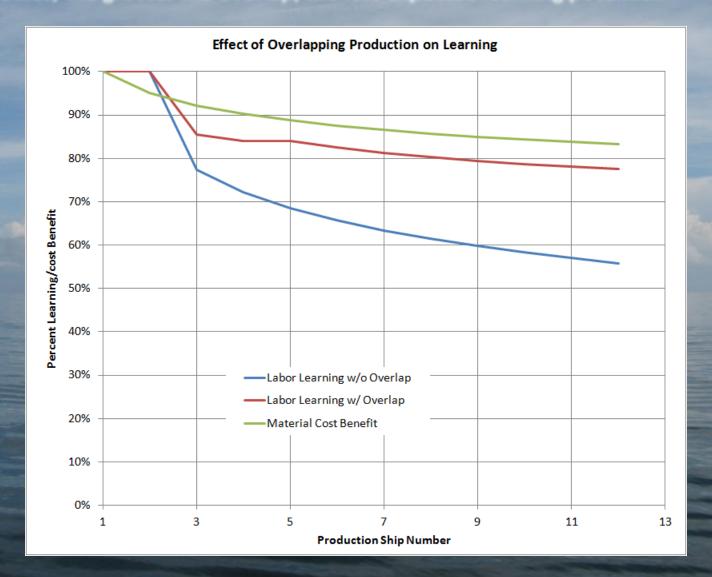




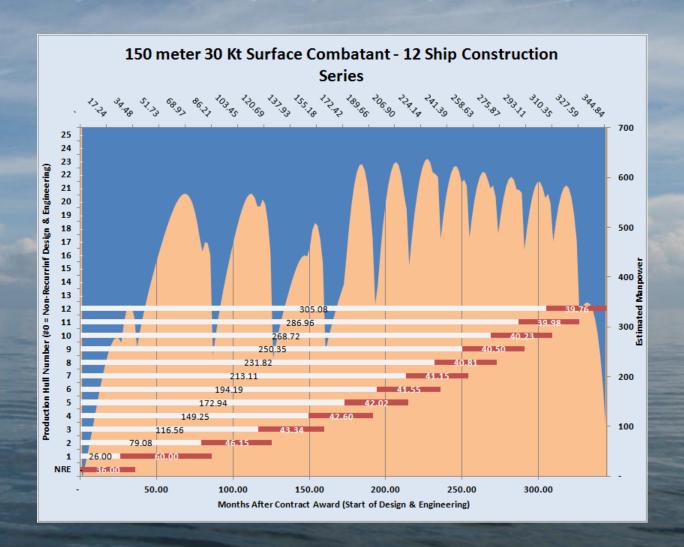
The Cost Model allows changes to follow ship production schedule durations and their overlaps with prior ship schedules.



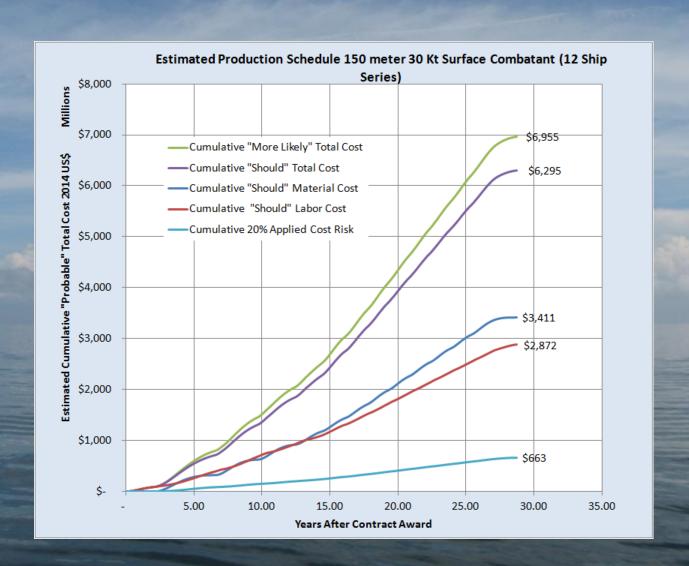
The user can specify the expected labor learning from follow ship to follow ship (also estimated material cost discounts). The cost model automatically adjusts the labor learning according to the extent of follow ship overlapping schedules; the greater the overlap, the less expected learning potential.



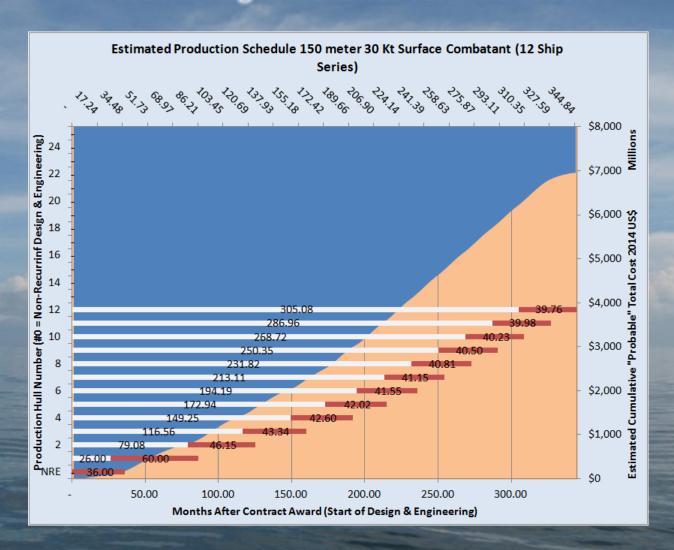
NRE, Lead Ship & Follow Ship Production Schedules (from Low Rate Production to High Rate Production options) with estimated manpower requirements are quickly and easily modeled by the user.



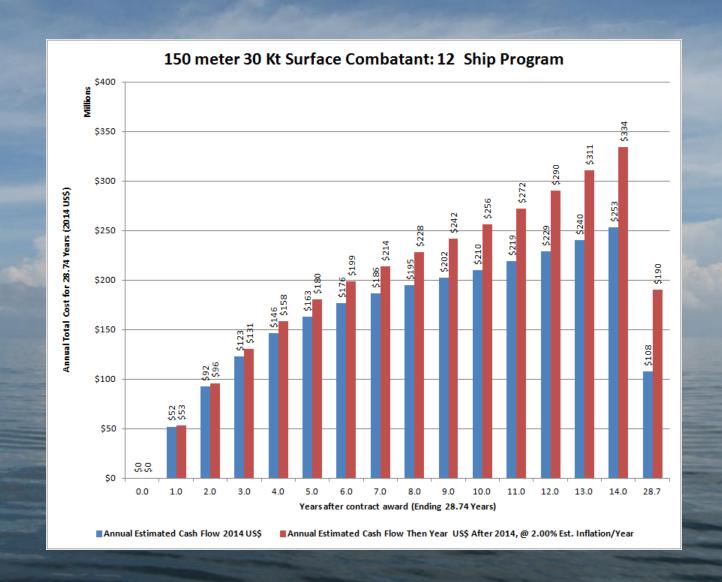
Estimating Time-Lines for Total Costs



Estimating Time-Lines for Total Costs



Estimating Annual Costs



The cost model will accommodate costs in non-U.S. currencies.

While the material costs are based on U.S. material dollar costs, the cost model provides factors for currency exchange rates as well as a general factor to increase/decrease material costs that more accurately reflect local costs versus those of the U.S.

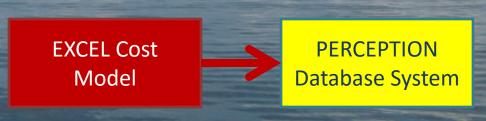
The labor hour and material cost data embedded within the cost model can be easily modified and expanded by the user.

The cost models enable the estimator to vary ship design dimensional characteristics (linear, volumetric and area), speed, type and size of propulsion and electrical power systems. Other variables include crew size and type, structural configuration, including selections of type structural materials.

The cost models further provide a wide range of selections for outfit and auxiliary systems and equipment.

The Excel cost models provide only summary SWBS Group-Level estimate reports and many charts and tables. For more format reports, the data contents of the cost model can be down-loaded into the PERCEPTION ESTI-MATE database system. The following slides illustrate only three of the many varieties of formats that are available in PERCEPTION. PERCEPTION also has features for customizing formats for specific reporting requirements.

PERCEPTION has many features for modifying/adding/deleting the estimate details from the cost model. New estimates can be easily copied and modified from earlier estimates residing on the database. PERCEPTION provides many powerful database features for storing and managing detail cost data in libraries that are capable of generating cost estimates with or without using the cost models.



- Add/Change/Delete Cost Items
- Generate Summary & Detail Reports
- Develop & Management Cost Libraries for Future Estimates
- Prepare Estimate Data for Transfer to Production Requisitions & Work Orders
- Plan & Manage Production Costs and Schedules

	Table of Contents	
4.0	D.C.I. TI. CI.I. B.I. CI.	
1-0	Defining The Ship & Its Characteristics	
1-1	Ship Characterisics	
1-2 1-3	Rates & Factors Labor Rates	
1-3	Labor Rates	
2-0	Acquisition Summary Costs	
2-1	Summary Cost-Price (Acquisition Cost-Price)	
2-2	Summary Cost-Price (Acquisition Cost-Price) Charts	
2-3	Acquisition Cost Graphics	
2-4	Cost Risk	
2-5	Cost Risk Graphics	
3-0	Life Cycle Summary Costs (Only for Extended Cost Model)	
3-1	LCC Summary Report	
4-0	Life Cycle Cost Details (Only for Extended Cost Model)	
4-1	LCC Maintenance	
4-2	Casualty Repairs (detail cost worksheet)	
4-3	Modernization (detail cost worksheet)	
4-4	Drydocking (detail cost worksheet)	
4-5	Disposal & Decommissioning	
	· -	Number of Cost Line Iter
5-0	Acquisition SWBS Cost Details	(Parametric)
5-1	Structural Materials	56
5-2	Structural Costs (detail cost worksheet)	116
5-3	Propulsion Systems Costs (detail cost worksheet)	44
5-4	Propulsion Components (detail cost worksheet)	25
5-5	Propulsion Support Systems (for reference only)	
5-6	Electrical Systems Costs (detail cost worksheet)	54
5-7	Electrical Generation Components (detail cost worksheet)	38
5-8	Electronic Systems Costs (detail cost worksheet)	25
5-9	C4ISR Costs (detail cost worksheet)	69
5-10	Auxiliary Systems Costs (detail cost worksheet)	75
5-11	Paint Surfaces (Special Modeling of Ship Surface Areas)	
5-12	Outfit & furnishings Costs (detail cost worksheet)	191
5-13	Armament Costs (detail cost worksheet)	37
5-13	Scientific Equipment Costs (detail cost worksheet)	31
5-14	Technical Support Services (detail cost worksheet)	8
5-15	Shipyard Production Support Services (detail cost worksheet)	25
5-16	Acquisition Fees, Bonds & Insurance (detail cost worksheet)	29
6-0	Non-Recurring Costs	
6-3	Design, Engineering & Planning Costs (detail cost worksheet)	33
6-1	Summary Non-Recurring Costs	
6-2	Research Costs (detail cost worksheet)	
6-4	Expert Technical Team (detail cost worksheet)	26
0-4		

The cost model is a large comprehensive Excel workbook containing the various worksheets as listed in this slide. Also indicated are the number of individual cost line items arranged in worksheets corresponding to SWBS Groups. These line items are mostly parametric and utilize many different metrics such as power (kW), linear dimensions, surface areas, volumes, crew size, etc.

	the state of the s
7-0	General Shipyard Resource Plan for New Construction
7-1	Time-Phased Trade Labor Distribution
7-2	Time-Phased Trade Manpower Requirements
	MultiShip Schedules
7-4	MultiShip Labor Costs
7-5	MultiShip Material Costs
7-6	MultiShip Risk Cost
- ' -	Waltering Fuel Seet
9-0	Export Data For PERCEPTION Reports
9-1	SWBS Costs - Groups 01-10 (Construction)
9-2	SWBS Costs - Groups 11-29 (R&D)
9-3	Cost Item Notes
10-0	Miscellaneous
10-1	Escalation Factors Tables
10-2	Factor Select Table
10-3	Module Factors
10-4	Shipyard Productivity Factors
10-5	Special Factors (lists systems impacted by special design regmnts)

Cost Item Detail Value Report: A Selection of Estimated Structural Costs

Project Total Center C												
Project Range: 101 to 101	12/3/	2014 10:44:17		SPAR Asso	ciates	, Inc.					Pag	ge 1 of 10
Project Range: 101 to 101 Zone Range: 0 to ZZZZZZZZ Outfl Zone Range: 0 to ZZZZZZZZ Cost Grp: 0 to ZZZZZZZZZ Cost Grp: 0 to ZZZZZZZZ Cost Grp: 0 to ZZZZZZZZ Cost Grp: 0 to ZZZZZZZZZ Cost Grp: 0 to ZZZZZZZZZ Cost Grp: 0 to ZZZZZZZZ Cost Grp: 0 to ZZZZZZZZ Cost Grp: 0 to ZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ	(Date fo	rmat: M/D/YYYY)	Cost Item	Value Report	by SW	BS Grow	ns(CI14)					
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Cost	Group	Range: 0 to ZZZZZZZZ Outfit Zone Range:	0 to ZZZZZZZZ	Sub Assembly Range:	(0 to ZZZZZZZZ			0 to ZZZZ	7777		
Cost Item Description Labor Hours Cost Cost	Account	Range: 0 to ZZZZZZZZ Unit/Block Range:	0 to ZZZZZZZZ	MGF Part Range:	(to ZZZZZZZZ	COAI	tem:	0 to ZZZZ	7777		
Teal		Work Center Range:	0 to ZZZZZZZZ	CLINs Range:	(0 to ZZZZZZZZ	Planned 9	Start: 01/01/19	950 to 01/0	1/2050		
Project 101 Lead Ship Group 1 - Hull Structure Center S'H - Shippard Hull Production Depts Single Side Shel - Parallel 3,212 148,940 43,824 192,764 0 192,749 365,514 30,841 416,355 111,19 Single Side Shel - Parallel 33,21 255,933 81,387 607,320 689,625 1,276,945 102,156 1,379,100 113,16 Double Bottoms - Parallel 835 38,714 7,968 46,682 0 49,588 96,270 7,702 100,972 114,131 Double Bottoms - Parallel 835 38,714 7,968 46,682 0 49,588 96,270 7,702 100,972 114,131 Double Bottoms - Parallel 835 38,714 7,968 46,682 0 49,588 96,270 7,702 100,972 114,131 Double Bottoms - Parallel 836 82,583 18,887 84,682 0 49,588 96,270 7,702 100,972 114,131 Double Bottoms - Parallel 836 84,682 0 49,588 96,270 7,702 100,972 114,131 Double Bottoms - Parallel 836 84,682 0 49,588 96,270 7,702 100,972 114,131 Double Bottoms - Parallel 84,682 84,682 0 49,588 96,270 7,702 100,972 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,131 114,1	Cost			Labor	Labor	Material	Direct	Taxes	Indirect	Total	Profit	Total
Surface 1- Hull Structure Surface Strippard Hull Production Depts Surface	Item	Description		Hours	Cost	Cost	Cost		Cost	Cost		Price
Single Side Shell - Parallel 3,2												
11118 Shole Side Sheli - Parallel 3,212 148,840 43,824 192,764 0 192,749 385,514 30,841 416,355 11119 Shole Side Sheli - Shaped 11,342 255,933 81,387 607,320 0 669,625 1,276,946 102,146 1,376,100 113,161 Double Bottoms - Parallel 835 38,714 7,968 46,682 0 49,568 96,270 7,702 103,972 103,972 103,972 103,972 103,972 103,972 103,972 103,972 103,972 103,972 103,972 103,973 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,974 103,		•										
11119 Snabe Side Shele - Shaped 11,342 525,933 81,387 607,320 0 669,625 1,276,945 102,156 1,379,100 100uble Bottoms - Parallel 835 38,714 7,968 46,682 0 49,588 96,270 7,702 309,772 1114.13 Blice Keels & Skeas 495 22,955 6,640 29,593 0 22,687 59,281 4,742 64,023 116,28 Lonchions 483 22,952 6,640 29,593 0 28,844 56,927 4,544 61,401 116,28 Lonchions 483 32,952 43,634 350,186 0 389,735 739,921 59,194 799,115 117,27 Transverse Frames 4,611 306,552 43,634 350,186 0 389,735 739,921 59,194 799,115 127,29 Longtudinal Frames 4,743 31,942 31,03 251,246 0 279,623 503,088 42,496 573,338 121,30 Longtudinal Frames 4,967 230,297 4,554 61,481 122,29 Transverse Bulkheads - Sliffened 4,967 230,297 4,551 275,828 0 294,700 570,528 45,644 616,170 123,33 Trunsk and Enclosures 3,320 133,3387 61,673 395,294 0 195,412 369,271 29,542 398,813 130,24 Deck Platforms & Cross-Overs 29 9,691 949 10,640 12,257 22,397 1,832 24,729 140,25 Platforms/Flats 21,606 1,001,879 73,040 1,074,919 0 1,263,305 233,225 887,058 252,5283 140,25 Platforms/Flats 1,678 39,5294 0 4,66,255 821,588 55,727 140,25 Platforms/Flats 1,678 79,500 78,347 19,900 98,267 0 100,921 199,188 15,935 215,223 140,125 Platforms/Flats 1,678 79,500 78,347 19,900 98,267 0 100,921 199,188 15,935 215,223 140,125 Platforms/Flats 1,678 79,500 78,479 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,778 1,								_				
113.16 Double Bottoms - Parallel 9.35 3.8 7.14 7.968 46,682 0 49,588 96,270 7.702 103,972 113.17 Double Bottoms - Shaped 2,563 118,846 14,798 133,644 0 150,778 284,422 22,754 307,176 114.43 Blige Keels & Steas 495 22,953 6,691 28,063 0 29,687 59,281 4,742 64,023 115.26 Stanchions 483 22,392 5,691 28,063 0 28,844 55,927 4,554 61,461 116.28 Lonculdinal Fames 6,611 306,552 43,691 28,063 0 28,844 55,927 4,554 61,461 117.27 Transverse Frames 4,743 219,942 31,303 251,245 0 279,623 530,868 42,499 573,338 117.29 Transverse Buikheads - Stiffened 4,967 230,297 45,531 275,828 0 294,700 570,528 45,642 616,170 123.33 Trunks and Enclosures 3,320 153,939 19,920 173,859 0 195,412 369,271 29,542 339,813 130.24 Deck Deltoms & Cross-Overs 209 9,691 949 10,640 0 12,257 22,897 1,352 24,708 131.22 Weather Decks 7,195 333,637 61,657 395,234 0 426,295 821,588 65,727 887,315 140.25 Platforms & Cross-Overs 1,990 73,404 11,491 0 1,263,305 2,332,25 187,688 25,253 150.34 Deckhouse/Superstructure/Bridge 1,678 77,768 9,024 86,810 0 98,586 185,395 14,832 200,227 164.32 Hull, Deckhouse, Misc Closures 1,990 73,447 19,920 89,267 0 100,921 199,188 15,935 215,123 150.101 Deck House Total 13,141 69,930 72,018 61,348 0 772,465 1,453,812 116,305 13,523 150.101 Deck House Total 13,141 69,930 72,018 61,348 0 772,485 14,455 116,305 12,525 13,681 161.170 14,456 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450 14,450				· ·				_				
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114.43 Bloe Keels & Skreas 495 2.2,953 6,640 2.9,593 0 2.9,887 5.9,281 4,742 64,023 115.26 Stanchions 483 2.2,392 5,691 28,083 0 2.8,844 55,921 4,554 61,81 117.27 Transverse Frames 4,743 21,942 31,303 251,245 0 279,623 50,088 42,469 573,338 122.29 Transverse Frames 4,597 230,297 45,531 275,828 0 294,700 570,528 45,642 616,170 122.29 Transverse Bulkheads - Sitffened 4,967 230,297 45,531 275,828 0 294,700 570,528 45,642 616,170 123.33 Transk and Enclosures 3,320 153,393 19,920 173,859 0 195,412 45,642 616,170 13.12 Weather Decks 7,195 333,837 61,657 395,294 0 426,295 821,588 65,727 887,315 15.								_				
115.26 Stanchions 483 22,392 5,691 28,093 0 28,844 58,927 4,554 61,491 116.28 Lonquidulial Frames 6,611 306,552 4,3634 350,186 0 389,735 739,921 59,194 799,115 117.27 Transverse Richards 4,743 219,942 31,303 251,245 0 279,623 530,868 42,469 573,381 121.30 Lonquidulial Bulkheads - Stiffened 4,599 213,280 37,943 251,203 0 272,627 523,470 41,878 565,348 122.29 Transverse Bulkheads - Stiffened 4,967 230,297 45,531 275,828 0 297,700 570,528 45,62 616,170 130.24 Deck Platforms & Cross-Overs 209 9,691 9,691 1,686 735,294 0 12,257 22,997 1,832 22,4729 140.25 Platforms/Flats 7,195 333,873 61,657 395,294 0 12,63305 2,338,225		•										
116.28 Longitudinal Frames 6,611 306,552 43,634 350,186 0 389,735 739,921 59,194 799,115 117.27 Transverse Frames 4,743 219,320 37,943 251,245 0 279,623 530,888 42,469 573,338 112.29 Transverse Bulkheads - Stiffened 4,967 230,297 45,531 275,828 0 294,700 570,528 45,642 616,170 122.29 Transverse Bulkheads - Stiffened 4,967 230,297 45,531 275,828 0 294,700 570,528 45,642 616,170 130.24 Deck Platforms & Cross-Overs 209 9,981 949 10,640 0 12,257 22,897 1,832 24,729 131.22 Weather Decks 7,195 333,637 61,657 395,294 0 426,295 821,588 65,727 887,315 140.25 Platforms/Flats 1,678 77,786 9,024 86,810 0 9,856 185,395 141,832								_				
117.27 Transverse Fremes 4,743 219,942 31,303 251,245 0 279,623 50,888 42,469 573,338 122.29 Transverse Bulkeads - Stiffened 4,599 213,260 37,943 251,203 0 272,267 523,470 41,878 565,348 122.29 Transverse Bulkeads - Stiffened 4,967 230,297 173,859 0 294,700 570,528 45,642 366,170 123.33 Trunks and Enclosures 3,320 153,939 19,920 173,859 0 195,412 399,271 29,542 398,813 130.24 Deck Platforms & Cross-Overs 20 9,691 9,991 19,920 173,859 0 195,412 399,271 29,542 398,813 140.25 Platforms/Flats 21,606 1,001,879 73,040 1,074,919 0 12,253 2,338,225 187,058 2,525,283 160.34 Deckhouse/Superstructure/Bridge 1,680 7,786 9,024 486,810 9,98,886 185,395 14,832 20,227 164.32 Hull, Deckhouse, Misc Closures 1,690								_				
121 30 Longlutdinal Bulkheads - Stiffened 4,599 213,260 37,943 251,203 0 272,267 523,470 41,878 565,548 122.29 Transverse Bulkheads - Stiffened 4,967 230,297 45,531 275,828 0 294,700 570,528 45,642 616,170 123.33 Trunks and Enclosures 3,300 153,399 19,920 173,889 0 195,412 369,271 29,482 398,813 130.24 Deck Platforms & Cross-Overs 29 9,891 9,49 10,640 0 12,257 22,887 1,832 24,729 140.25 Platforms/Flats 21,600 1,011,879 73,040 1,074,919 0 426,295 821,588 65,727 887,315 150.34 Deckhouse/Superstructure/Bridge 1,678 77,786 9,024 86,810 0 98,586 185,395 14,832 200,227 164.32 Hull, Deckhouse, Misc Closures 1,678 77,786 9,024 86,810 0 98,586 185,395 14,832 200,227 164.32 Hull, Deckhouse, Misc Closures				-1				_				
122.29 Transverse Bulkheads - Stiffened 4,967 230,297 45,531 275,828 0 294,700 570,528 45,642 616,170 123.33 Trunks and Enclosures 3,30 153,939 19,920 173,859 0 195,412 369,271 29,542 398,813 130.24 Deck Platforms & Cross-Overs 2,99 681 949 10,640 0 12,257 22,987 1,832 24,729 131.22 Weather Decks 7,195 333,637 61,657 395,294 0 426,295 821,588 65,727 887,315 140.25 Platforms/Flats 21,606 1,001,879 73,040 1,074,919 0 1,263,305 2,338,225 187,035 2,525,283 163.34 Deck Deck Superstructure/Bridge 1,678 77,786 9,024 86,810 0 98,586 185,395 14,832 200,227 164.32 Hull, Deckhouse, Misc Closures 1,680 78,347 19,920 525,297 0 634,710 1,160,007								_				
123.33 Trunks and Enclosures 3,320 153,939 19,920 173,859 0 195,412 369,271 29,522 398,813 130.24 Deck Platforms & Cross-Overs 209 9,681 949 10,640 0 12,257 22,837 1,832 24,729 140.25 Platforms/Flats 7,195 333,637 61,657 395,294 0 426,295 821,588 65,727 887,315 140.25 Platforms/Flats 21,606 1,001,879 73,040 1,074,919 0 1,263,305 2,338,225 187,058 2,525,283 150.34 Deckhouse/Superstructure/Bridge 1,690 78,347 19,920 98,267 0 100,921 199,188 15,935 215,123 165.83 Sonar Dome 10,899 505,377 19,920 525,297 0 634,710 1,160,007 92,801 1,252,088 100.113 Averace Misc. Rooms, Lockers & Houses 15,971 740,571 53,526 794,097 0 933,742 1,727,899		Transverse Bulkheads - Stiffened						0				•
131.22 Weather Decks 7,195 333,637 61,657 395,294 0 426,295 821,588 65,727 887,315 140.25 Platforms/Flats 21,606 1,001,879 73,040 1,074,919 0 1,263,305 2,338,225 187,058 2,525,283 150.34 Deckhouse/Superstructure/Bridge 1,690 78,347 19,920 98,267 0 100,921 199,188 15,935 215,123 165.83 Sonar Dome 10,899 505,377 19,920 525,297 0 634,710 1,160,007 92,801 1,252,808 100.116 Castings 2,638 122,315 17,842 140,157 0 634,710 1,160,007 92,801 1,252,808 100.116 Castings 2,638 122,315 17,842 140,157 0 155,750 295,727 23,658 319,365 123.163 Tanks - Machinery Space Volume 224 1,40,45 13,385 23,791 0 155,70 295,727 23,658 31		Trunks and Enclosures						0				
140.25 Platforms/Flats 21,606 1,001,879 73,040 1,074,919 0 1,263,305 2,338,225 187,058 2,525,283 150.34 Deckhouse/Superstructure/Bridge 1,678 77,786 9,024 86,810 0 98,586 185,395 14,832 200,227 164.32 Hull, Deckhouse/Superstructure/Bridge 1,690 78,347 19,920 98,267 0 100,921 199,188 15,935 215,123 165.83 Sonar Dome 10,899 505,377 19,920 525,297 0 634,710 1,160,007 92,801 1,252,808 100.113 Average Misc. Rooms, Lockers & Houses 15,971 740,571 53,526 794,097 0 933,742 1,727,839 138,227 1,866,066 100.116 Castings 2,24 10,405 13,385 23,791 0 155,570 295,727 23,658 319,385 100.114 Castings 1,487 10,405 13,385 23,791 0 155,015 38,806 <td< td=""><td>130.24</td><td>Deck Platforms & Cross-Overs</td><td></td><td>209</td><td>9,691</td><td>949</td><td>10,640</td><td>0</td><td>12,257</td><td>22,897</td><td>1,832</td><td>24,729</td></td<>	130.24	Deck Platforms & Cross-Overs		209	9,691	949	10,640	0	12,257	22,897	1,832	24,729
150.34 Deckhouse/Superstructure/Bridge 1,678 77,786 9,024 86,810 0 98,586 185,395 14,832 200,227 164.32 Hull, Deckhouse, Misc Closures 1,690 78,347 19,920 98,267 0 100,921 199,188 15,935 215,123 165.83 Sonar Dome 10,899 505,377 19,920 525,297 0 634,710 1,160,007 92,801 1,252,808 100.113 Average Misc. Rooms, Lockers & Houses 15,971 740,571 53,526 794,097 0 933,742 1,727,839 138,227 1,866,066 100.116 Castinas 2,638 122,315 17,842 140,157 0 155,570 295,727 23,658 319,385 123.163 Tanks - Machinery Space Volume 224 10,405 13,385 23,791 0 15,015 38,806 3,104 41,910 150.110 Deck House Total 13,141 609,330 72,018 681,348 0 772,465 1,453,812	131.22	Weather Decks		7,195	333,637	61,657	395,294	0	426,295	821,588	65,727	887,315
164.32 Hull, Deckhouse, Misc Closures 1,690 78,347 19,920 98,267 0 100,921 199,188 15,935 215,123 165.83 Sonar Dome 10,899 505,377 19,920 525,297 0 634,710 1,160,007 92,801 1,252,808 100.113 Average Misc. Roms, Lockers & Houses 15,971 740,571 53,526 794,097 0 933,772 1,727,839 138,227 1,866,066 100.116 Castings 2,638 122,315 17,842 140,157 0 155,772 295,727 23,658 319,385 123.163 Tanks - Machinery Space Volume 224 10,405 13,385 23,791 0 15,015 38,806 3,104 41,910 150.101 Deck House Total 13,141 609,330 72,018 681,348 0 772,465 1,453,812 116,305 1,570,117 162.137 Stacks and Macks 2,684 67,659 9,664 67,659 0 73,943 141,602 11,32	140.25	Platforms/Flats		21,606	1,001,879	73,040	1,074,919	0	1,263,305	2,338,225	187,058	2,525,283
165.83 Sonar Dome 10,899 505,377 19,920 525,297 0 634,710 1,160,007 92,801 1,252,808 100.113 Average Misc. Rooms, Lockers & Houses 15,971 740,571 53,526 794,097 0 933,742 1,727,839 138,227 1,866,066 100.116 Castings 2,638 122,315 17,842 140,157 0 155,570 295,727 23,658 319,385 123.163 Tanks - Machinery Space Volume 224 10,405 13,385 23,791 0 155,570 295,727 23,658 319,385 150.101 Deck House Total 13,141 609,330 72,018 681,348 0 772,465 1,453,812 116,305 1,570,117 162.137 Stacks and Macks 1,256,868 12,752 1,487 14,259 0 73,943 141,602 11,328 152,930 170.145 Masts & Spars 701 32,491 3,717 36,208 0 41,172 77,380 6,190	150.34	Deckhouse/Superstructure/Bridge		1,678	77,786	9,024	86,810	0	98,586	185,395	14,832	200,227
100.113 Average Misc. Rooms, Lockers & Houses 15,971 740,571 53,526 794,097 0 933,742 1,727,839 138,227 1,866,066 100.116 Castings 2,638 122,315 17,842 140,157 0 155,570 295,727 23,658 319,385 123.163 Tanks - Machinery Space Volume 224 10,405 13,385 23,791 0 15,015 38,806 3,104 41,910 150.101 Deck House Total 13,141 609,330 72,018 681,348 0 772,465 1,453,812 116,305 1,571,117 162.137 Stacks and Macks 12,51 57,995 9,664 67,659 0 73,438 116,602 11,328 152,930 163.132 Sea Chest 275 12,752 1,487 14,239 0 16,63 30,401 2,432 32,834 170.145 Masts & Spars 701 32,491 3,717 36,208 0 41,172 77,380 6,190 83,571 <								_				
100.116 Castings 2,638 122,315 17,842 140,157 0 155,570 295,727 23,658 319,385 123.163 Tanks - Machinery Space Volume 224 10,405 13,385 23,791 0 15,015 38,806 3,104 41,910 150.101 Deck House Total 13,141 609,330 72,018 681,348 0 772,465 1,453,812 116,305 1,570,117 162.137 Stacks and Macks 1,251 57,995 9,664 67,659 0 73,943 114,602 11,328 152,930 163.132 Sea Chest 275 12,752 1,487 14,239 0 16,163 30,401 2,432 32,834 170.145 Masts & Spars 701 32,491 3,717 36,208 0 41,172 77,380 6,190 83,571 180.138 Foundations - Propulsion 5,359 248,506 19,329 267,835 0 313,532 581,367 46,509 627,876				•				_				
123.163 Tanks - Machinery Space Volume 224 10,405 13,385 23,791 0 15,015 38,806 3,104 41,910 150.101 Deck House Total 13,141 609,330 72,018 681,348 0 772,465 1,453,812 116,305 1,570,117 162.137 Stacks and Macks 1,251 57,995 9,664 67,659 0 73,943 141,602 11,328 152,930 170.145 Masts & Spars 701 32,491 3,717 36,208 0 41,172 77,380 6,190 83,571 180.138 Foundations - Propulsion 5,359 248,506 19,329 267,835 0 313,532 581,367 46,509 627,876 180.139 Foundations - Propulsion 5,359 248,506 19,329 267,835 0 313,532 581,367 46,509 627,876 180.139 Foundations - Command and Control 2,267 105,125 8,178 113,303 0 132,633 245,937 19,675				,				_				
150.101 Deck House Total 13,141 609,330 72,018 681,348 0 772,465 1,453,812 116,305 1,570,117 162.137 Stacks and Macks 1,251 57,995 9,664 67,659 0 73,943 141,602 11,328 152,930 170.145 Masts & Spars 701 32,491 3,717 36,208 0 41,172 77,380 6,190 83,571 180.138 Foundations - Propulsion 5,359 248,506 19,329 267,835 0 313,532 581,367 46,509 627,876 180.139 Foundations - Electrical 2,680 124,253 9,664 133,917 0 156,766 290,683 23,255 313,938 184.140 Foundations - Command and Control 2,267 105,125 8,178 113,307 0 156,766 290,683 23,255 313,938 185.141 Foundations - Auxilary 1,950 90,435 12,788 103,223 0 114,962 218,186 17,455		-		,				_				
162.137 Stacks and Macks 1,251 57,995 9,664 67,659 0 73,943 141,602 11,328 152,930 163.132 Sea Chest 275 12,752 1,487 14,239 0 16,163 30,401 2,432 32,834 170.145 Masts & Spars 701 32,491 3,717 36,208 0 41,172 77,380 6,190 83,571 180.138 Foundations - Propulsion 5,359 248,506 19,329 267,835 0 313,532 581,367 46,509 627,876 180.139 Foundations - Electrical 2,680 124,253 9,664 133,917 0 156,766 290,683 23,255 313,938 184.140 Foundations - Command and Control 2,267 105,125 8,178 113,303 0 132,633 245,937 19,675 265,612 185.141 Foundations - Auxilary 1,950 90,435 12,788 103,223 0 114,962 218,186 17,455 235,641								_	,			
163.132 Sea Chest 275 12,752 1,487 14,239 0 16,163 30,401 2,432 32,834 170.145 Masts & Spars 701 32,491 3,717 36,208 0 41,172 77,380 6,190 83,571 180.138 Foundations - Propulsion 5,359 248,506 19,329 267,835 0 313,532 581,367 46,509 627,876 180.139 Foundations - Electrical 2,680 124,253 9,664 133,917 0 156,766 290,683 23,255 313,938 184.140 Foundations - Command and Control 2,267 105,125 8,178 113,303 0 132,633 245,937 19,675 265,612 185.141 Foundations - Auxilary 1,950 90,435 12,788 103,223 0 114,962 218,186 17,455 235,641 186.142 Foundations - Outfit 1,236 57,332 4,460 61,792 0 72,334 134,126 10,730 144,856				,	,			_				
170.145 Masts & Spars 701 32,491 3,717 36,208 0 41,172 77,380 6,190 83,571 180.138 Foundations - Propulsion 5,359 248,506 19,329 267,835 0 313,532 581,367 46,509 627,876 180.139 Foundations - Electrical 2,680 124,253 9,664 133,917 0 156,766 290,683 23,255 313,938 184.140 Foundations - Command and Control 2,267 105,125 8,178 113,303 0 132,633 245,937 19,675 265,612 185.141 Foundations - Auxilary 1,950 90,435 12,788 103,223 0 114,962 218,186 17,455 235,641 186.142 Foundations - Outfit 1,236 57,332 4,460 61,792 0 72,334 134,126 10,730 144,856				•				-				
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SWBS Account Summary Report: A Selection of Estimated Structural Costs

12/3/2014 10:52:01

(Date format: M/D/YYYY)

SPAR Associates, Inc. SWBS Account Summary Report (SUM03)

Page 3 of 14

Contract NavyResearchShip Cost Estimate: Naval Research Ship

Accoun	t Description	Labor Hours	Labor Cost	Material Cost	Direct Cost	Taxes	Indirect Cost	Total Cost	Profit	Total Price	
	<u> </u>	Hours	COSL	COSI	Cost		Cost			Price	
	Project 101 Lead Ship Group 1 Hull Structure										
156	5th Deck House Level	0	0	0	0	0	0	0	0	0	
157	6th Deck House Level	0	0	0	0	0	0	0	0	0	
158	7th Deck House Level	0	0	0	0	0	0	0	0	0	
159	8th Deck House Level	0	0	0	0	0	0	0	0	0	
160	Special Structures	0	0	0	0	0	0	0	0	0	
161	Structural Castings, Forgings, etc.	0	0	0	0	0	0	0	0	0	
162	Stacks & Macks	1,251	57,995	9,664	67,659	0	73,943	141,602	11,328	152,930	
163	Sea Chest	275	12,752	1,487	14,239	0	16,163	30,401	2,432	32,834	
164	Structural	1,690	78,347	19,920	98,267	0	100,921	199,188	15,935	215,123	
165	Structural	10,899	505,377	19,920	525,297	0	634,710	1,160,007	92,801	1,252,808	
166	Sponsons	0	0	0	0	0	0	0	0	0	
167	Hull Structural Closures	0	0	0	0	0	0	0	0	0	
169	Special Purpose Closures	0	0	0	0	0	0	0	0	0	
170	Structural	701	32,491	3,717	36,208	0	41,172	77,380	6,190	83,571	
171	Masts Towers & Tetrapods	0	0	0	0	0	0	0	0	0	
172	Kingposts & Support Frames	0	0	0	0	0	0	0	0	0	
179	Service Platforms	0	0	0	0	0	0	0	0	0	
180	Structural	8,039	372,759	28,993	401,752	0	470,298	872,050	69,764	941,814	
181	Hull Structure Foundations	0	0	0	0	0	0	0	0	0	
183	Electric Plant Foundations	0	0	0	0	0	0	0	0	0	
184	Command & Surveillance Foundations	2,267	105,125	8,178	113,303	0	132,633	245,937	19,675	265,612	
185	Auxiliary Systems Foundations	1,950	90,435	12,788	103,223	0	114,962	218,186	17,455	235,641	
186	Structural	1,236	57,332	4,460	61,792	0	72,334	134,126	10,730	144,856	
187	Armament Foundations	2,885	133,791	10,408	144,199	0	168,800	313,000	25,040	338,040	
199	Special Tools	0	0	0	0	0	0	0	0	0	
	Group: 1 Totals	137,024	6,353,789	759,615	7,113,404	0	8,056,179	15,169,583	1,213,567	16,383,150	
Grou	in 2 Propuleion Plant										

Bid Format Report: A Selection of SWBS Estimated Structural Costs (Shipyard's Own Logo Can be Defined for the Report)



Page 1 of 29

Estimate Date

12/3/2014

TO CUSTOMER

ESTIMATE

PROPOSAL FROM

SPAR Associates, Inc. 927 West Street Annapolis MD 21401 USA

Contract NavyResearch Ship - Cost Estimate: Naval Research Ship

Project 101 - Lead Ship

Cost Item #	Quantity	UoM	Description	Unit Price	Extended Cost
Account 100			Hull Structure		
100.113	43.71	MTON	Average Misc. Rooms, Lockers & Houses	42,691.97	1,866,065.92
100.116	14.57	MTON	Castings	21,920.71	319,384.69
			Total for Acct: 100		2,185,450.61
Account 111			Shell Plating		
111.18	28.05	MTON	Single Side Shell - Parallel	14,843.30	416,354.68
111.19	52.09	MTON	Single Side Shell - Shaped	26,475.34	1,379,100.27
			Total for Acct: 111		1,795,454.95
Account 113			Inner Bottom		
113.16	5.10	MTON	Double Bottoms - Parallel	20,386.67	103,972.04
113.17	9.47	MTON	Double Bottoms - Shaped	32,436.71	307,175.66
			Total for Acct: 113		411,147.70

Over 40 Years Serving the Shipbuilding & Repair Industry



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