

**Antonio Salguero****Sound Boats**

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Schooner JUNO  
 January 15, 2002

Robert and Melissa Soros: Owners  
 Nat Benjamin: Designer

**Vessel Particulars**

LOA		64' 11"	
LWL		52'	
BEAM		15' 6"	
BEAM LWL		14' 8"	
DRAFT		9' 2"	
SAIL AREA (UNDER LOWERS)		2040	sq. ft.
Midship Draft			
Station Spacing	5.20	= 5' 2 7/16"	
Scale of Lines DWG		1/2"=1'0"	
Scale Factor (1/scale^2)		4	

**Hydrostatic and Displacement Summary**

Displacement (lbs.)	91,847
Displacement (long tons)	41
Displacement (volume ft^3)	1,435
DLR	292
LCB	0.547
LCF	0.550
PPI (lbs)	2,755
Moment trim 1" (Skene's nomograph)	9000 ft-lbs
Wetted Surface (sq. ft.)	944
Sail Area/Wetted Surface	2.16
Sail Area/ Displacement	16.03

**Coefficients of Form**

Prismatic:	$C_p = \text{displacement volume} / \text{LWL} \times \text{area of largest underwater section}$
	= 0.56
Block:	$C_b = \text{displacement volume} / \text{LWL} \times \text{WL BEAM} \times \text{Midship Draft}$
	= 0.24
Waterplane:	$C_w = \text{waterplane area} / \text{LWL} \times \text{WL BEAM}$
	= 0.68
Midship:	$= \text{midship area} / \text{midship WL BEAM} \times \text{Midship Draft}$
	= 0.42

**Planimeter Readings**

Half Section Areas (sq. in.)

Station	First	Second	Third	Average
0	0.00	0.00	0.00	0.00
1	0.55	0.56	0.54	0.55
2	1.95	1.90	1.90	1.92
3	3.50	3.56	3.55	3.54
4	5.00	5.00	5.00	5.00
5	6.07	6.00	6.03	6.03
6	6.20	6.20	6.25	6.22
7	5.58	5.40	5.47	5.48
8	3.94	4.00	4.00	3.98
9	1.69	1.71	1.74	1.71
10	0.00	0.00	0.00	0.00

Station	1/2 Area	S. Multiplier	S. Functions	Station	S.Moments
0	0.00	1	0	0	0
1	0.55	4	2	1	2
2	1.92	2	4	2	8
3	3.54	4	14	3	42
4	5.00	2	10	4	40
5	6.03	4	24	5	121
6	6.22	2	12	6	75
7	5.48	4	22	7	154
8	3.98	2	8	8	64
9	1.71	4	7	9	62
10	0.00	1	0	10	0
Column Totals			103	566	

Displacement Volume (ft<sup>3</sup>) = (sum of S. Functions x Station Spacing x Scale Factor x 2)/3  
 = 1,435 ft<sup>3</sup>

Density of Seawater = 64 lbs/ft<sup>3</sup>

Displacement in lbs = 91,847 lbs

Displacement in Long Tons = (displacement in lbs/2240

= 41 L.T.

LCB = (sum of S. Moments/sum of S. Functions/10)

= 0.55

DLR = Disp. In L.T./ (.01 x LWL)<sup>3</sup>

= 292

Table of WL Half Breadths (ft.)

Station	Half Breadth (ft.)	S. Multiplier	S. Functions	Station	S.Moments	
0	0.00	1	0	0	0	
1	1.75	4	7	1	7	
2	3.63	2	7	2	15	
3	5.25	4	21	3	63	
4	6.33	2	13	4	51	
5	7.08	4	28	5	142	
6	7.25	2	15	6	87	
7	7.00	4	28	7	196	
8	6.13	2	12	8	98	
9	4.50	4	18	9	162	
10	0.00	1	0	10	0	
Column Totals			149			820

Waterplane Area (ft<sup>3</sup>) = (sum of S. Functions x Station Spacing x 2)/3  
 = 517 sq. ft.

LCF = (sum of S. Moments/sum of S. Functions/10)  
 = 0.55

Pounds Per Inch Immersion = (waterplane area x 64 lbs/ft<sup>3</sup>)/12  
 = 2,755 lbs

Table of Half Girths (ft.)

Station	Half Girth (ft.)	S. Multiplier	S. Functions	Station	S.Moments	
0	0.00	1	0	0	0	
1	3.00	4	12	1	12	
2	5.67	2	11	2	23	
3	8.00	4	32	3	96	
4	10.00	2	20	4	80	
5	11.50	4	46	5	230	
6	11.08	2	22	6	133	
7	12.58	4	50	7	352	
8	12.25	2	25	8	196	
9	11.50	4	46	9	414	
10	0.00	1	0	10	0	
Column Totals			264			1536

Wetted Surface (ft<sup>2</sup>) = (sum of S. Functions x Station Spacing x 2)/3  
 = 916 sq. ft.

3% Bilge Factor = 27 sq. ft.

Corrected Wetted Surface = 944 sq. ft.