

BOAT
Name TORNADO Sail Nr PER 43

GPH
617.4

HULL					
Length Overall	12.330 m				
Maximum Beam	3.948 m				
Displacement	7,926 kg				
Draft	2.241 m				
IMS Reg. Division	Cruiser/Racer				
Dynamic Allowance	0.295%				
Fwd Accommodation	Yes				
Hull Construction	Solid				
Carbon Rudder	No				
Trim Tab	No				
IMS L	10.034	VCGD	-0.118	VCGM	-0.131
Sink	21.72 kg/mm	Wetted Area	31.13 m²		



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GENERAL
Class Frers 40
Designer Frers
Builder Cadarsó
Series 12/1991
Age 12/1991
Age Allowance 0.975%
Offset File SANSAT.OFF - 18/08/1991 12:54:58
Measurement by G LIZA / L YARLAQ - 26/07/2010

SCORING OPTIONS						
	OFFSHORE			INSHORE		
	COASTAL / LONG DISTANCE			WINDWARD / LEEWARD		
Time On Distance	617.4			688.2		
Time On Time	0.9718			0.9808		
Performance Line	PLT	PLD		PLT	PLD	
	0.862	109.5		1.021	297.0	
Triple Number	Low	Medium	High	Low	Medium	High
	0.9530	1.2334	1.3913	0.7261	0.9914	1.1577

Rating Office

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TIME ALLOWANCES							
Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Beat VMG	1036.9	851.6	761.4	716.2	688.4	669.9	663.6
52°	668.7	560.0	515.8	495.0	482.9	474.9	467.7
60°	623.9	536.6	497.6	477.0	466.1	458.6	450.1
75°	589.7	519.9	484.6	461.6	445.7	437.1	427.5
90°	587.9	508.7	472.2	452.1	442.4	431.0	412.2
110°	601.9	519.7	479.5	451.8	430.9	416.5	402.0
120°	643.5	539.2	491.9	461.3	437.3	417.9	390.0
135°	740.1	592.6	524.2	485.7	458.5	436.2	399.7
150°	885.5	699.2	585.7	525.9	489.1	462.7	422.4
Run VMG	1022.5	807.3	676.1	595.0	540.7	502.9	453.7

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Selected Courses							
Windward / Leeward	1049.2	842.7	730.0	663.9	621.7	593.2	565.1
Circular Random	850.9	687.1	599.1	547.8	515.9	494.9	469.4
Ocean for PCS	909.2	718.6	612.6	547.8	505.2	475.0	432.7
Non Spinnaker	913.4	730.6	630.8	571.5	534.2	509.7	480.0

Crew Weight	
Declared	560 kg
Default*	749 kg
Non Manual Power	No

Velocity Prediction in Knots for True Wind Speeds							
Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Beat Angles	44.5°	44.3°	41.3°	39.2°	38.3°	37.5°	37.9°
Beat VMG	3.47	4.23	4.73	5.03	5.23	5.37	5.42
52°	5.38	6.43	6.98	7.27	7.46	7.58	7.70
60°	5.77	6.71	7.23	7.55	7.72	7.85	8.00
75°	6.10	6.92	7.43	7.80	8.08	8.24	8.42
90°	6.12	7.08	7.62	7.96	8.14	8.35	8.73
110°	5.98	6.93	7.51	7.97	8.35	8.64	8.96
120°	5.59	6.68	7.32	7.80	8.23	8.61	9.23
135°	4.86	6.07	6.87	7.41	7.85	8.25	9.01
150°	4.07	5.15	6.15	6.85	7.36	7.78	8.52
Run VMG	3.52	4.46	5.32	6.05	6.66	7.16	7.94
Gybe Angles	142.6°	147.0°	150.9°	162.0°	167.8°	172.2°	174.3°

Special Scoring	
ToD	ToT
Double Handed	619.0 0.9693
Non Spinnaker	651.0 0.9216
N/S Perf. Line	71.5 0.761

Sails Limitations		
Genoas	Jibs	Spinnakers
3	2	3
Spinnaker configuration Symmetric		

Storm Sails Areas	
Heavy Weather Jib	37.12
Storm Jib (JL=10.78)	13.75
Storm Trysail	11.42

Owner

Hector Estremadoyro
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I certify that I understand my responsibilities under ORC Rules and Regulations

Signature

BOAT	
Name TORNADO File PER43.dxt	Sail Nr PER 43 Data in meters/kilograms

RIG			
Forestay Tension Aft	Spreaders 3		
Inner Forestay Adjustable	Runners 2		
Carbon Mast No	Jumpers None		
Taper Hollows No	Jib Furler No		
Fiber Rigging No	w/o Backstay No		
P 14.545	E 4.488	MDT1 0.122	TL 2.880
IG 16.583	J 4.860	MDL1 0.223	MWT
ISP 16.583	SFJ 0.062	MDT2 0.122	MCG
SPS 2.555	SPL 4.853	MDL2 0.177	CPW 2.298
BAS 1.775	TPS	MW 0.177	BD 0.167
BAL 0.452	FSP 0.072	GO 0.177	BWT

MIZZEN RIG AND SAILS	
N/A	


COMMENTS	
nueva medición de estab, francobordo velas y aparjo	

INCLINING TEST AND FREEBOARDS			
Inclining Test Current Inclining			
Flotation date 22/07/2010		SG 1.0260	
FFM 1.176	FF 1.176	SFFP 0.600	
FAM 1.007	FA 1.007	SAFP 10.810	
W1 115.00	PD1 544.7	WD 12.030	
W2 115.00	PD2 544.7	GSA 1.0	
W3 115.00	PD3 544.7	RSA 1.0	
W4 115.00	PD4 544.7	PLM 9000.0	
Maximum beam station from stern			7.351
RM Measured / Default			200.0 / 173.0
Limit of positive stability			118.6°
Stability Index			121.0
Freeboard at mast at 4.922			1.011

PROPELLER			
Installation Shaft	PRD 0.460		
Type Feathering 2 blades	PBW 0.155		
Twin Screw No	PIPA 0.0050		
PSA 16.000	PHL 0.145	ST3 0.137	ESL 1.030
PSD 0.032	ST1 0.022	ST4 0.061	
PHD 0.068	ST2 0.111	ST5 0.225	

WATER BALLAST			
N/A			

CENTERBOARD			
N/A			




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AVOP

SAILS (Maximum Areas)									
Mainsail	HB	MGT	MGU	MGM	MGL	MSW	Area	Area (r)	Formula
	0.157	0.99	1.69	2.89	3.79	19.70	39.00	39.63	$P/8 \cdot (E + 2 \cdot MGL + 2 \cdot MGM + 1.5 \cdot MGU + MGT + 0.5 \cdot HB)$
Jib/Genoa	JH	JGT	JGU	JGM	JGL	JL	LPG		
	0.80	0.86	1.69	3.42	5.28	16.48	7.23	58.66	$0.1125 \cdot JL \cdot (1.445 \cdot LPG + 2 \cdot JGL + 2 \cdot JGM + 1.5 \cdot JGU + JGT + 0.5 \cdot JH)$
Symmetric	SL	SMG	SF						
	16.18	8.78	8.66					118.06	$SL \cdot (SF + 4 \cdot SMG) / 6$

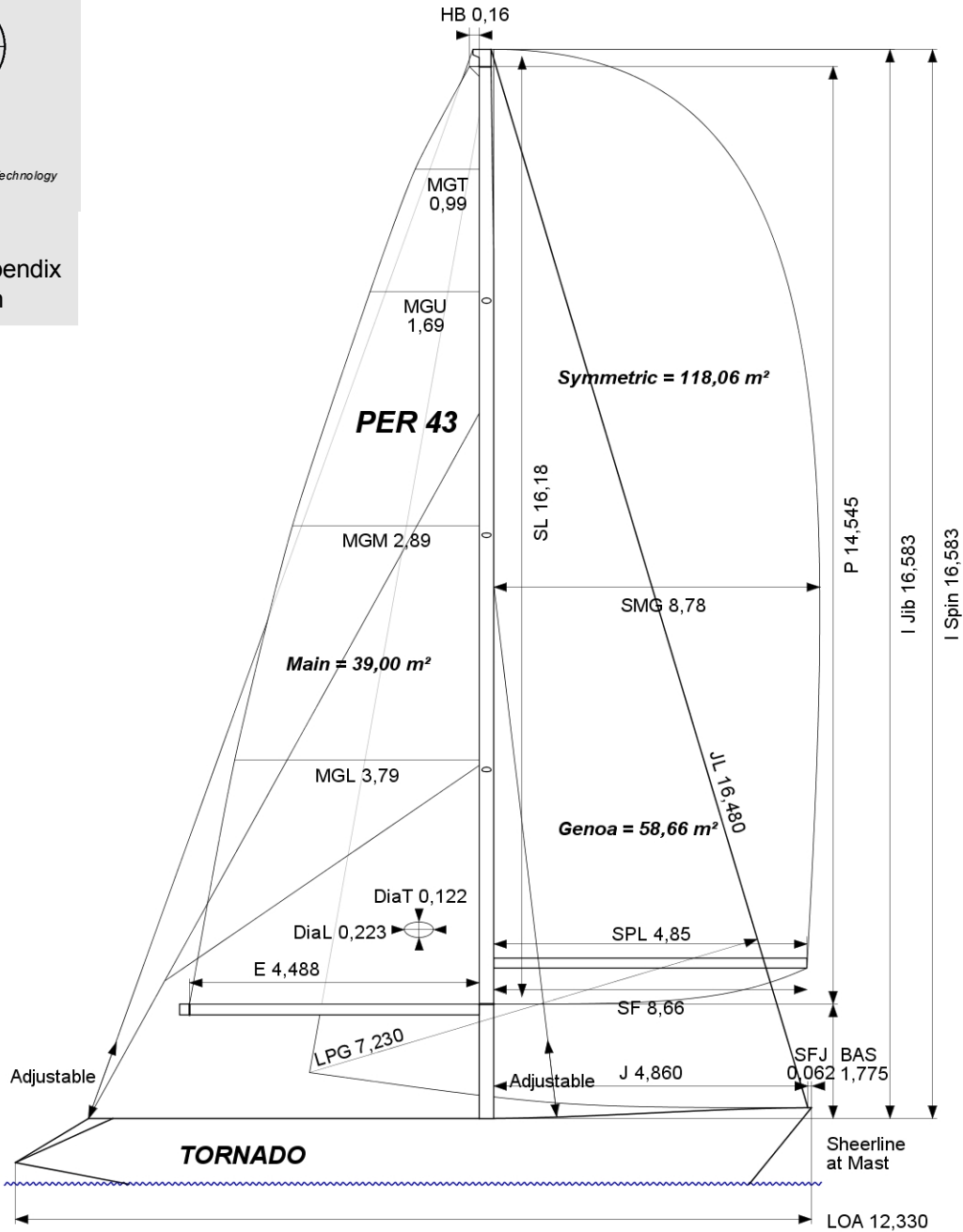
MEASUREMENT INVENTORY			
Measurer Date 22/07/2010 Comment G LIZAL YARLEQUE			
Id	Item	Weight	Distanc Description
3.5	Anchor	14.0	1.11
3.6	Chain	19.0	1.11 de acero 8 mts
Id	Item	Maker	Model
1.1	Engine	volvo	38 hp
Id	Item	Weight	Description
3.7	Deck Gear	12.0	radar a popa estribor con tubo de soporte
3.4	Deck Gear	20.0	jgo escotas, maniv elas, poleas

MEASUREMENT INVENTORY						
Id	Item	Tank Use	Tank Type	Capct	Dist.	Condt Description
2.2	Liquid Tank	combustible	flex	15.0	6.06	2.0 debajo camilla
2.1	Liquid Tank	agua	flex	25.0	6.06	0.0 debajo camilla
Id	Item	Weight	Distanc	Description		
3.1	Battery	24.0	6.46	2 sobre crujia a proa de motor		
3.3	Miscellaneous	12.0	8.21	cocina a gas lado estribor		
3.2	Miscellaneous	4.0	7.26	lav adero acero lado estribor		



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Sail Plan



SAILS INVENTORY

MANSAIL

Id	HB	MGT	MGU	MGM	MGL	MSW	Area	Measurer	Meas.Date	Manufacture	Material	Comment
M1	0.157	0.99	1.69	2.89	3.79	19.70	39.00	G LIZA / L YAR	22/07/2010	QUANTUM	Kevlar	nueva medición

JIBS / GENOAS

Id	JH	JGT	JGU	JGM	JGL	LPG	JL	Overlp	Area	Measurer	Meas.Date	Manufacture	Material	Comment
JIB	0.09	0.60	1.15	2.35	3.58	4.83	16.56	99%	39.51	G LIZA / L	22/07/2010	QUANTUM	Dacron	nueva medición
G1	0.80	0.86	1.69	3.42	5.28	7.23	16.48	149%	58.66	G LIZA / L	22/07/2010	QUANTUM	Kevlar	nueva medición

SYMMETRIC SPINNAKERS

Id	SL	SMG	SF	Area	Measurer	Meas.Date	Manufacture	Material	Comment
S1	16.18	8.78	8.66	118.06	G LIZA/L YAR	22/07/2010	NORTH	Polyester	nueva medición

ASYMMETRIC SPINNAKERS

Id	SLU	SLE	ASL	AMG	ASF	Area	Kind	Measurer	Meas.Date	Manufacture	Material	Comment
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