

BOAT Name NEGRA Sail Nr ECU -717	GPH 540,1	HULL Length Overall 13,829m Maximum Beam 3,888m Displacement 9.963kg Draft 2,838m IMS Reg. Division Cruiser/Racer Dynamic Allowance 0,000% Fwd Accommodation Yes Hull Construction Cored Carbon Rudder Yes Crew Arm Extension
GENERAL Class SWAN 45 Designer GERMAN FRERS Builder NAUTOR Series 11/2001 Age 11/2001 Age Allowance 0,487% Offset File SWAN45.OFF - 22/09/2011 01:04:10 Measurement by P. GUTIERREZ - 29/09/2017		IMSL 12,650m VCGD -0,267m Sink 26,98kg/mm RL 11,400m VCGM -0,327m WS 36,81m² LSMO 12,458m Displacement/Length ratio 5,1528



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2017
ORC International
Certificate

Rating Office
Federación Ecuatoriana de Vela
Patricio D. Gutiérrez - RO
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SCORING OPTIONS	COASTAL / LONG DISTANCE			WINDWARD / LEEWARD		
	Low	Medium	High	Low	Medium	High
Time On Distance	527,5			589,5		
Time On Time	1,1374			1,1450		
Triple Number	Low	Medium	High	Low	Medium	High
Time on Distance	612,6	480,9	427,7	798,0	594,3	512,8
Time on Time	1,1019	1,4035	1,5781	0,8459	1,1357	1,3164

TIME ALLOWANCES	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Beat VMG	888,5	739,1	660,8	625,4	607,1	593,6	580,1
52°	580,8	488,8	452,3	439,6	432,9	428,9	420,1
60°	545,6	467,0	439,2	427,3	420,6	416,3	407,4
75°	514,6	452,0	428,4	412,9	401,1	394,0	386,0
90°	513,1	450,5	426,2	408,5	391,3	376,2	359,9
110°	542,5	455,5	423,3	403,3	391,3	377,5	354,6
120°	562,1	465,8	429,9	406,5	382,4	366,4	344,2
135°	629,5	511,4	451,7	425,0	403,3	379,8	331,2
150°	751,5	603,4	510,3	454,8	427,8	407,2	363,5
Run VMG	867,7	696,7	589,3	519,9	475,1	440,7	398,8

Certificate
Number **FVEC10**
ORC Ref **ECU00005603**
Issued On **04/10/2017**
VPP Ver. **2017 1.00**
Valid until **31/03/2018**

Crew Weight
Declared **910kg**
Default* **942kg**
Non Manual Pwr **No**

Special Scoring
ToD ToT
Non Spin GPH **563,7 1,0644**
Non Spin OSN **551,4 1,0881**

Selected Courses	878,1	717,9	625,1	572,6	541,1	517,1	489,5
Windward / Leeward	878,1	717,9	625,1	572,6	541,1	517,1	489,5
Circular Random	737,7	598,6	524,6	481,5	454,5	435,9	410,4
Ocean for PCS	910,2	705,4	590,1	519,4	473,2	440,6	394,7
Non Spinnaker	780,1	628,8	547,0	498,7	468,2	447,6	420,4

Sails Limitations
Headsails **7** Spinnakers **5**

Velocity Prediction in Knots for True Wind Speeds	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Beat Angles	42,9°	42,0°	40,8°	38,9°	37,8°	37,2°	36,9°
Beat VMG	4,05	4,87	5,45	5,76	5,93	6,06	6,21
52°	6,20	7,37	7,96	8,19	8,32	8,39	8,57
60°	6,60	7,71	8,20	8,43	8,56	8,65	8,84
75°	7,00	7,96	8,40	8,72	8,97	9,14	9,33
90°	7,02	7,99	8,45	8,81	9,20	9,57	10,00
110°	6,64	7,90	8,51	8,93	9,20	9,54	10,15
120°	6,40	7,73	8,37	8,86	9,42	9,83	10,46
135°	5,72	7,04	7,97	8,47	8,93	9,48	10,87
150°	4,79	5,97	7,05	7,92	8,42	8,84	9,90
Run VMG	4,15	5,17	6,11	6,92	7,58	8,17	9,03
Gybe Angles	141,7°	146,2°	149,2°	155,4°	166,6°	180,0°	180,0°

Class Division Length
CDL = **12,026**

Storm Sails Areas
Heavy Weather Jib **47,34**
Storm Jib (JL=12,17) **17,53**
Storm Trysail **21,34**


Owner
FRANCISCO RIZZO
AV. 9 DE OCTUBRE 100 Y
MALECON
GUAYAQUIL - ECUADOR

I certify that I understand my responsibilities under ORC Rules and Regulations
Signature

BOAT	
Name NEGRA	Sail Nr ECU -717
File ECU717	Data in meters/kilograms

INCLINING TEST AND FREEBOARDS		
Inclining Test Current Inclining		
Flotation date 29/09/2017	SG 1,0253	
FFM 1,493	FF 1,496	SFFP 0,295
FAM 1,176	FA 1,176	SAFP 13,301
W1 140,0	PD1 464,9	WD 11,320
W2 140,0	PD2 466,8	GSA 1,0
W3 140,0	PD3 468,6	RSA 1,0
W4 140,0	PD4 467,1	PLM 9000,0
LCF from stem on CL / on sheer		7,716 / 7,948
Maximum beam station from stem		8,935
RM Measured		267,3kg·m
RM Default		272,5kg·m
Limit of positive stability / Stab.Index		134,9° / 141,9
Freeboard at mast at 5,435		1,266

RIG			
Forestay Tension Aft	Spreaders 2		
Inner Stay None Fitted	Runners 0		
Carbon Mast Yes	Jumper Struts None		
Taper Hollows No	Jib Furler No		
Fiber Rigging No	Main Furler No		
Lenticular Rigging No	Without Backstay No		
Articulated Bowsprit No			
P 18,620	E 6,550	MDT1 0,140	MW 0,250
IG 18,640	J 5,400	MDL1 0,250	GO 0,275
ISP 18,820	SFJ 0,035	MDT2 0,110	BD 0,290
BAS 1,840	SPL 5,400	MDL2 0,150	MWT 284,00
FSP 0,070	TPS	TL 1,850	MCG 7,040




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IMS Measurement Certificate

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MIZZEN RIG AND SAILS	
N/A	

PROPELLER		
Installation Strut	PRD 0,485	
Type Folding 2 blades	PBW 0,138	
Twin Screw No	PIPA 0,0030	
ST1 0,048	ST3 0,170	ST5 0,300
ST2 0,170	ST4 0,095	EDL 2,800

COMMENTS	
MEDICION EST Y FBDS 200 KG EN VENTANA DE BULBO	

MOVEABLE BALLAST	
N/A	

CENTERBOARD	
N/A	

SAILS (Maximum Areas)						
Mainsail	MHB	MUW	MTW	MHW	MQW	Area Area (r) Formula
	0,260	1,66	2,79	4,52	5,73	76,87 79,01 $P/8 \cdot (E + 2 \cdot MQW + 2 \cdot MHW + 1.5 \cdot MTW + MUW + 0.5 \cdot MHB)$
Symmetric	SLU	SLE	SL	SHW	SFL	Area (r) Formula
	18,42	18,42	18,42	9,83	9,46	149,75 $SL \cdot (SFL + 4 \cdot SHW) / 6$
Asymmetric	SLU	SLE	SL	SHW	SFL	Area (r) Formula
	19,23	17,94	18,59	9,93	9,60	152,77 $AS \cdot (SFL + 4 \cdot SHW) / 6$

HEADSAILS												
Area = 0.1125·HLU · (1.445·HLP + 2·HQW + 2·HHW + 1.5·HTW + HUW + 0.5·HHB)												
HHB	HUW	HTW	HHW	HQW	HLP	HLU	Area	Btn	Fly	Meas.Date	Material	Comment
0,14	0,87	1,62	2,97	4,33	5,76	18,97	56,11	Y		02/05/2017	Kevlar	NUEVA
0,14	0,88	1,60	2,96	4,32	5,70	18,92	55,65	Y		01/10/2017	Carbon	3DI
0,15	0,84	1,56	2,90	4,26	5,72	18,77	54,57	Y		25/09/2014	Carbon	REMEDICION

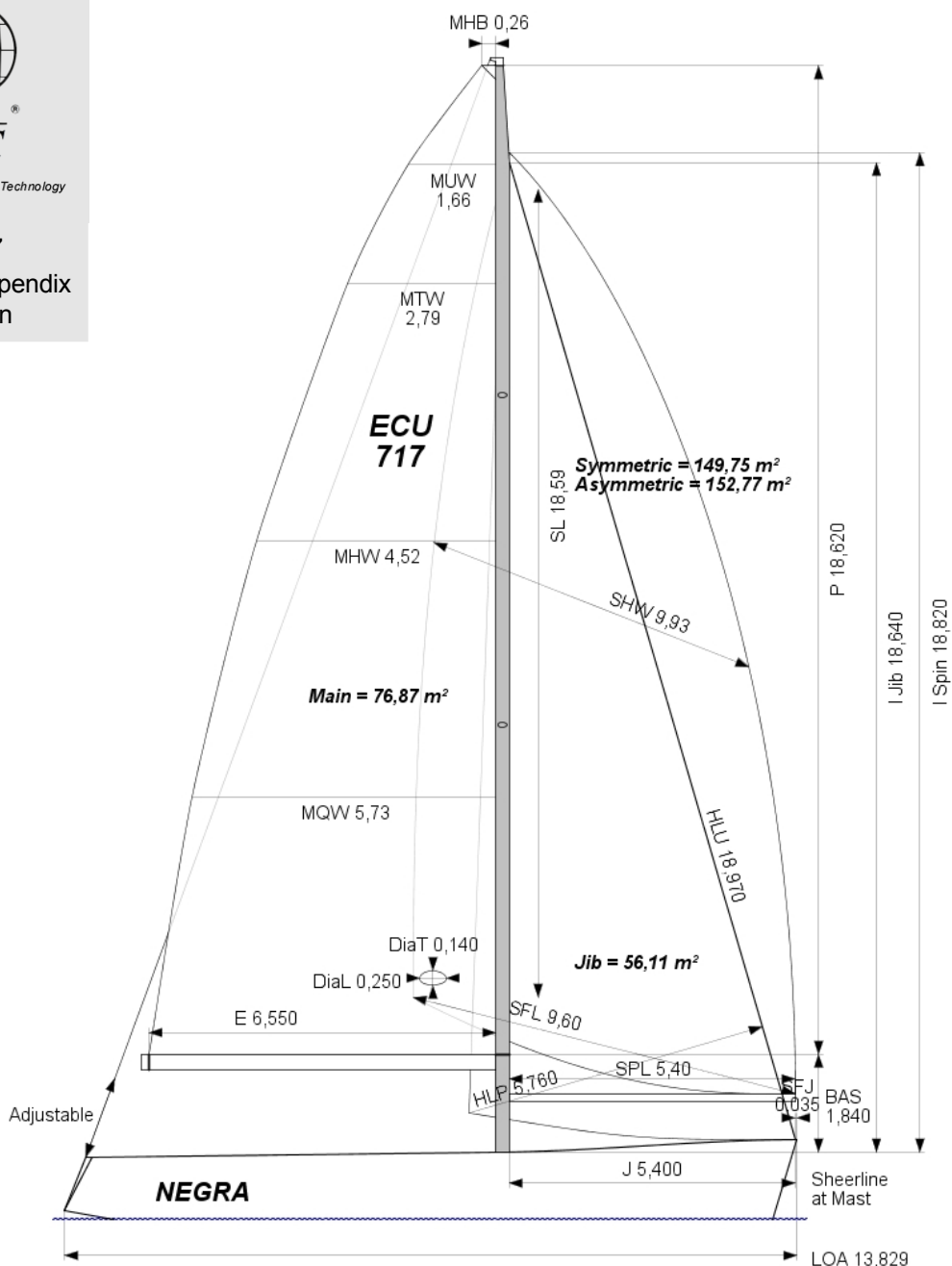
MEASUREMENT INVENTORY				
Measurer PATRICIO GUTIERREZ P G				
Date 29/09/2017				
Comment				
<i>Id</i>	<i>Item</i>	<i>Weight</i>	<i>Distance</i>	<i>VCG Description</i>
<i>Id</i>	<i>Item</i>	<i>Maker</i>	<i>Model</i>	
3A	Engine	VOLVO PENTA	55HP	
<i>Id</i>	<i>Item</i>	<i>Weight Description</i>		

MEASUREMENT INVENTORY									
<i>Id</i>	<i>Item</i>	<i>Tank Use</i>	<i>Tank Type</i>	<i>Capcty</i>	<i>Dist.</i>	<i>VCG</i>	<i>Condtn</i>	<i>Description</i>	
4A	Tank	GAS OIL	ALUMINIO	150,0	6,60	0,10	50,0	A BAVOR	
4D	Tank	AGUA	PLASTICO	126,0	7,13	0,20	0,0	A ESTRIBOR	
4C	Tank	AGUA	PLASTICO	116,0	6,52	0,20	0,0	A ESTRIBOR	
4B	Tank	AGUA	PLASTICO	81,0	5,87	0,20	0,0	A ESTRIBOR	
<i>Id</i>	<i>Item</i>	<i>Weight</i>	<i>Distance</i>	<i>VCG Description</i>					
C7	Battery	15,0	6,48	0,50 12 V - 65 AMP					
C7	Battery	40,0	6,12	0,50 6 x 12V. GEL					
C6	Misc	5,0	6,16	0,10 GATO HIDRAULICO					
B6	Misc	10,0	8,30	0,60 COCINA CON HORNO INOX					



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Sail Plan



SAILS INVENTORY

MAINSAIL (1)

Id	MHB	MUW	MTW	MHW	MQW	Area	Measurer	Meas.Date	Manufacture	Material	Comment
MNi4	0,260	1,66	2,79	4,52	5,73	76,87	A V M	30/08/2017	NORTH	Kevlar	NUEVA

HEADSAILS (3)

Id	HHB	HUW	HTW	HHW	HQW	HLP	HLU	Ovrlp	Area	Btn	Fly	Measurer	Meas.Date	Manufacture	Material	Comment
M2A	0,14	0,87	1,62	2,97	4,33	5,76	18,97	107%	56,11	Y		A V M	02/05/2017	NORTH	Kevlar	NUEVA
1 LM3	0,14	0,88	1,60	2,96	4,32	5,70	18,92	106%	55,65	Y		P	01/10/2017	NORTH	Carbon	3DI
M-H2	0,15	0,84	1,56	2,90	4,26	5,72	18,77	106%	54,57	Y		G LIZA	25/09/2014	NORTH	Carbon	REMEDICION

SYMMETRIC SPINNAKERS (3)

Id	SLU	SLE	SL	SHW	SFL	Area	Measurer	Meas.Date	Manufacture	Material	Comment
S2	18,42	18,42	18,42	9,83	9,46	149,75	A V M	23/04/2016	NORTH	Nylon	REMEDICION
1.5	18,50	18,50	18,50	9,70	9,54	149,05	C HERMAN	27/04/2011		Unknown	
S0	18,60	18,60	18,60	7,00	9,50	116,25	PG	26/09/2011	NORTH	Nylon	

ASYMMETRIC SPINNAKERS (2)

Id	SLU	SLE	SL	SHW	SFL	Area	Kind	Measurer	Meas.Date	Manufacture	Material	Comment
A1	19,23	17,94	18,59	9,93	9,60	152,77	asym	P GUTIERREZ	26/09/2017	NORTH	Nylon	REMEDICION
A0	18,50	17,63	18,06	7,50	9,68	119,47	asym	G LIZ	02/10/2015	NORTH	Unknown	NUEVO