IMS RATING CERTIFICATE No. 9660
Based on: FULL MEASUREMENT (Metric)

NOT VALID AFTER 12/31/2006

GPH 666.2

IMS AMENDED TO JANUARY 2006
Offshore Racing Congress
Chelmsford, England
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IMS AMENDED TO JANUARY 2006 VPP: 19/APR/06 19:26:25
Cert No 9660 1 NOR9660.DAT 19/APR/04 16:03:00
OFF Meas'd: 25/OCT/94 X332_I.OFF 01/DEC/00 19:03:00

YACHT DESCRIPTION

Name: Andante
Sail No: NOR 9660
Class: X-332
LOA: 10.060m Beam(MB) 3.283m
Designer: JEPPESEN
Builder: X-YACHTS
Rig: FRACTIONAL SLOOP 151% Jib
Keel/CB: FIXED KEEL
PropInst: STRUT DRIVE FOLDING
FwdAccom: YES Spin: SYMMETRIC
HullCnst: HVYCORE RudCnst: STNDRD
Forestay: ADJST AFT BoomMtl: HEAVY
Spreadrs: 2 Sets InrFsty: NONE
Runners: NONE Jumpers: NONE
Dates: AGE:1/1996 SERIES : 1/1994

COMMENTS
Certificate only valid in Norway

RATING OFFICE:
Issued: NORWEGIAN SAILING FED.
19/APR/06 Per Boymo
Measured: boeymo@online.no
01/APR/01 +4792226418

Revalidation Authority: NORC
Measurer: Boeymo

"I CERTIFY THAT I UNDERSTAND MY RESPONSIBILITIES UNDER THE IMS."

OWNER:.....
Hall Torgersen

Borrowed inclinin and mast measurs from sistership

LIMITS AND REGULATIONS

Limit of Positive Stability: MEETS REQ
Minimum Displacem't 2650kg: MEETS REQ
Maximum Crew Weight: 627 kg.
Stability Index: 117.0
C/R HeavyItems Pitch Adjustm't 0.00050

Measurement Inventory: 01/APR/01
Accom Lgth: RACE= 10.1 C/R= 10.1
Accom Certificate: C/R DA= 0.65%
Plan Approval: YES
Anchor(s) Weight: 0 Dist: 0.00
Applied Age Allowance: 1.36%

NOTE TO OWNER: The range available to revise crew weight is 407- 752 kg.

TIME ALLOWANCES IN SEC/MI BY TRUE WIND VELOCITY & ANGLE (NOT WIND-AVERAGED)

Wind Velocity:	6kt	8kt	10kt	12kt	14kt	16kt	20kt	CHECKSUM
BEAT ANGLES:	43.8°	43.8°	41.6°	39.7°	38.7°	38.2°	38.1°	(283.9)
BEAT VMG:	1113.0	924.2	831.1	787.6	761.8	746.5	735.3	(5899.5)
52°:	719.5	603.6	559.4	537.3	522.9	514.9	508.5	(3966.1)
R 60°:	671.6	576.3	534.5	512.2	502.7	497.3	492.0	(3786.6)
E 75°:	631.6	555.6	513.9	493.7	482.4	475.7	466.7	(3619.6)
A 90°:	624.5	542.9	501.7	483.7	472.3	464.5	444.9	(3534.5)
C 110°:	650.7	558.9	510.7	487.1	466.5	446.1	421.4	(3541.4)
H 120°:	697.1	580.0	526.1	494.8	474.5	451.8	413.0	(3637.3)
135°:	800.8	642.9	564.4	517.8	492.1	472.2	429.7	(3919.9)
150°:	957.2	750.9	628.0	562.3	518.8	493.4	452.8	(4363.4)
RUN VMG:	1105.3	867.1	724.6	629.8	571.4	529.1	482.3	(4909.6)
GYBE ANGLES:	143.4°	150.0°	151.9°	164.6°	171.7°	172.6°	176.7°	(1130.9)

NOTE: To convert any time allowance above to speed in knots: Kt = 3600/TA

TIME ALLOWANCES FOR SELECTED COURSES (AFTER WIND-AVERAGING)

Wnd/Lwd VMG	1130.6	910.1	789.5	718.3	674.3	645.0	616.0	(5483.8)
CircularRandom	916.2	740.4	646.5	591.9	558.4	536.3	508.5	(4498.2)
Ocean for PCS	1036.8	813.5	687.3	608.9	556.6	519.5	468.0	(4690.6)
Non-Spinnaker	979.7	784.6	678.6	616.2	577.4	552.4	522.5	(4711.4)

SIMPLIFIED SCORING OPTIONS

	Time-on-Distance (sec/mi)	Time-on-Time TMF	Performance Line PLT	PLD	
OFFSHORE	666.2 (=GPH)	0.9006 (=600/GPH)	0.714	71.1	(Ocean)
INSHORE	744.9 (=ILC)	0.9062 (=675/ILC)	0.982	329.7	(Olympic)

Performance Line Corrected Time = (PLT x Elapsed Time)-(PLD x Distance)

TRI-NUMBER TMFS BY WIND RANGE

WINDWARD /LEEWARD	Low	Medium	High
	0.6734	0.9161	1.0645

CIRCULAR RANDOM	Low	Medium	High
	0.8849	1.1432	1.2828

CENTERBOARD AND DRAFT

ECM	0.000	CBRC	0.000	CBMC	0.000	CBTC	0.000
WCBA	0.0	CBDA	0.000	KCDA	0.000	ECE	0.000
WCBB	0.0	CBDB	0.000	ENDPLATE ADJ (KEDA)			0.000

PROPELLER AND INSTALLATION

PRD 0.410 ST1 0.042 ST4 0.103 ST5 0.277 EDL 2.050

PIPA 0.0033 ST4MAX 0.103

FLOTATION DATA

FFPS	1.164	AFPS	0.893	SFFP	0.513	SAFP	9.213
FFM	1.155	FAM	0.975	FFPV	0.000	AFPV	0.000
FF	1.160	FA	0.978			SG	1.011

STABILITY DATA

W1	15.000	PD1	37.000	PLM	1512.000	PL	1508.401
W2	30.000	PD2	74.000	GSA	12.600	RSA	5281.0
W3	45.000	PD3	110.000	SMB	6.512	WD	9.770
W4	60.000	PD4	147.000	RM	105.4	RMC	105.4
RM2	110.0	RM20	96.9	RM40	77.0	RM60	53.3
RM90	21.9	WBV	0.0	CREW ARM (CRA)			1.610

CALCULATED LIMIT OF POSITIVE STABILITY: 115.8 DEGREES
RATIO STABILITY CURVE AREAS, POSITIVE/NEGATIVE 2.477

HYDROSTATICS		MEASUREMENT TRIM		SAILING TRIM	
KEEL DRAFT	(DHK0)	1.834	(DHKA)		1.880
2ND MOMENT LENGTH	(LSM0)	9.208	(LSM1)		9.423
DISPLACEMENT (WEIGHT)	(DSPM)	4742	(DSPS)		5571
WETTED SURFACE	(WSM)	23.08	(WSS)		24.52
VCG FROM OFFSETS DATUM (For CLUB RM)			(VCGD)		-0.019
VCG FROM MEASUREMENT TRIM WATERLINE			(VCGM)		0.027
INTEGRATED BEAM ATTENUATED WITH DEPTH			(B)		2.831
MAXIMUM SECTION AREA			(AMS1)		1.096
BEAM/DEPTH RATIO			(BTR)		4.810
EFFECTIVE DRAFT			(D)		1.612
2° HEEL (LSM2)	9.424	25° HEEL	(LSM3)		9.472
SUNK (LSM4)	10.321	AVG LENGTH	(L)		9.316
TRIM: 1mm/8.190m-kg		SINK:	1mm/17.195kg		

SAIL AREAS: MAIN+FORE+MIZZEN: 55.64 MAIN: 33.32
GENOA: 35.00 SYM: 77.78 ASYM: 0.00 MIZ'N: 0.00

FORETRIANGLE

IG	12.580	J	3.530	HB	0.115	TH	NO
MW	0.166	FSP	0.070	MGT	0.00	TL	1.600
GO	0.185	LPG	5.26	MGU	1.45	MDT1	0.166
ISP	13.185	LP	5.33	MGM	2.63	MDL1	0.105
IM	12.648	JL	13.19	MGL	3.60	MDT2	0.105
HBI	1.026	JR	0.00	MSW	0.0	MDL2	0.125
SFJ	0.310			P	13.150	MWT	0.0
SPL	3.545	TPS	0.000	E	4.570	MCG	0.000
SL	12.94	ASL		EC	4.570	BD	0.000
SMW	6.36	AMG		BAS	1.725	CPW	0.000
SF		ASF		SPS	2.130	BAL	0.000

MAIN & SPARS

MIZZEN

IY	0.000	PY	0.000	HBY	0.000	TLY	0.000
EB	0.000	EY	0.000	MGTY	0.000	MDT1Y	0.000
YSD	0.00	ECY	0.000	MGUY	0.000	MDL1Y	0.000
YSF	0.00	BASY	0.000	MGMY	0.000	MDT2Y	0.000
YSMG	0.00	BALY	0.000	MGLY	0.000	MDL2Y	0.000
		HBIY	0.000	BDY	0.000		