POLAR DIAGRAM (NONSPINNAKER)

BOAT SPEED AS A FUNCTION OF
TRUE WIND VELOCITY & ANGLE

Yacht

BNT42IK
Masthead Sloop, 155% Jib, Keel
Folding Exposed Prop

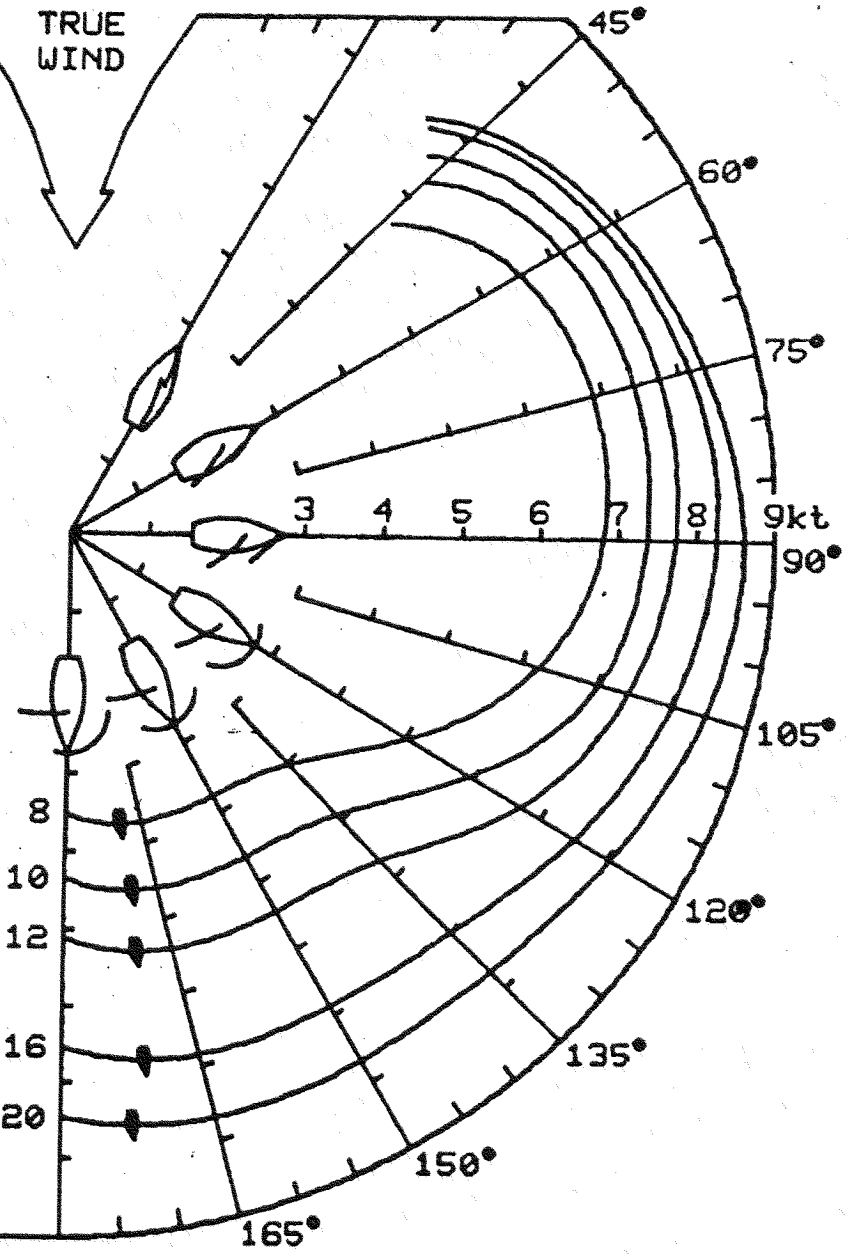
WIND	OPTIMUM VMG BEAT	OPTIMUM VMG RUN	OPTIMUM RUN ∠
8kt	3.913	3.627	169°
10kt	4.461	4.472	169°
12kt	4.810	5.267	170°
16kt	5.170	6.693	171°
20kt	5.298	7.555	173°

Notes:

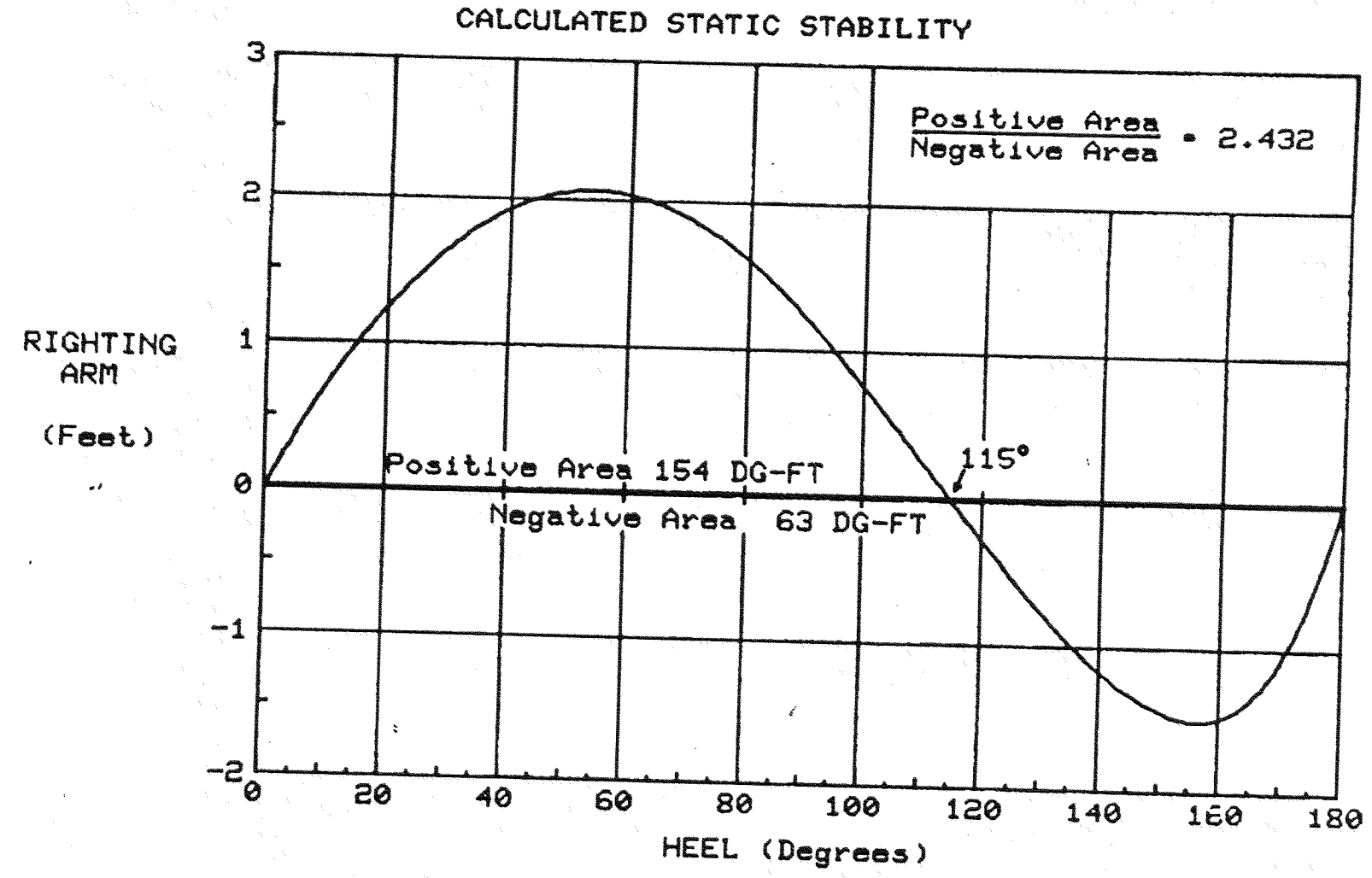
Boat-speed curves are given at five different true wind velocities as shown at right:

◥ = optimum run angle.

Run: 9/13/88 18: 2:11 Cert 28698



NON SPINNAKER



Yacht

BNT42IK

Run: 9/ 1/88 13: 9:53 Cert 28698

USYRU IMS AMENDED NOVEMBER 1987
LPP - RUN: 8/31/88 12:24:24

CERT# 28698

YACHT:

CLASS: BNT42IK

HYDROSTATICS & THEORETIC STABILITY

VCG = VERTICAL CENTER GRAVITY
VCB = VERTICAL CENTER BUOYANCY
LCB = LONGITUDINAL CENTER BUOYANCY

HYDROSTATIC DATA

FLOTATION CONDITION:	--- MEAS TRIM --- (NO CREW WGT)		------ SAILING TRIM ------ (WITH CREW WEIGHT)			
HEEL IN DEGREES:	0	2	0	2	25	0
DISPL'T LBS-SW:	21516	21516	24073	24074	24073	45443
WETTED AREA:	372.3	372.2	389.2	389.1	379.8	495.5
RIGHTING MOM'T/DEG:	1496	1496	1561	1561	1407	0
VCG ABOVE MEASM'T WL:	.01	.01	.32	.32	.32	.32
VCB ABOVE MEASM'T WL:	-.96	-.97	-.85	-.85	-1.78	-.09
LCB AFT OF STEM:	22.40	22.40	22.85	22.85	22.85	23.57
PRISMATIC COEF:	.494	.494	.509	.509	.502	.530
2ND MOMENT WL LENGTH:	35.01	35.01	35.35	35.35	34.69	39.45

THEORETIC STABILITY

HEEL IN DEGREES	RT ARM IN FT	RANGE OF POSITIVE STABILITY
25	1.461	
60	2.043	0 - 115
90	1.220	DEGREES
120	-.276	
150	-1.442	
165	-1.359	

AREA POS STAB CURVE: 154 DG-FT
AREA NEG STAB CURVE: 63 DG-FT

POS AREA / NEG AREA: 2.433

EFFECTIVE BEAM:	11.025
BEAM/DEPTH RATIO:	3.980
KEEL DRAFT:	7.418
CENTERBOARD EXTENSION:	.000
POUNDS PER INCH OF IMMERSION:	1335
MOMENT TO CHANGE TRIM 1 INCH:	2145

IMS AMENDED NOVEMBER 1987
VPP - RUN: 9/13/88 17: 8:40

NON-SPINNAKER VELOCITY PREDICTION

CERT# 28698

SPEED, HEEL ANGLE, REEF, SAIL FLATTENING AND LIFT COEFFICIENTS BY SAILING ANGLE & WIND STRENGTH.

CLASS: BNT42IK

RIG: SLOOP
PROP: FOLDING
INST: OUT OF APERTURE

VTW = TRUE WIND VELOCITY
BTW = TRUE WIND ANGLE
VAW = APPARENT WIND VELOCITY
BAW = APPARENT WIND ANGLE
V = BOAT SPEED
VMG = VELOCITY MADE GOOD
HEEL = HEEL ANGLE IN DEGREES
REEF = % OF SAIL AREA REMAINING
FLAT = % OF FULL DRAFT REMAINING
CL = COEFFICIENT OF LIFT

VTW	BTW	VAW	BAW	V	VMG	HEEL	REEF	FLAT	CL
8.0	45.2	12.29	26.1	5.549	3.913	11.5	1.000	1.000	2.008
8.0	52.0	12.46	28.8	6.128	3.773	11.9	1.000	1.000	2.012
8.0	60.0	12.37	32.3	6.564	3.282	11.5	1.000	1.000	2.017
8.0	70.0	11.92	37.2	6.822	2.333	9.9	1.000	1.000	2.017
8.0	80.0	11.23	42.7	6.897	1.198	7.8	1.000	1.000	1.998
8.0	90.0	10.34	48.7	6.823	.000	5.3	1.000	1.000	1.938
8.0	110.0	8.00	66.4	5.877	-2.810	2.6	1.000	1.000	1.535
8.0	120.0	6.86	80.5	5.039	-2.520	1.7	1.000	1.000	1.181
8.0	135.0	5.72	105.0	4.039	-2.856	1.1	1.000	1.000	.632
8.0	150.0	4.92	127.4	3.776	-3.270	.8	1.000	1.000	.307
8.0	165.0	4.31	152.0	3.736	-3.608	.5	1.000	1.000	.091
8.0	169.1	4.24	159.6	3.694	-3.627	.4	1.000	1.000	.033
8.0	180.0	4.30	180.0	3.509	-3.509	-.1	1.000	1.000	-.100
10.0	44.5	14.65	26.1	6.253	4.461	18.5	1.000	.964	1.937
10.0	52.0	14.69	29.3	6.846	4.215	19.4	1.000	1.000	2.013
10.0	60.0	14.42	33.6	7.166	3.583	18.0	1.000	1.000	2.018
10.0	70.0	13.84	39.5	7.367	2.520	15.4	1.000	1.000	2.012
10.0	80.0	13.08	45.8	7.437	1.291	12.1	1.000	1.000	1.974
10.0	90.0	12.15	52.6	7.384	.000	8.4	1.000	1.000	1.872
10.0	110.0	9.77	69.5	6.756	-2.311	3.4	1.000	1.000	1.456
10.0	120.0	8.52	82.8	5.955	-2.978	2.3	1.000	1.000	1.126
10.0	135.0	7.18	106.0	4.925	-3.483	1.6	1.000	1.000	.615
10.0	150.0	6.19	128.0	4.649	-4.026	1.2	1.000	1.000	.302
10.0	165.0	5.45	152.4	4.605	-4.448	.7	1.000	1.000	.088
10.0	169.2	5.36	160.1	4.553	-4.472	.5	1.000	1.000	.033
10.0	180.0	5.43	180.0	4.330	-4.330	-.2	1.000	1.000	-.100

VTW	BTW	VAW	BAW	V	VMG	HEEL	REEF	FLAT	CL
12.0	42.4	15.73	25.7	6.511	4.810	21.6	1.000	.823	1.652
12.0	52.0	16.52	30.2	7.170	4.415	24.2	1.000	.918	1.849
12.0	60.0	16.05	34.4	7.468	3.734	24.9	1.000	1.000	2.016
12.0	70.0	15.47	41.1	7.693	2.631	21.1	1.000	1.000	2.007
12.0	80.0	14.73	48.2	7.791	1.353	16.7	1.000	1.000	1.945
12.0	90.0	13.82	55.9	7.751	.000	11.6	1.000	1.000	1.798
12.0	110.0	11.44	73.6	7.238	-2.476	4.2	1.000	1.000	1.353
12.0	120.0	10.17	85.2	6.715	-3.358	3.0	1.000	1.000	1.067
12.0	135.0	8.66	107.1	5.732	-4.053	2.1	1.000	1.000	.594
12.0	150.0	7.50	128.7	5.462	-4.730	1.7	1.000	1.000	.294
12.0	165.0	6.63	152.3	5.419	-5.235	1.0	1.000	1.000	.085
12.0	169.5	6.52	160.9	5.356	-5.267	.8	1.000	1.000	.023
12.0	180.0	6.61	180.0	5.113	-5.113	-.2	1.000	1.000	-.100
14.0	40.9	18.69	25.6	6.659	5.031	24.0	1.000	.708	1.420
14.0	52.0	18.27	31.2	7.359	4.531	26.6	1.000	.904	1.620
14.0	60.0	17.66	35.6	7.641	3.820	27.8	1.000	.892	1.801
14.0	70.0	16.80	41.9	7.902	2.703	27.2	1.000	1.000	2.002
14.0	80.0	16.19	50.0	8.051	1.398	21.4	1.000	1.000	1.918
14.0	90.0	15.40	58.5	8.040	.000	15.0	1.000	1.000	1.734
14.0	110.0	13.11	77.2	7.578	-2.592	5.3	1.000	1.000	1.263
14.0	120.0	11.82	88.3	7.177	-3.589	3.7	1.000	1.000	.992
14.0	135.0	10.16	108.2	6.488	-4.588	2.7	1.000	1.000	.575
14.0	150.0	8.83	129.3	6.242	-5.406	2.1	1.000	1.000	.287
14.0	165.0	7.85	153.2	6.201	-5.990	1.3	1.000	1.000	.082
14.0	169.6	7.72	161.3	6.129	-6.027	1.0	1.000	1.000	.020
14.0	180.0	7.82	180.0	5.853	-5.853	-.3	1.000	1.000	-.100
16.0	40.1	20.55	25.7	6.756	5.170	25.9	1.000	.615	1.234
16.0	52.0	19.95	32.0	7.482	4.606	28.8	1.000	.708	1.428
16.0	60.0	19.23	36.7	7.760	3.880	29.8	1.000	.789	1.592
16.0	70.0	18.18	43.1	8.030	2.746	30.2	1.000	.919	1.834
16.0	80.0	17.42	51.2	8.239	1.431	26.3	1.000	1.000	1.898
16.0	90.0	16.87	60.6	8.276	.000	18.5	1.000	1.000	1.681
16.0	110.0	14.76	80.2	7.860	-2.688	7.3	1.000	1.000	1.195
16.0	120.0	13.48	91.3	7.511	-3.756	4.7	1.000	1.000	.923
16.0	135.0	11.73	110.0	7.034	-4.973	3.5	1.000	1.000	.545
16.0	150.0	10.25	130.4	6.888	-5.965	2.7	1.000	1.000	.276
16.0	165.0	9.17	153.8	6.863	-6.629	1.7	1.000	1.000	.077
16.0	171.0	8.99	164.2	6.777	-6.693	1.2	1.000	1.000	-.000
16.0	180.0	9.07	180.0	6.552	-6.552	-.4	1.000	1.000	-.100
20.0	39.6	24.07	26.3	6.873	5.298	28.4	.961	.527	.976
20.0	52.0	23.16	33.7	7.627	4.696	30.3	.916	.686	1.161
20.0	60.0	22.30	39.0	7.916	3.958	30.3	.902	.792	1.297
20.0	70.1	21.09	46.0	8.207	2.867	31.0	.899	.937	1.492
20.0	80.0	19.83	53.6	8.459	1.469	31.3	.955	1.000	1.686
20.0	90.0	19.32	63.5	8.620	.000	26.0	1.000	1.000	1.609
20.0	110.0	17.93	84.7	8.324	-2.847	12.5	1.000	1.000	1.083
20.0	120.0	16.77	95.8	8.038	-4.019	8.0	1.000	1.000	.827
20.0	135.0	15.01	113.8	7.741	-5.474	5.8	1.000	1.000	.484
20.0	150.0	13.39	133.4	7.713	-6.679	4.1	1.000	1.000	.247
20.0	165.0	12.24	155.6	7.708	-7.445	2.5	1.000	1.000	.093
20.0	173.1	12.01	166.7	7.611	-7.555	1.5	1.000	1.000	-.031
20.0	180.0	12.06	180.0	7.478	-7.478	-.6	1.000	1.000	-.100