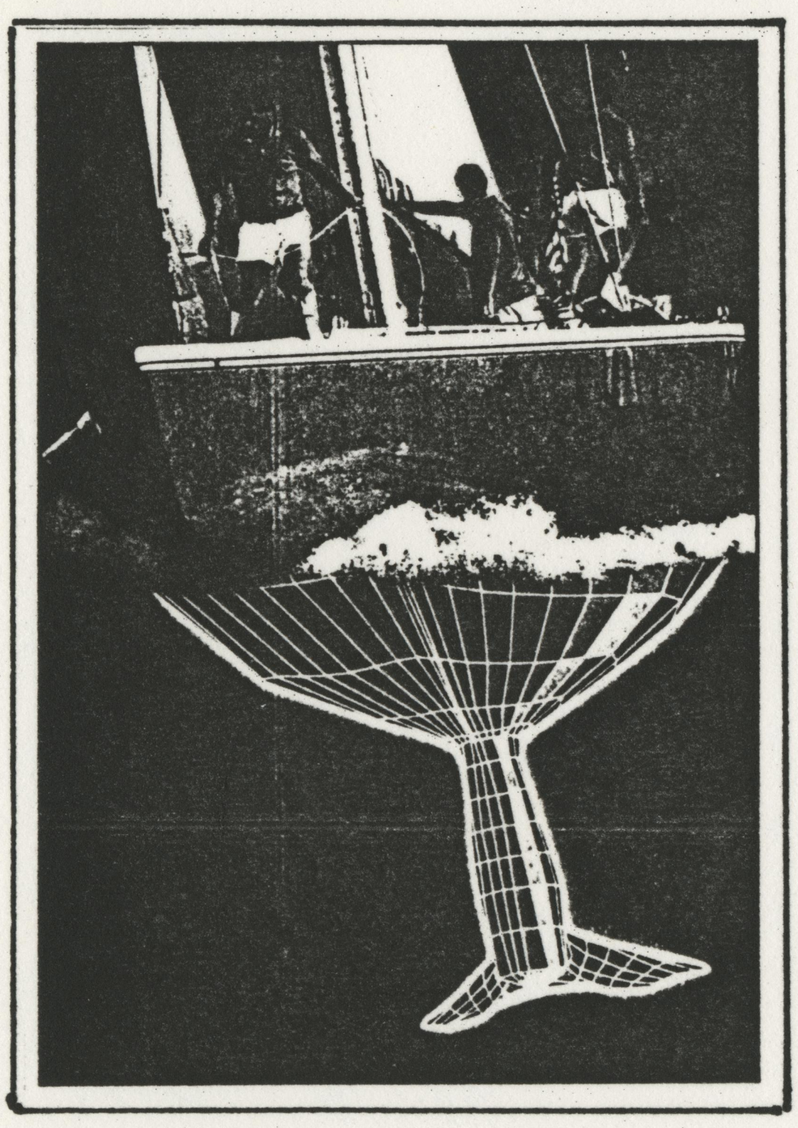
SAF SECRET

PERFORMANCE DATA HANDBOOK

SAF HAWAII FLEET



Prepared by

Clay Oliver • SAIC • Annapolis

January 15, 1986

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PREFACE

This handbook presents performance data for the boats in the Sail America Foundation Hawaii Fleet. Predictions are based on the best available experimental data modified to accurately model the boats as they are believed to be sailed. The boats in the SAF Fleet and their assumed configurations are shown in Table 1. Predictions are made with VPPX Version 1.2.

There are three sections in this handbook:

Section 1 - "Deltas"
Section 2 - Performance Numbers
Section 3 - Miscellaneous Data

The "Deltas" and Performance numbers are computed for smooth water and "standard rough" water conditions. (See Section 3 for rough water specs.) Section 3 also contains information about how a variation of righting moment, rated sail area, and parasite drag area affect performance.

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Table 1

ASSUMED NOMINAL CONFIGURATIONS

SAF HAWAII FLEET

BOAT	MWL (FT)	SAIL DSPL (LBS)	RMA2 FL/D	RSA (FT2)	J (FT)	E (FT)	REMARKS
S-86	47.96	69572	6141	1601	21.87	26.37	Not a 12M
S-85-1C	47.79	68497	6000	1624	22.18	26.76	Not a 12M
S-85-1A	47.79	69842	6650	1630	22.26	26.86	
S-83(H)	46.35	59730	5135	1764	24.00	29.14	1330 Ballast Increment
LIBERTY	45.53	60530	4667	1764	24.00	29.11	

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NOTES

1. The predictions for S-83 in this handbook assume she is heavy from her nominal condition by 1330 lbs and she is designated S-83(H).

2. The righting moment for S-83(H) is based on data taken from the S-83 Inclining Experiment of 11/23/85, with a correction made for additional ballast. Her actual righting moment is significantly less than had been originally estimated. (RMA2 = 5650 changed to 5135.)

3. Keep in mind that S-86 and S-85-1C are not 12 meters.

4. The predictions for S-86 are based on model tests SAF028, which had some unexpected excess drag. The actual boat represents some modifications to the model that may significantly improve her performance from that shown here.

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SECTION 1

DELTAS

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"DELTAS"

S-85-1C vs S-83 (H)

SEA STATE Smooth

Positive delta means S-85 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	0.4	-25.3	-11.5	-214.2
9	2.0	-20.6	-8.6	-149.0
10	3.8	-16.4	-6.1	-86.1
11	5.8	-12.7	-4.0	-25.3
12	8.1	-9.5	-2.3	33.2
13	10.6	-6.8	-0.9	89.5
14	12.8	-4.6	0.0	137.8
15	14.3	-2.8	0.6	172.5
16	15.2	-1.5	0.9	193.5
17	15.3	-0.6	0.8	200.9
18	15.2	-0.1	0.6	201.3
19	15.1	0.2	0.4	201.3
20	15.1	0.4	0.2	201.0
21	15.1	0.3	0.1	200.4
22	15.1	0.2	-0.0	199.5
23	15.2	0.0	-0.1	198.4
24	15.2	-0.2	-0.2	197.1
25	15.2	-0.4	-0.2	195.6
26	15.2	-0.6	-0.3	193.9
27	15.2	-0.9	-0.3	192.0
28	15.2	-1.2	-0.3	189.9
29	15.1	-1.5	-0.2	187.7
30	15.1	-1.8	-0.2	185.2

1. Positive deltas mean S851C.FTS is ahead and SPIRITH.FTS is behind.
2. VT is true windspeed in knots at 87 ft.

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"DELTAS"

S-85-1C VS S-83 (H)

SEA STATE Std Rough

Positive delta means S-85 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	-1.5	-25.3	-11.5	-238.7
9	-0.5	-20.6	-8.6	-181.2
10	1.0	-16.4	-6.1	-123.3
11	2.8	-12.7	-4.0	-64.9
12	5.1	-9.5	-2.3	-6.2
13	7.8	-6.8	-0.9	52.9
14	10.5	-4.6	0.0	108.1
15	13.0	-2.8	0.6	155.1
16	15.2	-1.5	0.9	194.0
17	17.2	-0.6	0.8	224.7
18	18.7	-0.1	0.6	247.6
19	19.8	0.2	0.4	262.9
20	20.4	0.4	0.2	270.6
21	20.5	0.3	0.1	270.7
22	20.3	0.2	-0.0	267.2
23	20.2	0.0	-0.1	263.8
24	20.0	-0.2	-0.2	260.7
25	19.9	-0.4	-0.2	257.7
26	19.9	-0.6	-0.3	254.9
27	19.8	-0.9	-0.3	252.3
28	19.7	-1.2	-0.3	249.9
29	19.7	-1.5	-0.2	247.6
30	19.7	-1.8	-0.2	245.5

1. Positive deltas mean S851C.FTR is ahead and SPIRITH.FTR is behind.
2. VT is true windspeed in knots at 87 ft.

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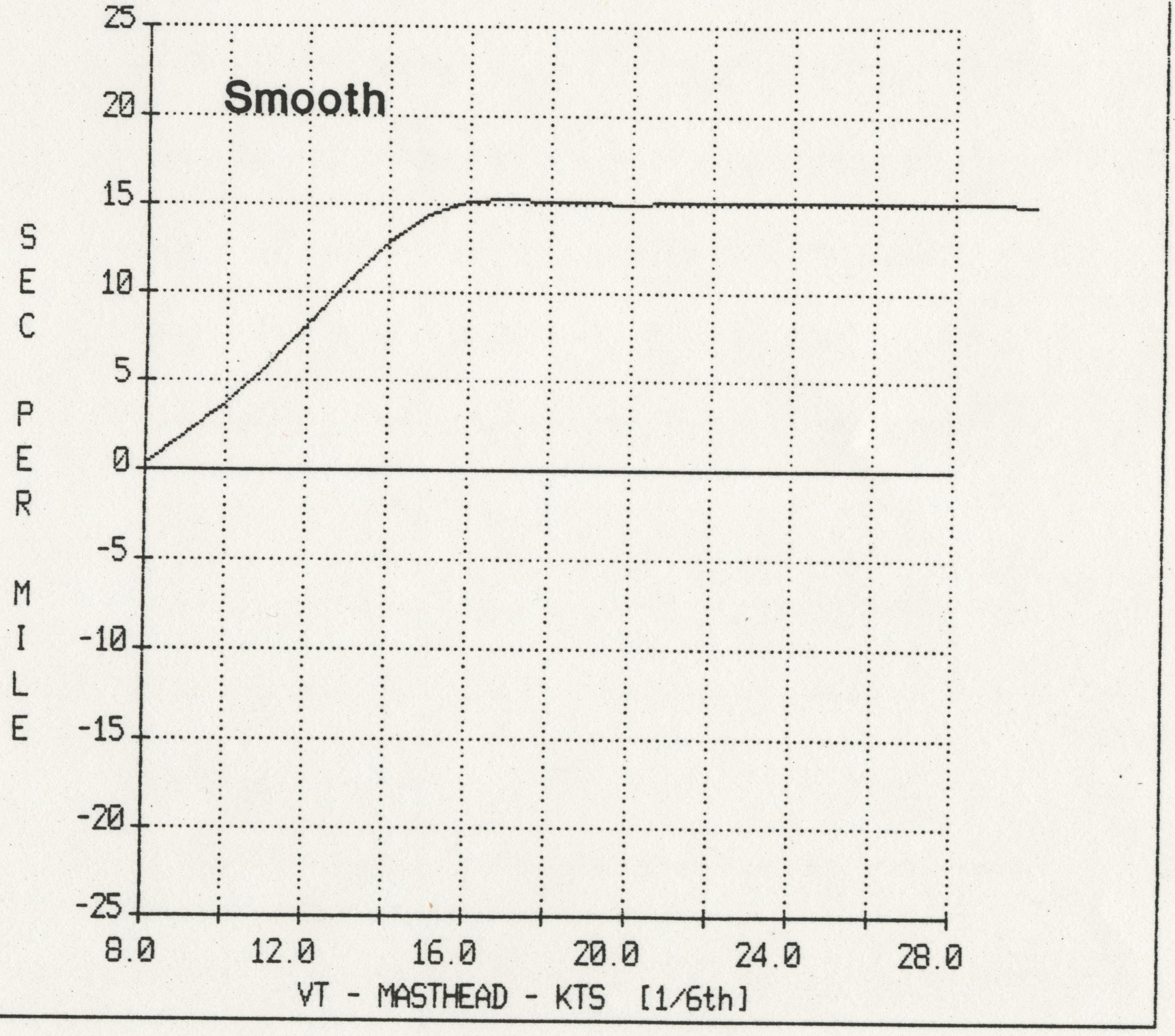
UPWIND DELTAS - S851C VS SPIRITH (+ values means S851C leads)



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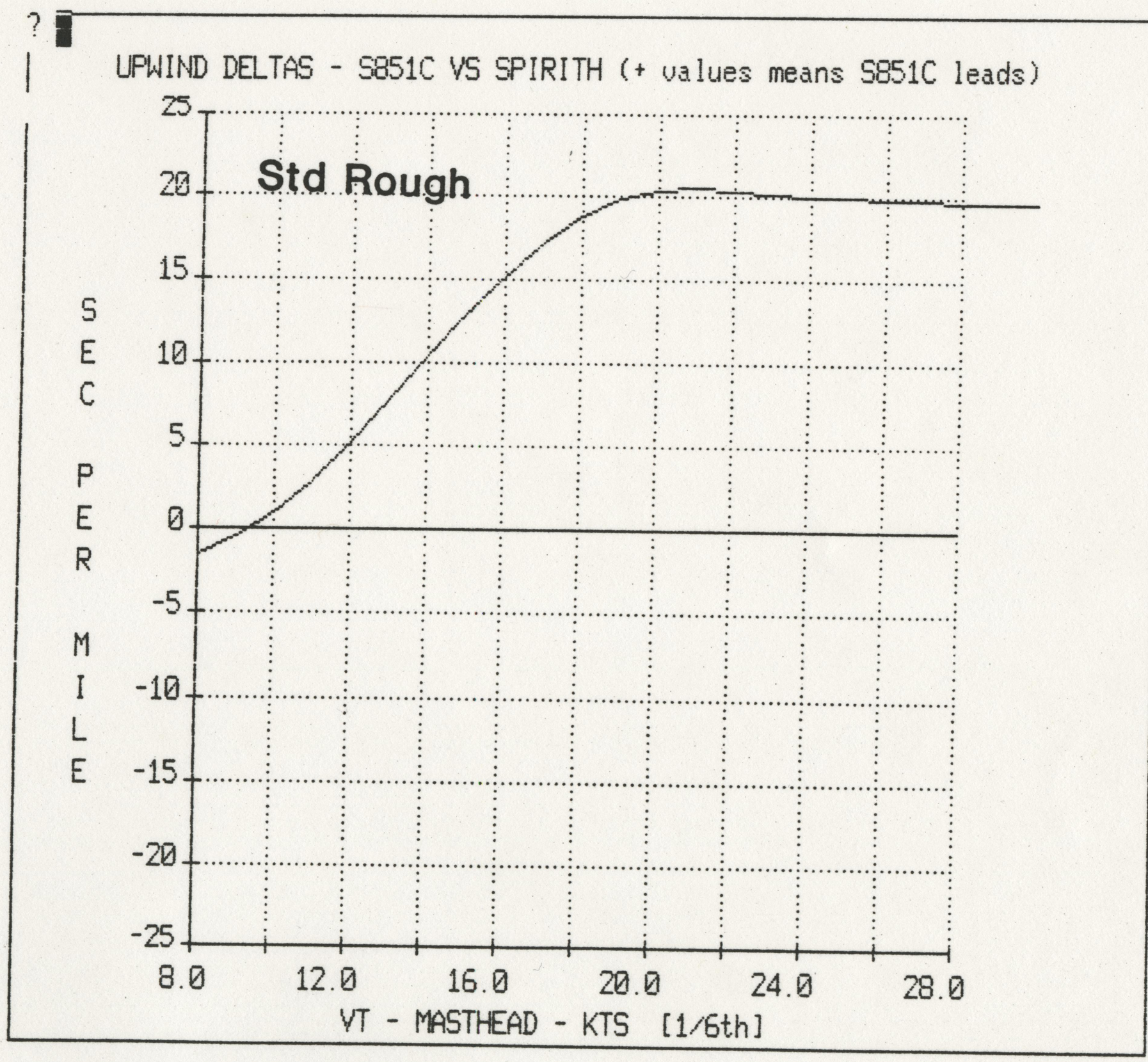

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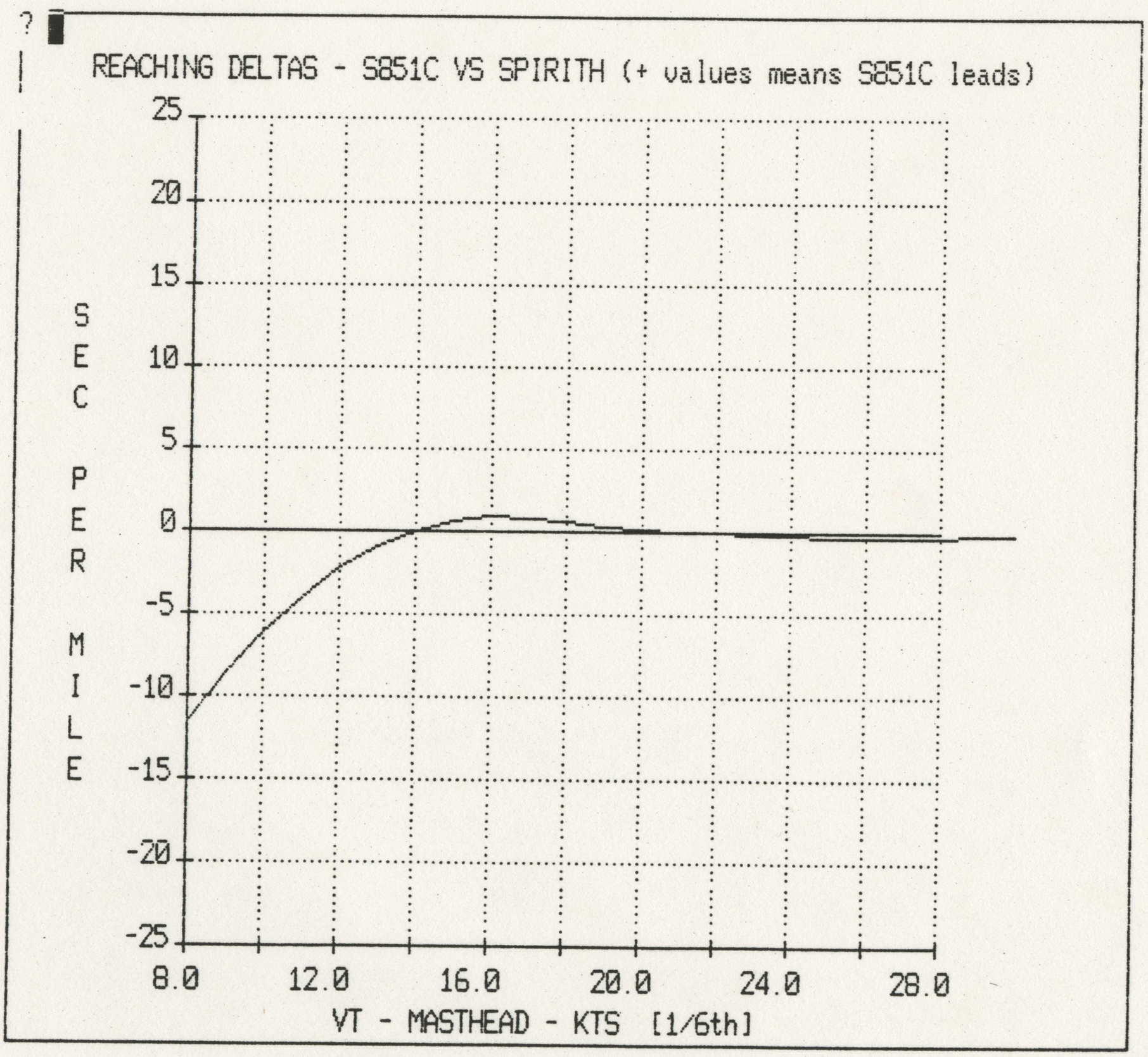

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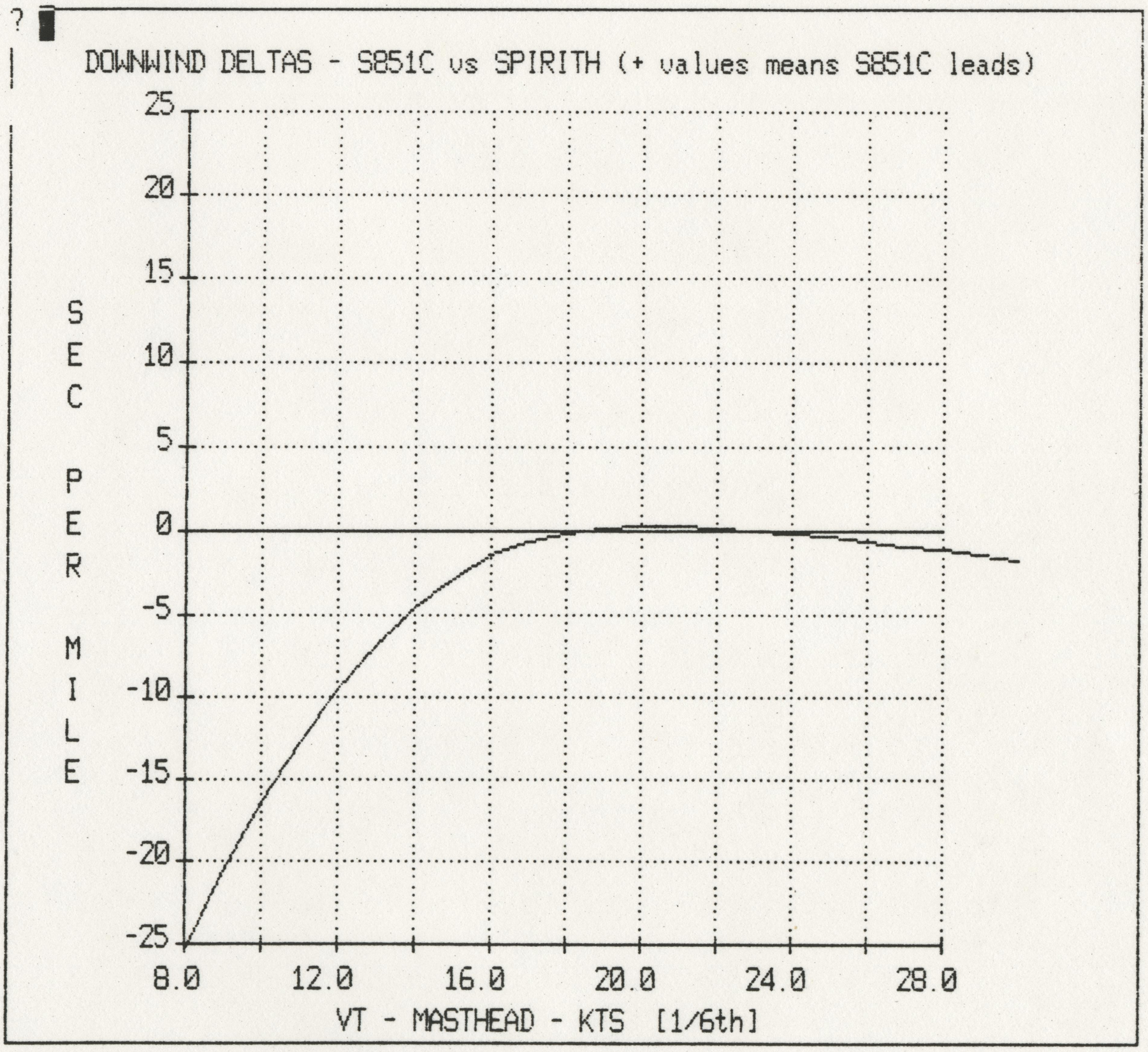

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"DELTAS"

S-86 vs S-85-1C

SEA STATE Smooth

Positive delta means S-86 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	-30.4	-28.6	-15.9	-658.9
9	-29.4	-29.0	-14.0	-639.7
10	-27.3	-27.8	-11.9	-595.4
11	-24.2	-25.2	-9.5	-525.9
12	-19.9	-21.1	-6.9	-431.3
13	-14.6	-15.5	-4.1	-311.6
14	-9.4	-9.8	-1.5	-193.9
15	-5.4	-5.6	0.4	-105.5
16	-2.7	-2.8	1.7	-46.3
17	-1.3	-1.5	2.2	-16.3
18	-0.6	-0.8	2.4	-1.5
19	0.1	-0.2	2.7	12.2
20	0.7	0.3	3.0	24.6
21	1.1	0.8	3.3	35.9
22	1.6	1.3	3.6	46.1
23	2.0	1.7	3.9	55.3
24	2.3	2.1	4.0	63.3
25	2.7	2.5	4.1	70.3
26	3.0	2.8	4.1	76.3
27	3.2	3.0	4.1	81.1
28	3.5	3.2	3.9	84.9
29	3.7	3.4	3.7	87.6
30	3.9	3.5	3.4	89.3

1. Positive deltas mean S86.FTS is ahead and S851C.FTS is behind.
2. VT is true windspeed in knots at 87 ft.

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"DELTAS"

S-86 vs S-85-1C

SEA STATE Std Rough

Positive delta means S-86 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	-34.6	-28.6	-15.9	-714.4
9	-35.0	-29.0	-14.0	-713.5
10	-34.0	-27.8	-11.9	-682.3
11	-31.4	-25.2	-9.5	-620.9
12	-27.4	-21.1	-6.9	-529.1
13	-21.9	-15.5	-4.1	-407.1
14	-16.1	-9.8	-1.5	-282.6
15	-11.3	-5.6	0.4	-183.4
16	-7.5	-2.8	1.7	-109.6
17	-4.7	-1.5	2.2	-61.0
18	-2.6	-0.8	2.4	-27.6
19	-0.8	-0.2	2.7	0.8
20	0.6	0.3	3.0	24.2
21	1.7	0.8	3.3	42.7
22	2.5	1.3	3.6	57.9
23	3.2	1.7	3.9	71.6
24	3.9	2.1	4.0	83.9
25	4.5	2.5	4.1	94.7
26	5.1	2.8	4.1	104.0
27	5.6	3.0	4.1	111.8
28	6.0	3.2	3.9	118.1
29	6.4	3.4	3.7	123.0
30	6.7	3.5	3.4	126.4

1. Positive deltas mean S86.FTR is ahead and S851C.FTR is behind.
2. VT is true windspeed in knots at 87 ft.

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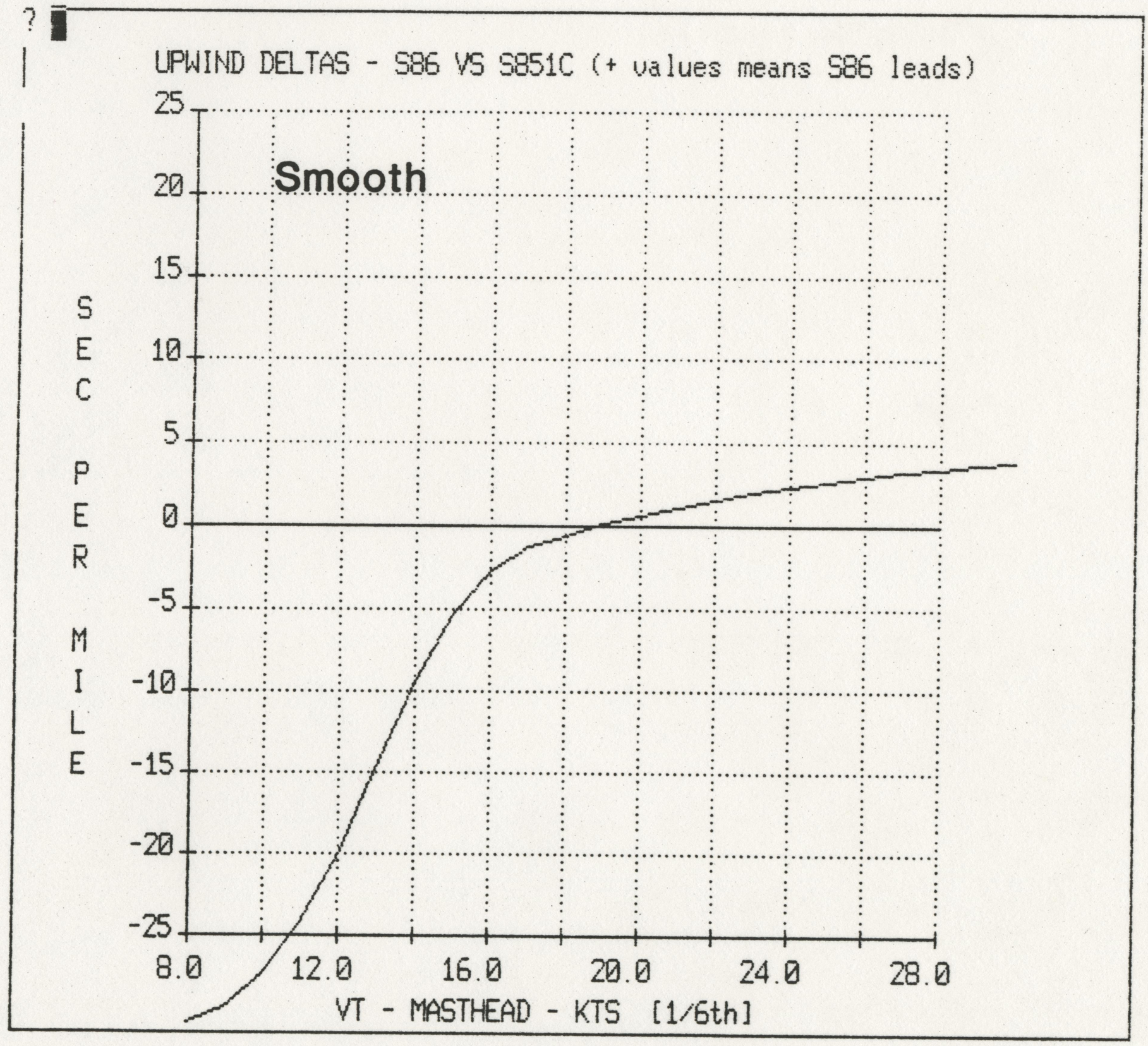

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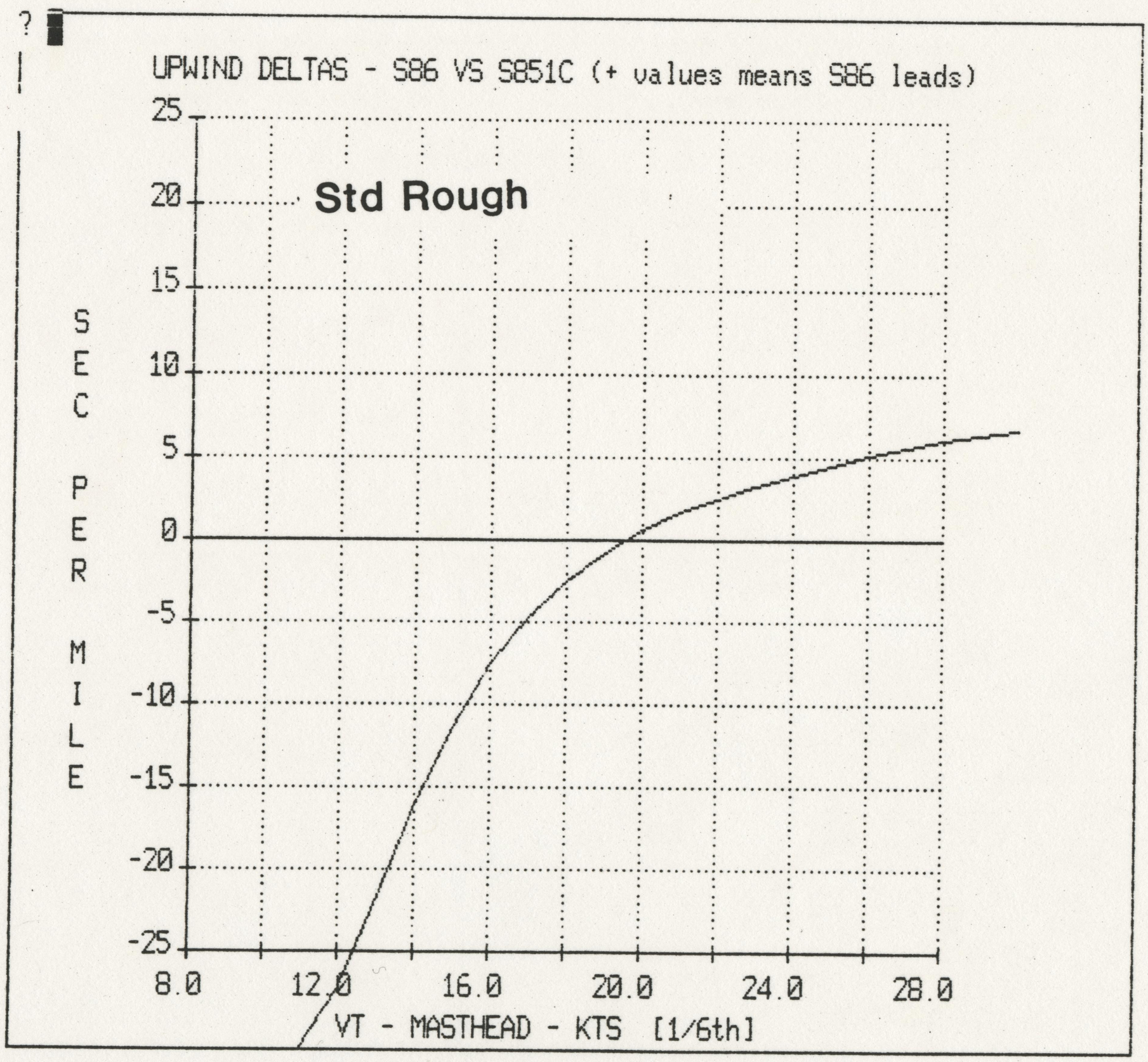

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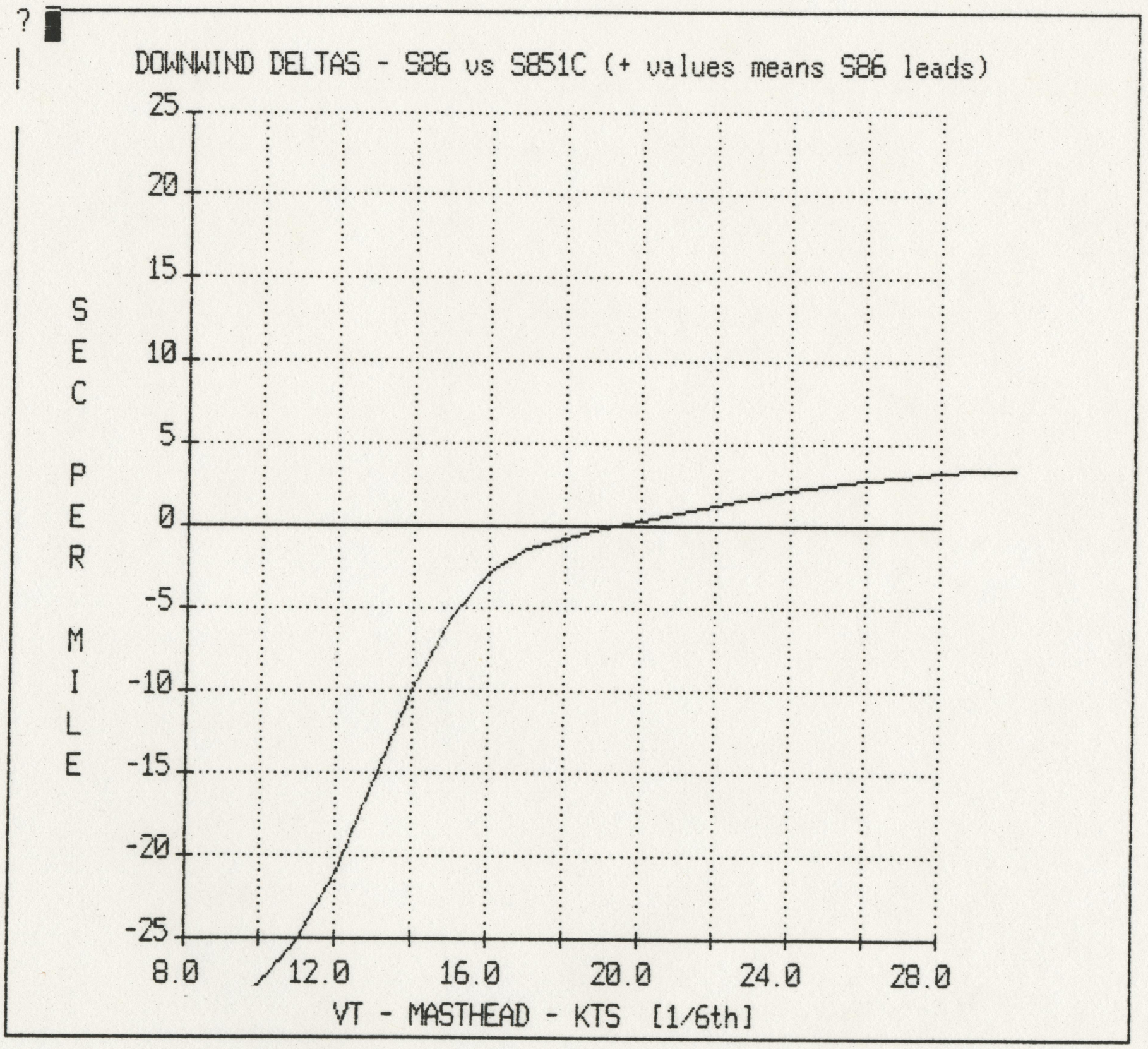

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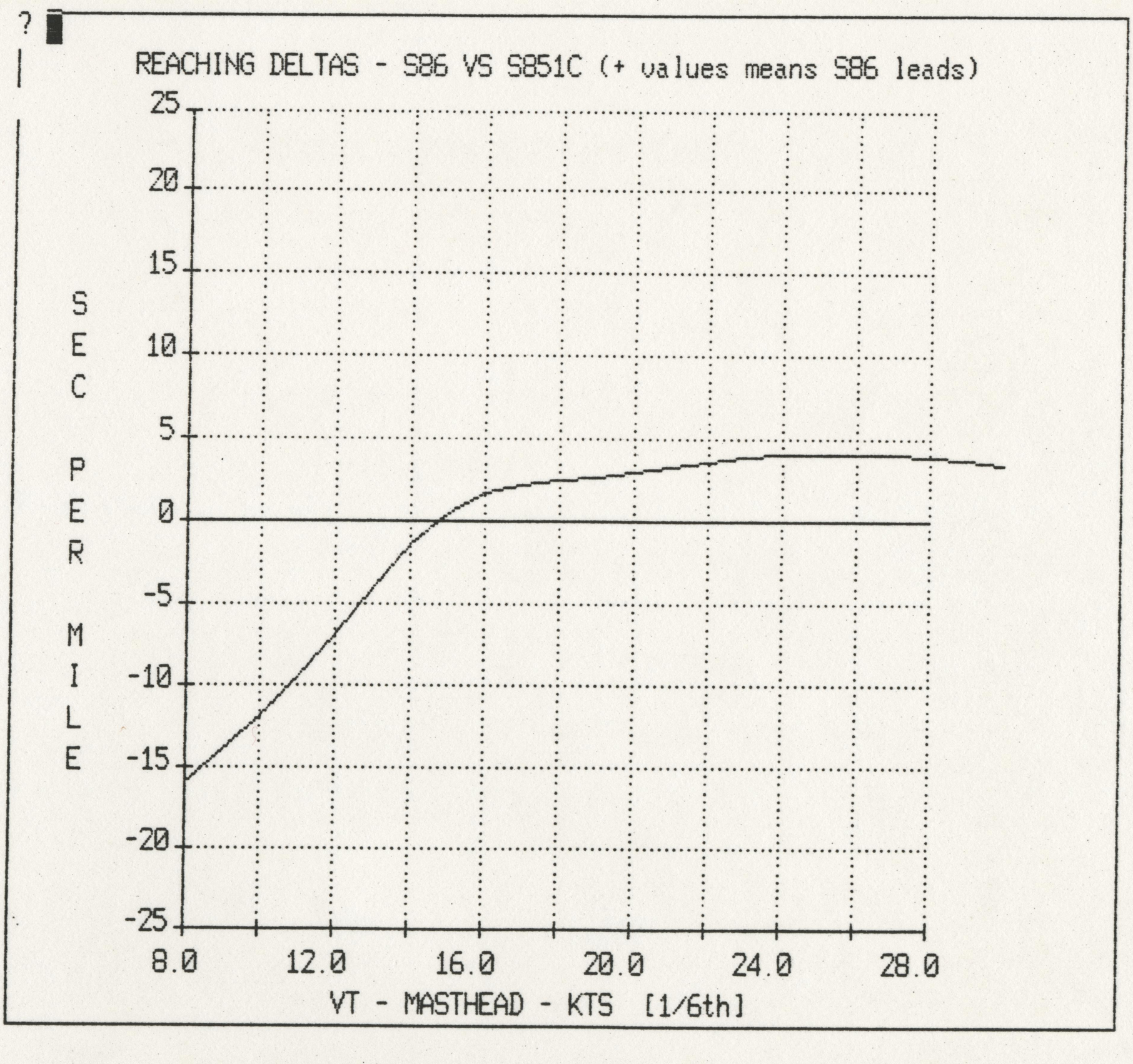

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"DELTAS"

S-85-1A vs S-83 (H)

SEA STATE Smooth

Positive delta means S-85 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	-24.6	-31.1	-20.4	-620.4
9	-18.5	-26.7	-15.4	-488.3
10	-13.0	-22.5	-11.2	-368.9
11	-8.0	-18.5	-7.8	-262.2
12	-3.6	-14.7	-5.2	-168.2
13	0.2	-11.1	-3.4	-86.9
14	3.3	-8.0	-2.3	-20.4
15	5.6	-5.6	-1.5	29.3
16	7.1	-3.8	-1.1	62.0
17	7.7	-2.8	-1.2	77.9
18	8.0	-2.1	-1.3	85.0
19	8.3	-1.7	-1.5	91.2
20	8.7	-1.5	-1.5	96.5
21	9.0	-1.6	-1.4	101.0
22	9.3	-1.7	-1.3	104.8
23	9.6	-1.8	-1.2	108.4
24	9.9	-1.9	-1.1	111.8
25	10.1	-2.1	-0.9	114.8
26	10.3	-2.2	-0.7	117.6
27	10.5	-2.3	-0.5	120.1
28	10.7	-2.5	-0.3	122.4
29	10.8	-2.6	-0.0	124.3
30	10.9	-2.8	0.3	126.0

1. Positive deltas mean S851A.FTS is ahead and SPIRITH.FTS is behind.
2. VT is true windspeed in knots at 87 ft.

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"DELTAS"

S-85-1A vs S-83 (H)

SEA STATE Std Rough

Positive delta means S-85 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	-27.3	-31.1	-20.4	-656.5
9	-22.1	-26.7	-15.4	-535.9
10	-17.2	-22.5	-11.2	-424.8
11	-12.7	-18.5	-7.8	-323.2
12	-8.4	-14.7	-5.2	-231.1
13	-4.5	-11.1	-3.4	-148.4
14	-0.9	-8.0	-2.3	-75.0
15	2.5	-5.6	-1.5	-10.6
16	5.7	-3.8	-1.1	44.8
17	8.8	-2.8	-1.2	91.2
18	11.4	-2.1	-1.4	128.7
19	13.4	-1.7	-1.5	157.5
20	14.8	-1.5	-1.5	177.5
21	15.7	-1.6	-1.4	188.8
22	16.2	-1.7	-1.4	195.7
23	16.8	-1.8	-1.2	202.4
24	17.3	-1.9	-1.1	208.9
25	17.8	-2.1	-0.9	215.4
26	18.3	-2.2	-0.7	221.7
27	18.7	-2.3	-0.5	227.9
28	19.2	-2.5	-0.3	233.9
29	19.6	-2.6	-0.0	239.9
30	20.0	-2.8	0.3	245.7

1. Positive deltas mean S851A.FTR is ahead and SPIRITH.FTR is behind.
2. VT is true windspeed in knots at 87 ft.

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"DELTAS"

S-85-1A vs LIBERTY

SEA STATE Smooth

Positive delta means S-85 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	-34.4	-47.4	-35.3	-925.2
9	-20.8	-37.3	-24.4	-630.8
10	-9.6	-28.7	-15.6	-385.8
11	-0.6	-21.5	-9.0	-190.3
12	6.0	-15.7	-4.4	-44.2
13	10.4	-11.4	-1.9	52.6
14	13.3	-8.2	-0.7	116.9
15	15.4	-5.5	0.1	166.0
16	16.8	-3.5	0.5	199.7
17	17.5	-2.2	0.6	218.2
18	17.9	-1.3	0.5	228.3
19	18.3	-0.6	0.4	237.2
20	18.7	-0.3	0.4	244.7
21	19.1	-0.2	0.4	250.9
22	19.5	-0.3	0.4	256.3
23	20.0	-0.4	0.5	261.2
24	20.3	-0.5	0.5	265.6
25	20.7	-0.7	0.6	269.6
26	21.0	-0.9	0.7	273.2
27	21.3	-1.1	0.8	276.3
28	21.6	-1.4	0.9	278.9
29	21.9	-1.7	1.1	281.1
30	22.1	-2.0	1.2	282.9

1. Positive deltas mean S851A.FTS is ahead and LIBERTY.FTS is behind.
2. VT is true windspeed in knots at 87 ft.

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"DELTAS"

S-85-1A vs LIBERTY

SEA STATE Std Rough

Positive delta means S-85 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	-37.7	-47.4	-35.3	-969.4
9	-24.9	-37.3	-24.4	-684.7
10	-13.9	-28.7	-15.7	-442.6
11	-4.6	-21.5	-9.0	-243.0
12	2.9	-15.7	-4.4	-86.1
13	8.6	-11.4	-1.9	28.3
14	13.2	-8.2	-0.7	116.8
15	17.7	-5.5	0.1	196.2
16	21.9	-3.5	0.5	266.3
17	25.8	-2.2	0.6	327.4
18	29.3	-1.3	0.5	378.6
19	32.2	-0.6	0.4	419.6
20	34.4	-0.3	0.4	450.3
21	35.9	-0.2	0.4	470.6
22	37.0	-0.3	0.4	485.5
23	38.2	-0.4	0.4	499.9
24	39.3	-0.5	0.5	513.8
25	40.3	-0.7	0.6	527.2
26	41.4	-0.9	0.7	540.0
27	42.4	-1.1	0.8	552.3
28	43.4	-1.4	0.9	564.1
29	44.3	-1.7	1.1	575.3
30	45.3	-2.0	1.2	586.1

1. Positive deltas mean S851A.FTR is ahead and LIBERTY.FTR is behind.
2. VT is true windspeed in knots at 87 ft.

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"DELTAS"

S-85-1C vs S-85-1A

SEA STATE Smooth

Positive delta means S-85 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
8	25.0	5.8	8.9	407.0
9	20.5	6.1	6.8	339.8
10	16.8	6.0	5.1	283.2
11	13.9	5.7	3.8	237.1
12	11.7	5.2	3.0	201.5
13	10.4	4.3	2.5	176.4
14	9.5	3.5	2.3	158.2
15	8.8	2.8	2.2	143.2
16	8.1	2.4	2.1	131.5
17	7.6	2.1	2.0	123.0
18	7.2	2.0	1.9	116.3
19	6.8	2.0	1.8	110.2
20	6.4	1.9	1.7	104.6
21	6.1	1.9	1.5	99.5
22	5.8	1.9	1.3	94.7
23	5.6	1.8	1.1	90.0
24	5.3	1.8	0.9	85.4
25	5.1	1.7	0.7	80.8
26	4.9	1.6	0.5	76.3
27	4.7	1.5	0.3	71.9
28	4.5	1.3	0.0	67.6
29	4.3	1.2	-0.2	63.3
30	4.2	1.0	-0.4	59.2

1. Positive deltas mean S851C.FTS is ahead and S851A.FTS is behind.
2. VT is true windspeed in knots at 87 ft.

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"DELTAS"

S-85-1C vs S-85-1A

SEA STATE Std Rough

Positive delta means S-85 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
8	25.8	5.8	8.9	417.7
9	21.6	6.1	6.8	354.7
10	18.2	6.0	5.1	301.5
11	15.5	5.7	3.8	258.2
12	13.5	5.2	3.0	224.8
13	12.3	4.3	2.5	201.3
14	11.4	3.5	2.3	183.1
15	10.5	2.8	2.2	165.7
16	9.5	2.4	2.1	149.2
17	8.4	2.1	2.0	133.5
18	7.4	2.0	1.9	118.8
19	6.4	2.0	1.8	105.3
20	5.5	1.9	1.7	93.0
21	4.8	1.9	1.5	81.9
22	4.1	1.9	1.3	71.5
23	3.4	1.8	1.1	61.5
24	2.8	1.8	0.9	51.7
25	2.1	1.7	0.7	42.3
26	1.6	1.6	0.5	33.2
27	1.0	1.5	0.3	24.4
28	0.5	1.3	0.0	15.9
29	0.1	1.2	-0.2	7.7
30	-0.4	1.0	-0.4	-0.1

1. Positive deltas mean S851C.FTR is ahead and S851A.FTR is behind.
2. VT is true windspeed in knots at 87 ft.

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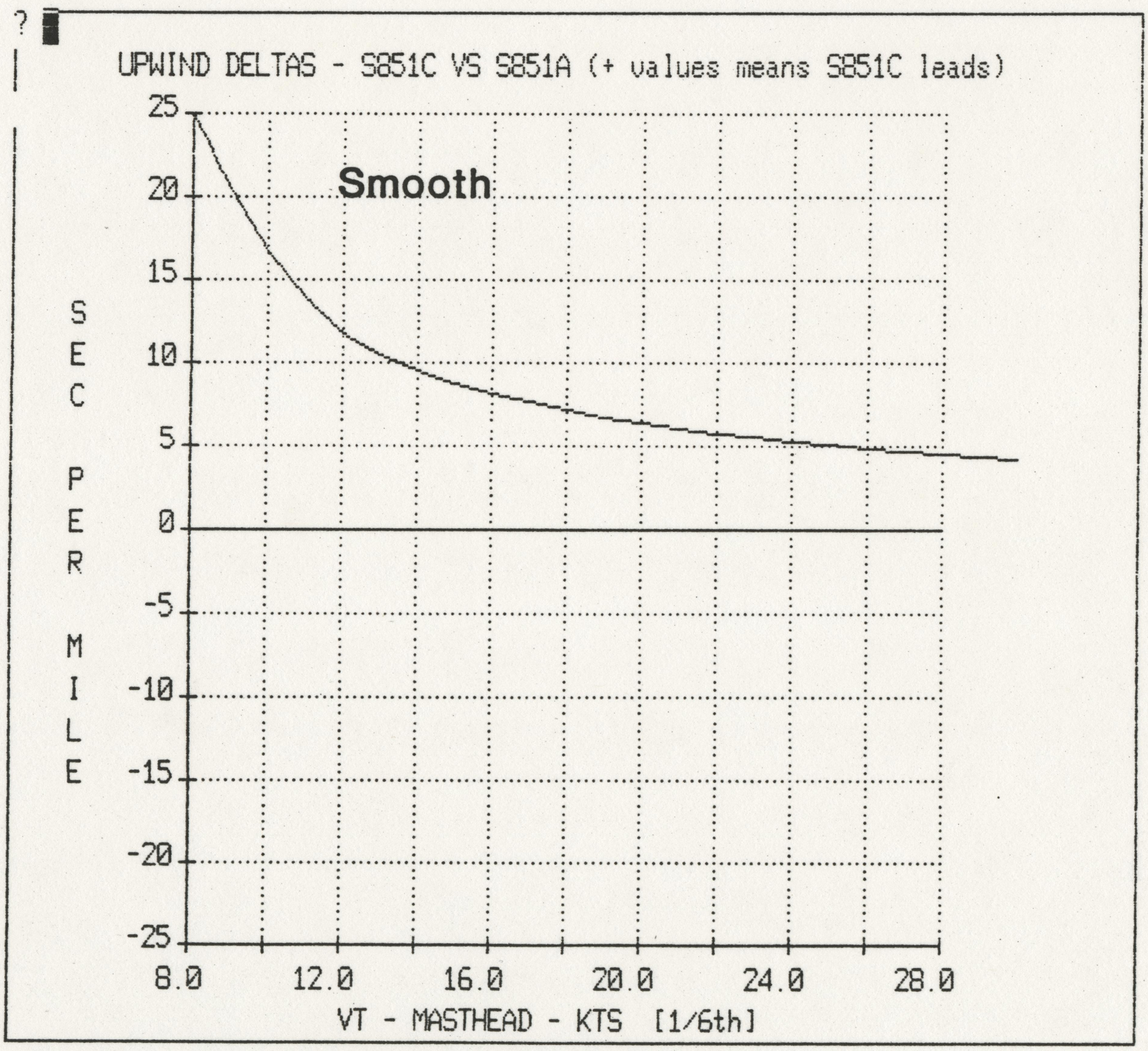

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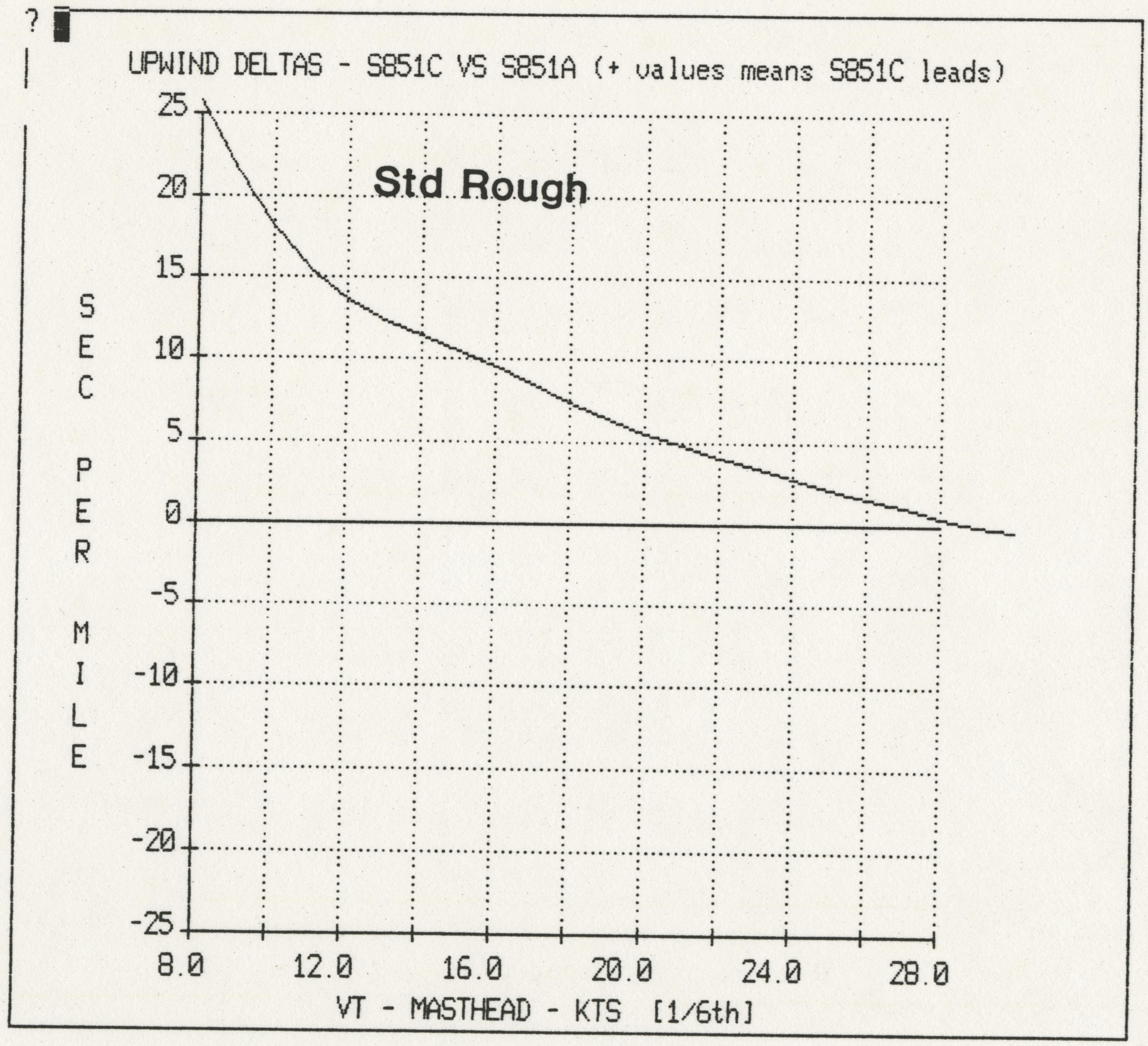

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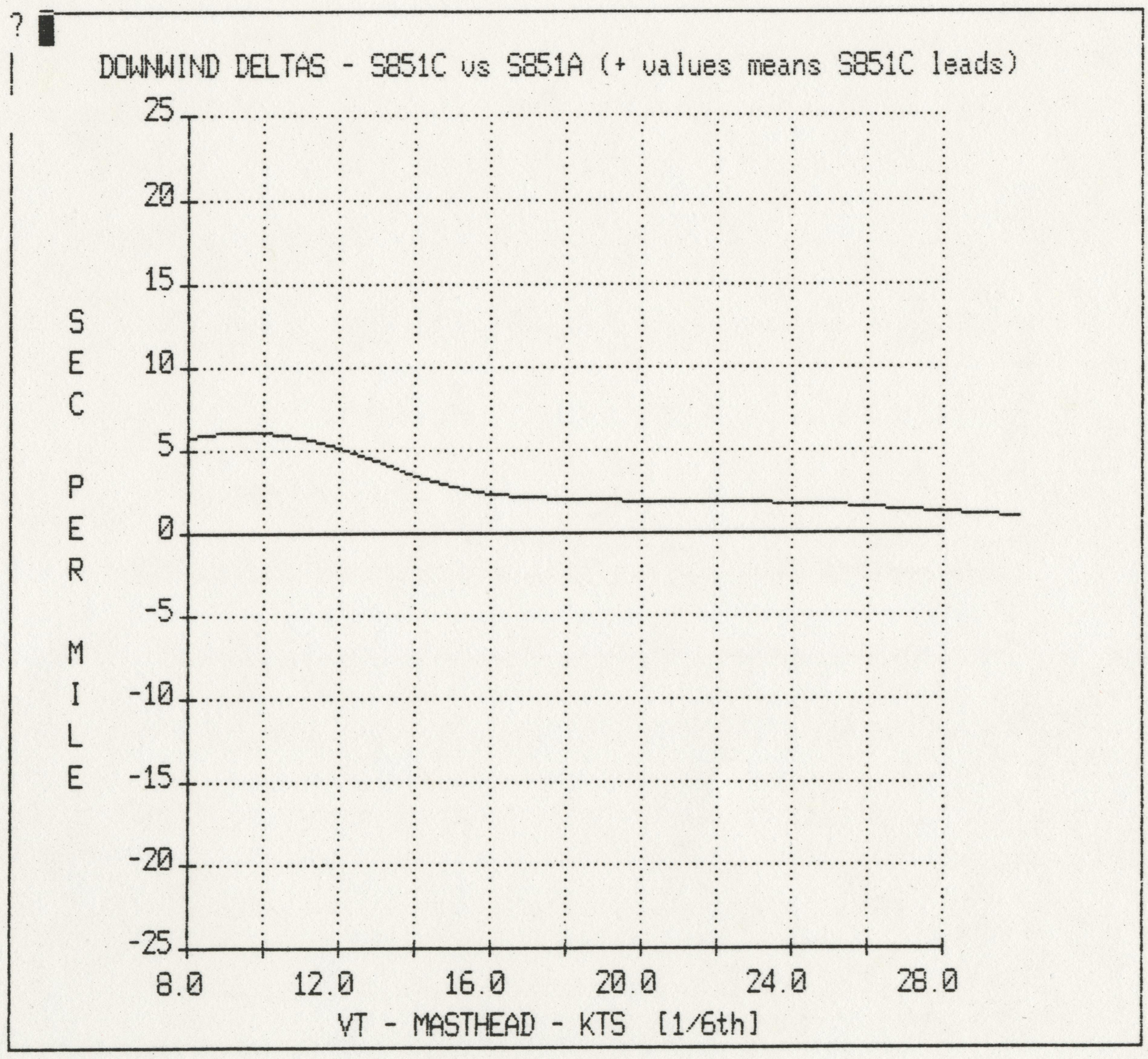

Science Applications International Corporation

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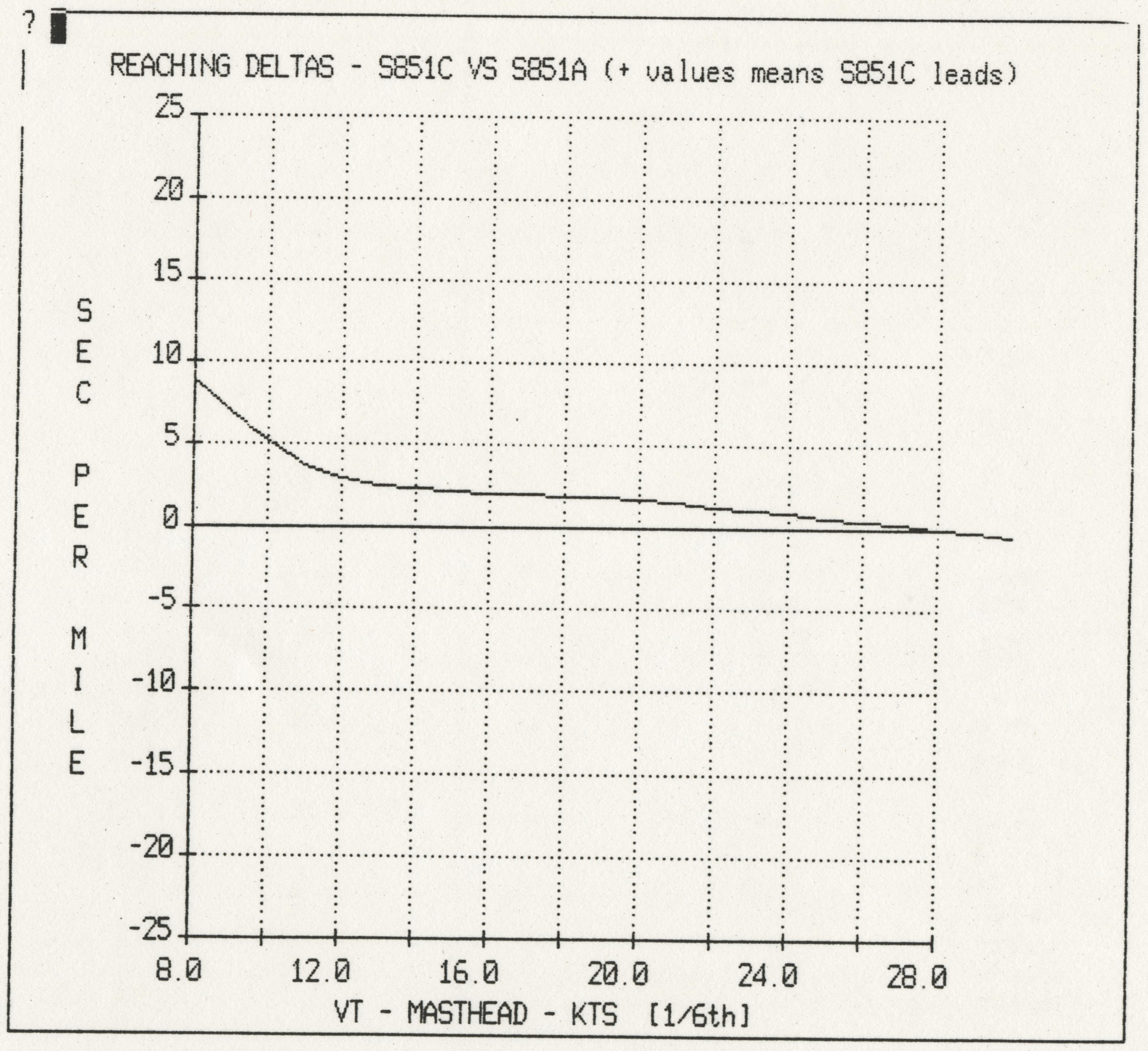

Science Applications International Corporation

"DELTAS"

S-83 (H) vs LIBERTY

SEA STATE Smooth

Positive delta means S-83 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
8	-9.8	-16.3	-14.9	-304.8
9	-2.4	-10.6	-9.0	-142.5
10	3.4	-6.2	-4.5	-17.0
11	7.4	-3.0	-1.2	71.9
12	9.7	-1.0	0.8	124.0
13	10.2	-0.3	1.5	139.4
14	10.0	-0.1	1.6	137.3
15	9.8	0.1	1.6	136.7
16	9.8	0.3	1.7	137.7
17	9.8	0.6	1.8	140.2
18	9.8	0.9	1.8	143.4
19	9.9	1.1	1.9	146.0
20	10.0	1.3	1.9	148.2
21	10.1	1.4	1.8	150.0
22	10.2	1.4	1.8	151.4
23	10.3	1.4	1.7	152.7
24	10.5	1.4	1.6	153.8
25	10.6	1.4	1.5	154.8
26	10.7	1.3	1.4	155.5
27	10.8	1.2	1.3	156.1
28	11.0	1.1	1.2	156.6
29	11.1	1.0	1.1	156.8
30	11.2	0.8	1.0	156.9

1. Positive deltas mean SPIRITH.FTS is ahead and LIBERTY.FTS is behind.
2. VT is true windspeed in knots at 87 ft.

SAIC™
Science Applications International Corporation

"DELTAS"

S-83 (H) vs LIBERTY

SEA STATE Std Rough

Positive delta means S-83 is ahead.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
8	-10.5	-16.3	-14.9	-312.9
9	-2.8	-10.6	-9.0	-148.8
10	3.3	-6.2	-4.5	-17.7
11	8.0	-3.0	-1.2	80.2
12	11.3	-1.0	0.8	145.0
13	13.1	-0.3	1.5	176.8
14	14.1	-0.1	1.6	191.8
15	15.2	0.1	1.6	206.8
16	16.1	0.3	1.7	221.5
17	17.1	0.6	1.8	236.1
18	18.0	0.9	1.8	249.9
19	18.8	1.1	1.9	262.1
20	19.5	1.3	1.9	272.7
21	20.2	1.4	1.8	281.8
22	20.8	1.4	1.8	289.9
23	21.4	1.4	1.7	297.6
24	22.0	1.4	1.6	304.9
25	22.6	1.4	1.5	311.8
26	23.1	1.3	1.4	318.3
27	23.7	1.2	1.3	324.4
28	24.2	1.1	1.2	330.1
29	24.7	1.0	1.1	335.5
30	25.2	0.8	1.0	340.4

1. Positive deltas mean SPIRITH.FTR is ahead and LIBERTY.FTR is behind.
2. VT is true windspeed in knots at 87 ft.

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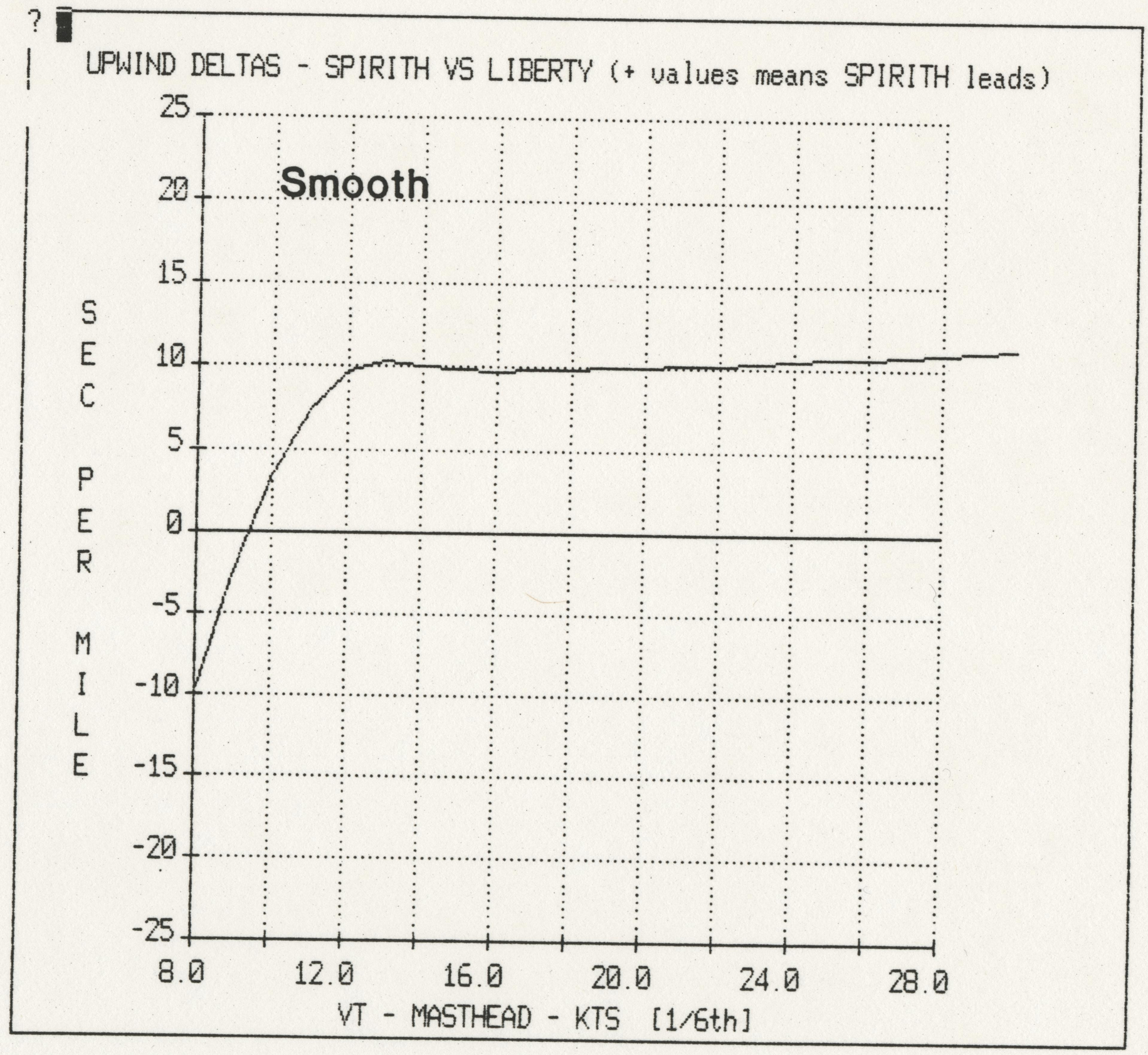

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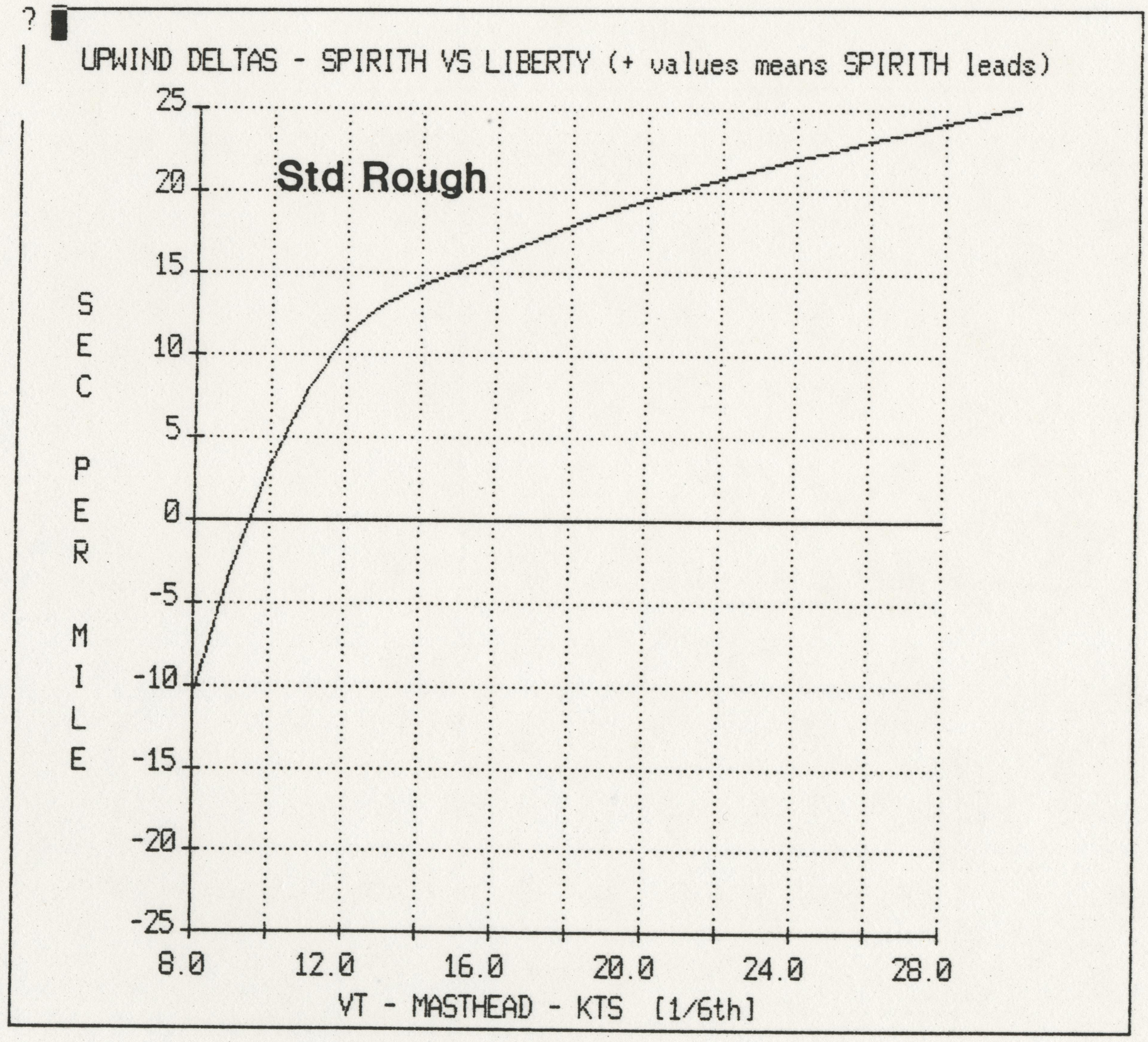

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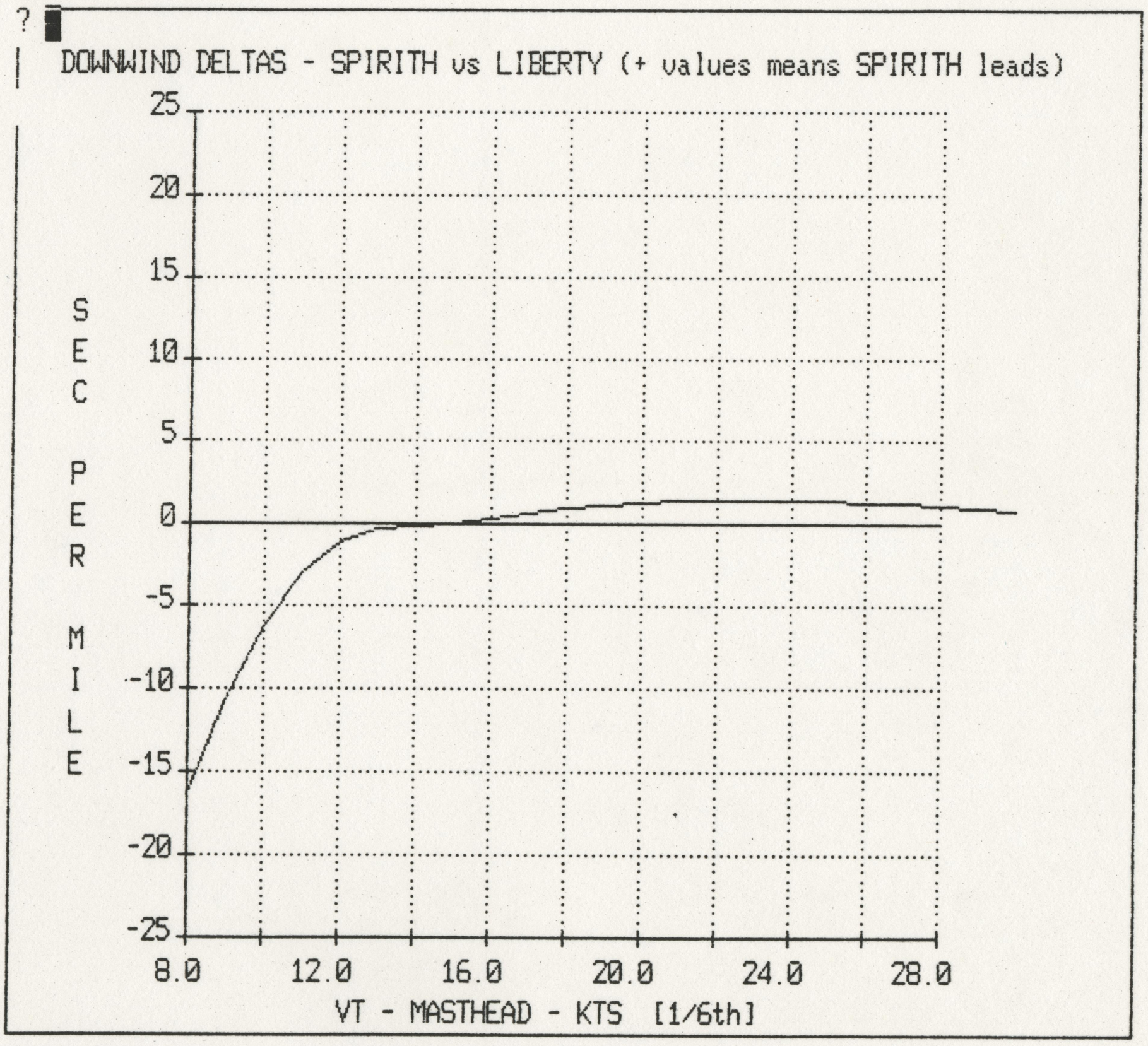

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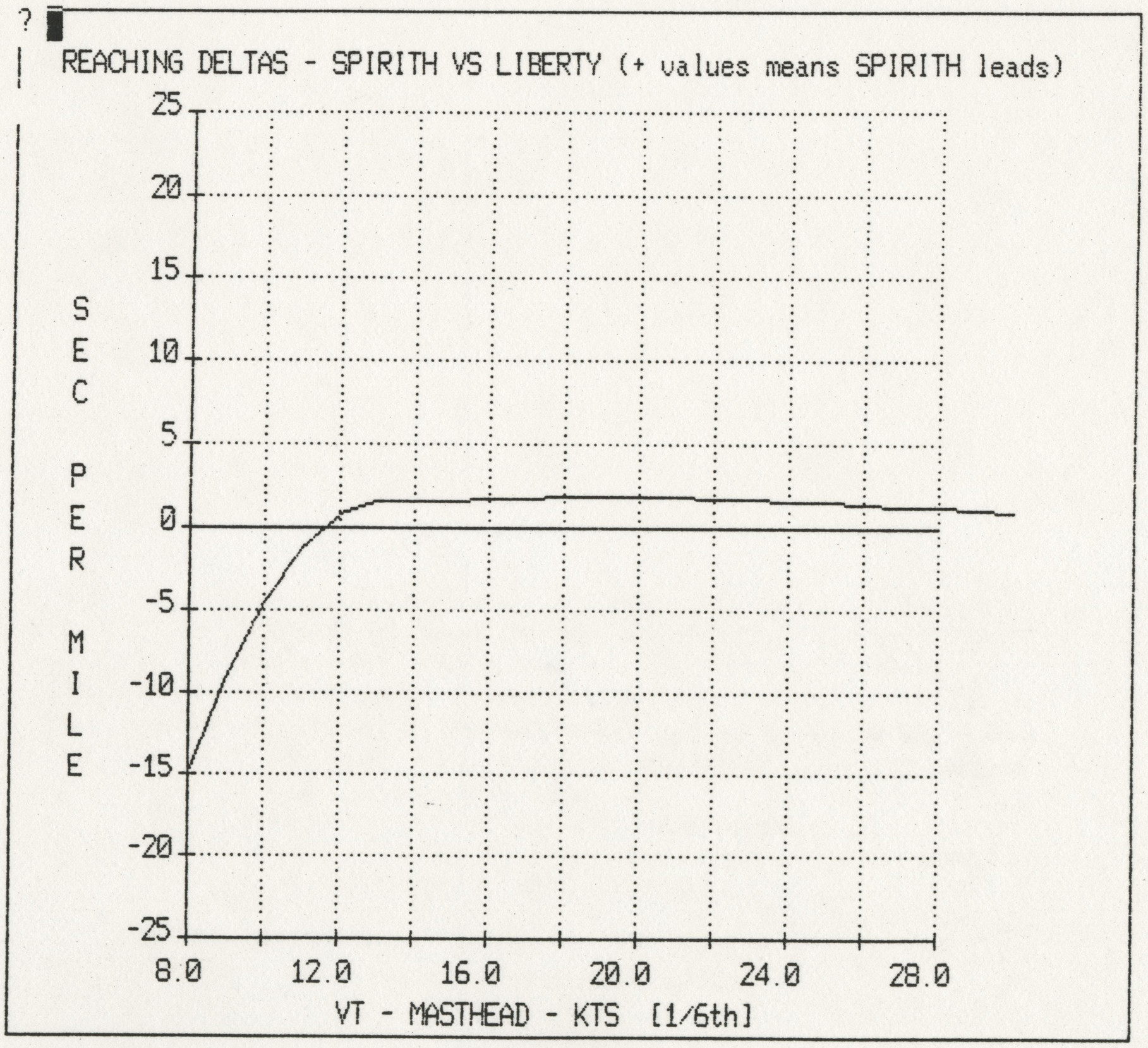

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SECTION 2

PERFORMANCE NUMBERS

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1. VT - True windspeed knots at 87 ft.
2. VS - Boatspeed in knots.
3. VMG - Speed made good in knots.
4. GAMMA - Angle of boat track to true wind dir.
5. TACK - Tacking angle using assumed leeways shown.
6. HEEL - Heel angle in degrees.
7. LEE - Assumed or estimated leeway angle.
8. TRIM - Proportion of available sail lift used.
9. TWIST - A measure of sail twist.
10. VT-O - True wind (Ockam - at vane in hor. plane).
11. VA-O - App. wind (Ockam - at vane in hor. plane).
12. BET-O - App. wind direction (Ockam ...).

PERFORMANCE PREDICTIONS

BOAT 5-85-1C

SEA STATE smooth LEG UPWIND

PERFORMANCE PREDICTIONS - WINDWARD - S851C.FTS

VT	VS	VMG	GAMMA	TACK	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.96	3.63	43	83	3.4	1.4	1.00	0.73	6.0	10.2	22.2
7	5.65	4.19	42	82	4.9	1.4	0.99	0.72	7.0	11.8	22.2
8	6.26	4.68	42	81	6.5	1.4	0.99	0.72	8.0	13.3	22.2
9	6.78	5.13	41	79	8.1	1.5	0.99	0.72	9.0	14.8	22.1
10	7.20	5.52	40	77	9.9	1.6	0.99	0.73	9.9	16.1	21.9
11	7.54	5.86	39	75	11.8	1.7	0.99	0.74	10.9	17.4	21.6
12	7.79	6.14	38	72	13.8	1.8	1.00	0.75	11.9	18.7	21.3
13	7.95	6.37	37	70	15.8	1.9	1.00	0.76	12.9	19.8	20.9
14	8.06	6.56	36	67	17.8	2.0	1.00	0.78	13.9	21.0	20.6
15	8.15	6.72	35	65	19.4	2.1	1.00	0.78	14.8	22.1	20.3
16	8.23	6.85	34	63	20.7	2.2	0.98	0.78	15.8	23.1	20.1
17	8.30	6.95	33	62	21.7	2.3	0.94	0.77	16.8	24.2	20.1
18	8.35	7.03	33	61	22.5	2.3	0.89	0.76	17.8	25.2	20.1
19	8.40	7.11	32	60	23.2	2.3	0.84	0.74	18.8	26.3	20.1
20	8.45	7.17	32	59	23.8	2.4	0.80	0.73	19.7	27.3	20.1
21	8.48	7.23	32	58	24.3	2.4	0.76	0.71	20.7	28.3	20.2
22	8.52	7.28	31	58	24.8	2.4	0.73	0.69	21.7	29.3	20.2
23	8.55	7.32	31	57	25.2	2.4	0.69	0.68	22.6	30.3	20.3
24	8.58	7.37	31	57	25.6	2.4	0.66	0.66	23.6	31.3	20.4
25	8.61	7.40	31	57	26.0	2.5	0.63	0.64	24.6	32.3	20.5
26	8.64	7.44	31	56	26.3	2.5	0.60	0.62	25.6	33.3	20.6
27	8.67	7.47	31	56	26.6	2.5	0.58	0.60	26.5	34.3	20.7
28	8.69	7.49	30	56	26.9	2.5	0.56	0.58	27.5	35.3	20.8
29	8.72	7.51	30	56	27.1	2.5	0.54	0.56	28.4	36.2	20.9
30	8.74	7.53	30	56	27.3	2.6	0.52	0.54	29.4	37.2	21.1

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PERFORMANCE PREDICTIONS

BOAT 5-85-1C

SEA STATE Rough LEG UPWIND

PERFORMANCE PREDICTIONS - WINDWARD - S851C.FTR

VT	VS	VMG	GAMMA	TACK	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.96	3.63	43	83	3.5	1.4	1.00	0.73	6.0	10.2	22.2
7	5.64	4.15	43	83	5.1	1.4	1.00	0.73	7.0	11.7	22.4
8	6.23	4.60	42	82	6.7	1.4	1.00	0.73	8.0	13.2	22.6
9	6.73	4.99	42	81	8.4	1.5	1.00	0.73	8.9	14.6	22.8
10	7.13	5.32	42	81	9.9	1.6	1.00	0.73	9.9	16.0	23.0
11	7.45	5.58	42	80	11.5	1.7	1.00	0.73	10.9	17.2	23.2
12	7.67	5.78	41	79	13.1	1.8	1.00	0.73	11.9	18.4	23.5
13	7.81	5.91	41	78	14.6	1.9	1.00	0.73	12.9	19.5	23.7
14	7.89	6.01	40	77	16.2	2.0	1.00	0.73	13.9	20.5	24.0
15	7.97	6.09	40	76	17.9	2.1	1.00	0.73	14.9	21.6	24.3
16	8.05	6.16	40	76	19.7	2.2	1.00	0.74	15.8	22.6	24.6
17	8.12	6.22	40	75	21.6	2.4	1.00	0.74	16.8	23.6	24.9
18	8.19	6.27	40	75	23.3	2.5	1.00	0.75	17.8	24.6	25.2
19	8.25	6.31	40	75	24.7	2.5	1.00	0.74	18.7	25.6	25.6
20	8.29	6.34	40	75	25.7	2.6	0.97	0.73	19.7	26.6	25.9
21	8.32	6.36	40	75	26.3	2.6	0.93	0.72	20.7	27.5	26.3
22	8.35	6.38	40	75	26.8	2.7	0.88	0.70	21.6	28.5	26.6
23	8.38	6.40	40	75	27.2	2.7	0.84	0.68	22.6	29.5	27.0
24	8.40	6.41	40	75	27.6	2.7	0.80	0.66	23.6	30.5	27.3
25	8.43	6.42	40	75	27.9	2.7	0.76	0.64	24.5	31.4	27.6
26	8.45	6.43	40	75	28.3	2.7	0.73	0.62	25.5	32.4	28.0
27	8.47	6.44	41	76	28.6	2.8	0.70	0.61	26.4	33.3	28.3
28	8.49	6.44	41	76	28.9	2.8	0.68	0.59	27.4	34.3	28.6
29	8.51	6.44	41	76	29.2	2.8	0.65	0.57	28.4	35.2	28.9
30	8.53	6.44	41	76	29.4	2.8	0.64	0.55	29.3	36.2	29.2

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PERFORMANCE PREDICTIONS

BOAT S-85-1C

SEA STATE Smooth or Rough LEG DOWNWIND

PERFORMANCE PREDICTIONS - DOWNWIND - S851C.FTS

VT	VS	VMG	GAMMA	GYBE	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	3.95	3.26	146	69	0.0	0.0	1.00	1.00	6.0	3.5	106.4
7	4.79	3.87	144	71	0.3	0.0	1.00	1.00	7.0	4.2	103.3
8	5.53	4.45	144	72	0.5	0.0	1.00	1.00	8.0	4.8	102.0
9	6.17	4.99	144	72	0.7	0.0	1.00	1.00	9.0	5.3	102.3
10	6.72	5.51	145	70	0.8	0.0	1.00	1.00	10.0	5.9	104.5
11	7.16	5.99	147	67	0.9	0.0	1.00	1.00	11.0	6.3	108.3
12	7.51	6.43	149	62	0.9	0.0	1.00	1.00	12.0	6.8	113.9
13	7.76	6.85	152	56	0.9	0.0	1.00	1.00	13.0	7.1	121.3
14	7.95	7.23	155	49	0.8	0.0	1.00	1.00	14.0	7.5	129.3
15	8.14	7.58	159	43	0.7	0.0	1.00	1.00	15.0	8.0	136.8
16	8.31	7.89	162	37	0.6	0.0	1.00	1.00	16.0	8.5	143.9
17	8.47	8.16	165	31	0.4	0.0	1.00	1.00	17.0	9.1	150.5
18	8.62	8.41	167	25	0.3	0.0	1.00	1.00	18.0	9.8	156.0
19	8.79	8.63	169	22	0.3	0.0	1.00	1.00	19.0	10.5	160.1
20	8.96	8.84	170	20	0.3	0.0	1.00	1.00	20.0	11.3	162.6
21	9.13	9.02	171	19	0.4	0.0	1.00	1.00	21.0	12.1	163.6
22	9.31	9.19	171	19	0.5	0.0	1.00	1.00	22.0	12.9	163.8
23	9.49	9.36	171	19	0.7	0.0	1.00	1.00	23.0	13.8	164.0
24	9.66	9.53	170	19	0.9	0.0	1.00	1.00	24.0	14.6	164.2
25	9.83	9.69	170	19	1.0	0.0	1.00	1.00	25.0	15.4	164.4
26	10.00	9.85	170	19	1.2	0.0	1.00	1.00	26.0	16.3	164.6
27	10.16	10.01	170	19	1.4	0.0	1.00	1.00	27.0	17.1	164.8
28	10.32	10.17	170	19	1.7	0.0	1.00	1.00	28.0	17.9	165.0
29	10.47	10.33	170	19	1.9	0.0	1.00	1.00	29.0	18.8	165.2
30	10.63	10.48	171	19	2.1	0.0	1.00	1.00	30.0	19.6	165.4

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PERFORMANCE PREDICTIONS

BOAT 5-85-1C

SEA STATE Smooth or Rough LEG REACHING (135°)

PERFORMANCE PREDICTIONS - REACHING LEG - S851C.FTS

VT	VS	VMG	GAMMA	****	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.50	4.50	135	0	0.0	0.0	1.00	1.00	6.0	4.2	86.5
7	5.33	5.33	135	0	0.4	0.0	1.00	1.00	7.0	4.9	86.4
8	6.07	6.07	135	0	0.9	0.0	1.00	1.00	8.0	5.6	86.7
9	6.73	6.73	135	0	1.4	0.0	1.00	1.00	9.0	6.3	87.4
10	7.30	7.30	135	0	1.9	0.0	1.00	1.00	10.0	7.0	88.5
11	7.79	7.79	135	0	2.5	0.0	1.00	1.00	11.0	7.7	89.9
12	8.19	8.19	135	0	3.1	0.0	1.00	1.00	12.0	8.5	91.8
13	8.51	8.51	135	0	3.8	0.0	1.00	1.00	13.0	9.2	94.0
14	8.77	8.77	135	0	4.5	0.0	1.00	1.00	14.0	9.9	96.3
15	9.02	9.02	135	0	5.2	0.0	1.00	1.00	15.0	10.7	98.4
16	9.24	9.24	135	0	6.0	0.0	1.00	1.00	16.0	11.5	100.4
17	9.45	9.45	135	0	6.9	0.0	1.00	1.00	17.0	12.3	102.0
18	9.65	9.65	135	0	7.8	0.0	1.00	1.00	18.0	13.1	103.6
19	9.84	9.84	135	0	8.7	0.0	1.00	1.00	19.0	13.9	104.9
20	10.03	10.03	135	0	9.6	0.0	1.00	1.00	20.0	14.7	106.2
21	10.21	10.21	135	0	10.6	0.0	1.00	1.00	21.0	15.5	107.3
22	10.39	10.39	135	0	11.6	0.0	1.00	1.00	22.0	16.4	108.3
23	10.56	10.56	135	0	12.6	0.0	1.00	1.00	22.9	17.2	109.2
24	10.72	10.72	135	0	13.6	0.0	1.00	1.00	23.9	18.0	110.1
25	10.88	10.88	135	0	14.7	0.0	1.00	1.00	24.9	18.8	110.9
26	11.03	11.03	135	0	15.7	0.0	1.00	1.00	25.9	19.7	111.7
27	11.18	11.18	135	0	16.8	0.0	1.00	1.00	26.8	20.5	112.4
28	11.32	11.32	135	0	17.8	0.0	1.00	1.00	27.8	21.3	113.1
29	11.45	11.45	135	0	18.9	0.0	1.00	1.00	28.7	22.2	113.7
30	11.58	11.58	135	0	20.0	0.0	1.00	1.00	29.7	23.0	114.2

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PERFORMANCE PREDICTIONS

BOAT 5-86

SEA STATE Smooth LEG UPWIND

PERFORMANCE PREDICTIONS - WINDWARD - S86.FTS

VT	VS	VMG	GAMMA	TACK	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.83	3.53	43	83	3.2	1.4	1.00	0.72	6.0	10.1	22.6
7	5.56	4.02	43	84	4.6	1.4	1.00	0.71	7.0	11.6	23.1
8	6.19	4.48	44	84	6.1	1.4	0.99	0.71	8.0	13.1	23.4
9	6.73	4.90	43	84	7.7	1.5	0.99	0.71	9.0	14.6	23.6
10	7.19	5.28	43	82	9.4	1.5	0.99	0.71	9.9	16.0	23.5
11	7.54	5.63	42	80	11.1	1.6	1.00	0.72	10.9	17.3	23.3
12	7.81	5.94	40	78	13.0	1.7	1.00	0.73	11.9	18.6	22.9
13	7.99	6.22	39	74	15.0	1.8	1.00	0.74	12.9	19.8	22.3
14	8.11	6.45	37	70	16.9	2.0	1.00	0.75	13.9	20.9	21.7
15	8.21	6.65	36	68	18.7	2.1	1.00	0.76	14.9	22.0	21.2
16	8.30	6.81	35	65	20.3	2.2	0.99	0.76	15.8	23.1	20.9
17	8.37	6.93	34	64	21.7	2.3	0.97	0.76	16.8	24.2	20.7
18	8.44	7.02	34	63	23.0	2.3	0.94	0.75	17.8	25.2	20.6
19	8.49	7.11	33	62	24.0	2.4	0.90	0.74	18.7	26.3	20.6
20	8.54	7.18	33	61	24.8	2.4	0.86	0.73	19.7	27.3	20.6
21	8.58	7.25	32	60	25.4	2.4	0.82	0.72	20.7	28.3	20.6
22	8.62	7.30	32	59	25.9	2.5	0.78	0.70	21.6	29.3	20.6
23	8.65	7.35	32	59	26.3	2.5	0.74	0.68	22.6	30.3	20.7
24	8.69	7.40	32	58	26.8	2.5	0.71	0.66	23.6	31.3	20.7
25	8.72	7.44	31	58	27.2	2.5	0.68	0.64	24.5	32.3	20.8
26	8.75	7.48	31	57	27.5	2.5	0.65	0.62	25.5	33.3	20.9
27	8.78	7.52	31	57	27.9	2.6	0.62	0.61	26.5	34.3	21.0
28	8.81	7.55	31	57	28.2	2.6	0.60	0.59	27.4	35.3	21.1
29	8.83	7.57	31	57	28.6	2.6	0.58	0.57	28.4	36.2	21.2
30	8.86	7.59	31	57	28.9	2.6	0.56	0.55	29.3	37.2	21.3

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PERFORMANCE PREDICTIONS

BOAT S-86

SEA STATE Rough LEG UPWIND

PERFORMANCE PREDICTIONS - WINDWARD - S86.FTR

VT	VS	VMG	GAMMA	TACK	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.83	3.52	43	83	3.2	1.4	1.00	0.72	6.0	10.1	22.6
7	5.53	3.97	44	85	4.7	1.4	1.00	0.72	7.0	11.6	23.3
8	6.14	4.38	44	86	6.2	1.4	1.00	0.72	8.0	13.1	23.8
9	6.66	4.74	44	86	7.7	1.5	1.00	0.71	8.9	14.5	24.3
10	7.09	5.05	44	86	9.2	1.5	1.00	0.71	9.9	15.8	24.7
11	7.42	5.32	44	85	10.7	1.6	1.00	0.71	10.9	17.0	25.0
12	7.67	5.54	44	84	12.3	1.7	1.00	0.71	11.9	18.2	25.2
13	7.82	5.71	43	83	13.9	1.8	1.00	0.71	12.9	19.4	25.3
14	7.93	5.85	42	81	15.5	2.0	1.00	0.71	13.9	20.5	25.3
15	8.02	5.98	42	80	17.1	2.1	1.00	0.72	14.9	21.5	25.4
16	8.11	6.08	41	78	18.9	2.2	1.00	0.72	15.9	22.6	25.5
17	8.19	6.17	41	78	20.8	2.3	1.00	0.72	16.8	23.6	25.6
18	8.26	6.24	41	77	22.5	2.4	1.00	0.73	17.8	24.6	25.8
19	8.32	6.30	41	77	24.1	2.5	1.00	0.72	18.7	25.6	26.0
20	8.37	6.35	41	76	25.4	2.6	0.98	0.72	19.7	26.6	26.3
21	8.41	6.38	41	76	26.4	2.6	0.95	0.71	20.6	27.6	26.5
22	8.44	6.41	41	76	27.3	2.7	0.92	0.70	21.6	28.5	26.8
23	8.47	6.43	41	76	28.1	2.7	0.89	0.68	22.6	29.5	27.1
24	8.50	6.46	41	76	28.8	2.7	0.86	0.67	23.5	30.5	27.4
25	8.53	6.47	41	76	29.4	2.8	0.83	0.65	24.5	31.4	27.7
26	8.55	6.49	41	76	29.9	2.8	0.80	0.63	25.4	32.4	28.0
27	8.58	6.50	41	76	30.4	2.8	0.77	0.62	26.4	33.3	28.3
28	8.60	6.51	41	76	30.7	2.8	0.74	0.60	27.3	34.3	28.5
29	8.62	6.52	41	76	31.0	2.9	0.71	0.58	28.3	35.2	28.8
30	8.63	6.52	41	76	31.1	2.9	0.69	0.56	29.2	36.2	29.1

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PERFORMANCE PREDICTIONS

BOAT S-86

SEA STATE SMOOTH OR ROUGH LEG DOWNWIND

PERFORMANCE PREDICTIONS - DOWNWIND - S86.FTS

VT	VS	VMG	GAMMA	GYBE	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	3.87	3.18	146	69	0.0	0.0	1.00	1.00	6.0	3.6	107.5
7	4.64	3.72	144	72	0.3	0.0	1.00	1.00	7.0	4.3	104.9
8	5.33	4.24	144	73	0.5	0.0	1.00	1.00	8.0	4.9	103.7
9	5.95	4.75	144	73	0.7	0.0	1.00	1.00	9.0	5.5	103.8
10	6.50	5.24	144	72	0.9	0.0	1.00	1.00	10.0	6.1	105.3
11	6.97	5.73	145	69	1.0	0.0	1.00	1.00	11.0	6.6	108.3
12	7.38	6.20	147	66	1.1	0.0	1.00	1.00	12.0	7.0	112.5
13	7.71	6.67	150	61	1.1	0.0	1.00	1.00	13.0	7.4	118.2
14	7.98	7.10	153	55	1.1	0.0	1.00	1.00	14.0	7.8	124.7
15	8.21	7.49	156	48	1.0	0.0	1.00	1.00	15.0	8.2	131.7
16	8.39	7.83	159	42	0.8	0.0	1.00	1.00	16.0	8.7	139.0
17	8.53	8.13	163	35	0.6	0.0	1.00	1.00	17.0	9.3	146.6
18	8.66	8.39	166	28	0.5	0.0	1.00	1.00	18.0	9.9	153.5
19	8.81	8.63	168	23	0.4	0.0	1.00	1.00	19.0	10.5	158.5
20	8.97	8.84	170	21	0.4	0.0	1.00	1.00	20.0	11.3	161.6
21	9.16	9.04	170	20	0.5	0.0	1.00	1.00	21.0	12.1	162.7
22	9.36	9.22	170	20	0.6	0.0	1.00	1.00	22.0	12.9	162.9
23	9.55	9.40	170	20	0.8	0.0	1.00	1.00	23.0	13.7	163.0
24	9.73	9.58	170	20	0.9	0.0	1.00	1.00	24.0	14.5	163.3
25	9.91	9.76	170	20	1.1	0.0	1.00	1.00	25.0	15.4	163.5
26	10.09	9.93	170	20	1.3	0.0	1.00	1.00	26.0	16.2	163.7
27	10.26	10.10	170	20	1.5	0.0	1.00	1.00	27.0	17.0	164.0
28	10.43	10.26	170	20	1.7	0.0	1.00	1.00	28.0	17.8	164.3
29	10.59	10.43	170	20	1.9	0.0	1.00	1.00	29.0	18.7	164.6
30	10.74	10.59	170	19	2.1	0.0	1.00	1.00	30.0	19.5	164.9

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PERFORMANCE PREDICTIONS

BOAT 5-86

SEA STATE Smooth or Rough LEG REACHING (135°)

PERFORMANCE PREDICTIONS - REACHING LEG - S86.FTS

VT	VS	VMG	GAMMA	****	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.39	4.39	135	0	0.0	0.0	1.00	1.00	6.0	4.2	87.9
7	5.18	5.18	135	0	0.4	0.0	1.00	1.00	7.0	4.9	87.9
8	5.90	5.90	135	0	0.8	0.0	1.00	1.00	8.0	5.6	88.2
9	6.55	6.55	135	0	1.3	0.0	1.00	1.00	9.0	6.3	88.9
10	7.12	7.12	135	0	1.8	0.0	1.00	1.00	10.0	7.0	89.8
11	7.63	7.63	135	0	2.4	0.0	1.00	1.00	11.0	7.7	91.1
12	8.07	8.07	135	0	3.0	0.0	1.00	1.00	12.0	8.5	92.6
13	8.43	8.43	135	0	3.6	0.0	1.00	1.00	13.0	9.2	94.5
14	8.74	8.74	135	0	4.3	0.0	1.00	1.00	14.0	9.9	96.5
15	9.03	9.03	135	0	5.1	0.0	1.00	1.00	15.0	10.7	98.4
16	9.28	9.28	135	0	5.8	0.0	1.00	1.00	16.0	11.5	100.2
17	9.51	9.51	135	0	6.7	0.0	1.00	1.00	17.0	12.3	101.8
18	9.71	9.71	135	0	7.5	0.0	1.00	1.00	18.0	13.1	103.3
19	9.92	9.92	135	0	8.4	0.0	1.00	1.00	19.0	13.9	104.7
20	10.11	10.11	135	0	9.3	0.0	1.00	1.00	20.0	14.7	105.9
21	10.31	10.31	135	0	10.3	0.0	1.00	1.00	21.0	15.5	107.0
22	10.50	10.50	135	0	11.3	0.0	1.00	1.00	22.0	16.3	107.9
23	10.68	10.68	135	0	12.3	0.0	1.00	1.00	22.9	17.1	108.9
24	10.85	10.85	135	0	13.3	0.0	1.00	1.00	23.9	18.0	109.7
25	11.02	11.02	135	0	14.3	0.0	1.00	1.00	24.9	18.8	110.6
26	11.17	11.17	135	0	15.3	0.0	1.00	1.00	25.9	19.6	111.3
27	11.32	11.32	135	0	16.4	0.0	1.00	1.00	26.8	20.5	112.0
28	11.46	11.46	135	0	17.4	0.0	1.00	1.00	27.8	21.3	112.7
29	11.59	11.59	135	0	18.5	0.0	1.00	1.00	28.7	22.1	113.3
30	11.71	11.71	135	0	19.5	0.0	1.00	1.00	29.7	23.0	113.9

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PERFORMANCE PREDICTIONS

BOAT S-85-1A

SEA STATE SMOOTH LEG UPWIND

PERFORMANCE PREDICTIONS - WINDWARD - S851A.FTS

VT	VS	VMG	GAMMA	TACK	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.79	3.51	43	83	3.0	1.4	1.00	0.73	6.0	10.0	22.5
7	5.51	4.06	43	82	4.3	1.4	0.99	0.72	7.0	11.6	22.7
8	6.14	4.56	42	82	5.7	1.5	0.99	0.72	8.0	13.2	22.7
9	6.68	5.00	42	80	7.2	1.5	0.99	0.72	9.0	14.6	22.6
10	7.12	5.39	41	79	8.8	1.6	0.99	0.73	9.9	16.0	22.5
11	7.47	5.73	40	76	10.5	1.7	0.99	0.74	10.9	17.3	22.2
12	7.73	6.02	39	74	12.3	1.8	1.00	0.75	11.9	18.6	21.9
13	7.89	6.25	38	71	14.1	1.9	1.00	0.76	12.9	19.8	21.5
14	8.00	6.45	36	68	15.9	2.1	1.00	0.77	13.9	20.9	21.1
15	8.09	6.61	35	66	17.4	2.2	1.00	0.77	14.9	22.0	20.8
16	8.17	6.74	34	64	18.6	2.3	0.98	0.77	15.9	23.1	20.6
17	8.24	6.85	34	63	19.6	2.3	0.95	0.77	16.8	24.1	20.5
18	8.30	6.94	33	62	20.5	2.4	0.90	0.75	17.8	25.2	20.5
19	8.35	7.01	33	61	21.2	2.4	0.86	0.74	18.8	26.2	20.5
20	8.40	7.08	33	60	21.9	2.5	0.82	0.73	19.8	27.2	20.5
21	8.44	7.14	32	59	22.5	2.5	0.79	0.71	20.8	28.3	20.5
22	8.48	7.19	32	59	23.0	2.5	0.75	0.70	21.7	29.3	20.6
23	8.51	7.24	32	58	23.5	2.6	0.72	0.68	22.7	30.3	20.6
24	8.54	7.29	31	58	23.9	2.6	0.69	0.66	23.7	31.3	20.7
25	8.57	7.33	31	57	24.3	2.6	0.66	0.65	24.6	32.3	20.8
26	8.60	7.36	31	57	24.7	2.6	0.63	0.63	25.6	33.3	20.8
27	8.63	7.40	31	57	25.1	2.7	0.61	0.61	26.6	34.3	20.9
28	8.66	7.42	31	57	25.4	2.7	0.58	0.59	27.5	35.2	21.1
29	8.68	7.45	31	56	25.7	2.7	0.56	0.57	28.5	36.2	21.2
30	8.71	7.47	31	56	26.0	2.7	0.54	0.55	29.5	37.2	21.3

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PERFORMANCE PREDICTIONS

BOAT 5-85-1A

SEA STATE STD. ROUGH LEG UPWIND

PERFORMANCE PREDICTIONS - WINDWARD - S851A.FTR

VT	VS	VMG	GAMMA	TACK	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.79	3.50	43	83	3.0	1.4	1.00	0.73	6.0	10.0	22.6
7	5.49	4.02	43	83	4.5	1.4	1.00	0.73	7.0	11.6	22.8
8	6.11	4.47	43	83	5.9	1.5	1.00	0.73	8.0	13.1	23.1
9	6.62	4.86	43	82	7.4	1.5	1.00	0.73	8.9	14.5	23.3
10	7.05	5.19	43	82	8.8	1.6	1.00	0.73	9.9	15.9	23.6
11	7.37	5.45	42	81	10.2	1.7	1.00	0.73	10.9	17.1	23.8
12	7.61	5.65	42	80	11.6	1.8	1.00	0.73	11.9	18.3	24.0
13	7.74	5.79	42	79	13.1	1.9	1.00	0.73	12.9	19.4	24.3
14	7.83	5.89	41	78	14.5	2.0	1.00	0.73	13.9	20.5	24.5
15	7.91	5.98	41	77	16.0	2.2	1.00	0.73	14.9	21.5	24.8
16	7.99	6.06	41	77	17.6	2.3	1.00	0.73	15.9	22.5	25.0
17	8.07	6.13	41	76	19.3	2.4	1.00	0.74	16.8	23.6	25.3
18	8.13	6.19	40	76	20.9	2.5	1.00	0.74	17.8	24.6	25.5
19	8.19	6.24	40	76	22.3	2.6	1.00	0.74	18.8	25.6	25.8
20	8.24	6.28	40	75	23.4	2.7	0.98	0.73	19.7	26.6	26.1
21	8.28	6.31	40	75	24.3	2.8	0.95	0.72	20.7	27.5	26.4
22	8.32	6.34	40	75	25.0	2.8	0.91	0.70	21.7	28.5	26.7
23	8.35	6.36	40	75	25.7	2.9	0.88	0.69	22.6	29.5	27.0
24	8.38	6.38	40	75	26.3	2.9	0.85	0.67	23.6	30.5	27.3
25	8.41	6.40	40	75	26.9	2.9	0.81	0.65	24.6	31.4	27.5
26	8.43	6.41	41	75	27.4	3.0	0.78	0.64	25.5	32.4	27.8
27	8.46	6.42	41	75	27.8	3.0	0.76	0.62	26.5	33.4	28.1
28	8.48	6.43	41	75	28.2	3.0	0.73	0.60	27.4	34.3	28.4
29	8.50	6.44	41	75	28.5	3.0	0.71	0.58	28.4	35.3	28.6
30	8.52	6.45	41	75	28.7	3.1	0.68	0.57	29.3	36.2	28.9

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PERFORMANCE PREDICTIONS

BOAT S-85-1A

SEA STATE Smooth or Rough LEG DOWNWIND

PERFORMANCE PREDICTIONS - DOWNWIND - S851A.FTS

VT	VS	VMG	GAMMA	GYBE	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	3.89	3.24	147	67	0.0	0.0	1.00	1.00	6.0	3.5	108.6
7	4.74	3.84	145	70	0.3	0.0	1.00	1.00	7.0	4.2	104.8
8	5.48	4.40	144	72	0.5	0.0	1.00	1.00	8.0	4.8	102.9
9	6.12	4.94	144	72	0.7	0.0	1.00	1.00	9.0	5.4	102.9
10	6.67	5.45	145	70	0.8	0.0	1.00	1.00	10.0	5.9	104.7
11	7.12	5.93	146	67	0.8	0.0	1.00	1.00	11.0	6.4	108.3
12	7.47	6.38	149	63	0.8	0.0	1.00	1.00	12.0	6.8	113.8
13	7.72	6.80	152	57	0.8	0.0	1.00	1.00	13.0	7.2	121.1
14	7.91	7.18	155	50	0.7	0.0	1.00	1.00	14.0	7.6	129.2
15	8.10	7.53	158	43	0.6	0.0	1.00	1.00	15.0	8.0	136.7
16	8.27	7.84	162	37	0.5	0.0	1.00	1.00	16.0	8.6	143.8
17	8.43	8.12	165	31	0.4	0.0	1.00	1.00	17.0	9.2	150.5
18	8.58	8.37	167	25	0.3	0.0	1.00	1.00	18.0	9.8	156.1
19	8.74	8.59	169	22	0.2	0.0	1.00	1.00	19.0	10.6	160.2
20	8.91	8.79	170	19	0.3	0.0	1.00	1.00	20.0	11.3	162.7
21	9.09	8.98	171	19	0.4	0.0	1.00	1.00	21.0	12.1	163.7
22	9.27	9.15	171	19	0.5	0.0	1.00	1.00	22.0	13.0	163.9
23	9.44	9.32	171	19	0.6	0.0	1.00	1.00	23.0	13.8	164.1
24	9.62	9.48	170	19	0.8	0.0	1.00	1.00	24.0	14.6	164.2
25	9.79	9.65	170	19	1.0	0.0	1.00	1.00	25.0	15.5	164.4
26	9.96	9.81	170	19	1.1	0.0	1.00	1.00	26.0	16.3	164.5
27	10.12	9.97	170	19	1.3	0.0	1.00	1.00	27.0	17.1	164.7
28	10.28	10.13	170	19	1.6	0.0	1.00	1.00	28.0	18.0	164.8
29	10.45	10.29	170	19	1.8	0.0	1.00	1.00	29.0	18.8	164.9
30	10.60	10.45	170	19	2.0	0.0	1.00	1.00	30.0	19.6	165.0

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PERFORMANCE PREDICTIONS

BOAT 5-85-1A

SEA STATE Smooth (or Rough) LEG REACHING

PERFORMANCE PREDICTIONS - REACHING LEG - S851A.FTS

VT	VS	VMG	GAMMA	****	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.42	4.42	135	0	0.0	0.0	1.00	1.00	6.0	4.2	87.6
7	5.25	5.25	135	0	0.4	0.0	1.00	1.00	7.0	4.9	87.3
8	6.00	6.00	135	0	0.8	0.0	1.00	1.00	8.0	5.6	87.5
9	6.66	6.66	135	0	1.2	0.0	1.00	1.00	9.0	6.3	88.0
10	7.24	7.24	135	0	1.7	0.0	1.00	1.00	10.0	7.0	89.0
11	7.73	7.73	135	0	2.2	0.0	1.00	1.00	11.0	7.7	90.4
12	8.14	8.14	135	0	2.8	0.0	1.00	1.00	12.0	8.5	92.1
13	8.46	8.46	135	0	3.4	0.0	1.00	1.00	13.0	9.2	94.3
14	8.72	8.72	135	0	4.1	0.0	1.00	1.00	14.0	10.0	96.6
15	8.97	8.97	135	0	4.7	0.0	1.00	1.00	15.0	10.7	98.7
16	9.20	9.20	135	0	5.5	0.0	1.00	1.00	16.0	11.5	100.6
17	9.40	9.40	135	0	6.2	0.0	1.00	1.00	17.0	12.3	102.3
18	9.60	9.60	135	0	7.0	0.0	1.00	1.00	18.0	13.1	103.8
19	9.79	9.79	135	0	7.9	0.0	1.00	1.00	19.0	13.9	105.2
20	9.98	9.98	135	0	8.7	0.0	1.00	1.00	20.0	14.7	106.4
21	10.17	10.17	135	0	9.6	0.0	1.00	1.00	21.0	15.6	107.5
22	10.35	10.35	135	0	10.6	0.0	1.00	1.00	22.0	16.4	108.4
23	10.52	10.52	135	0	11.5	0.0	1.00	1.00	23.0	17.2	109.4
24	10.69	10.69	135	0	12.5	0.0	1.00	1.00	23.9	18.0	110.2
25	10.86	10.86	135	0	13.4	0.0	1.00	1.00	24.9	18.9	111.0
26	11.02	11.02	135	0	14.4	0.0	1.00	1.00	25.9	19.7	111.8
27	11.17	11.17	135	0	15.4	0.0	1.00	1.00	26.8	20.5	112.5
28	11.32	11.32	135	0	16.4	0.0	1.00	1.00	27.8	21.4	113.1
29	11.46	11.46	135	0	17.4	0.0	1.00	1.00	28.8	22.2	113.7
30	11.60	11.60	135	0	18.5	0.0	1.00	1.00	29.7	23.0	114.2

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PERFORMANCE PREDICTIONS

BOAT LIBERTY

SEA STATE SMOOTH LEG UPWIND

PERFORMANCE PREDICTIONS - WINDWARD - LIBERTY.FT

VT	VS	VMG	GAMMA	TACK	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	5.08	3.75	42	81	5.0	2.0	1.00	0.77	6.0	10.3	21.0
7	5.74	4.25	42	80	7.7	2.1	1.00	0.78	7.0	11.8	21.2
8	6.30	4.70	42	79	10.2	2.2	1.00	0.79	7.9	13.3	21.4
9	6.78	5.09	41	78	12.5	2.3	1.00	0.79	8.9	14.7	21.5
10	7.17	5.43	41	77	14.6	2.4	1.00	0.80	9.9	16.0	21.5
11	7.47	5.72	40	75	16.5	2.5	1.00	0.80	10.9	17.3	21.4
12	7.67	5.96	39	73	18.3	2.6	0.99	0.80	11.9	18.5	21.3
13	7.79	6.15	38	70	19.9	2.6	0.96	0.80	12.8	19.6	21.1
14	7.86	6.30	37	68	21.3	2.7	0.91	0.79	13.8	20.7	20.8
15	7.93	6.43	36	66	22.5	2.8	0.87	0.78	14.8	21.7	20.7
16	7.98	6.54	35	64	23.6	2.9	0.82	0.77	15.8	22.8	20.6
17	8.04	6.63	34	63	24.4	2.9	0.78	0.76	16.7	23.8	20.5
18	8.08	6.70	34	62	25.0	2.9	0.73	0.74	17.7	24.8	20.6
19	8.12	6.77	34	61	25.7	3.0	0.69	0.72	18.7	25.9	20.6
20	8.16	6.83	33	60	26.3	3.0	0.66	0.70	19.7	26.9	20.6
21	8.19	6.88	33	60	26.8	3.0	0.62	0.68	20.6	27.9	20.7
22	8.22	6.92	33	59	27.3	3.1	0.59	0.66	21.6	28.9	20.8
23	8.25	6.96	32	59	27.7	3.1	0.57	0.64	22.6	29.9	20.8
24	8.28	7.00	32	58	28.2	3.1	0.54	0.62	23.5	30.8	20.9
25	8.30	7.03	32	58	28.5	3.1	0.52	0.60	24.5	31.8	21.0
26	8.32	7.06	32	58	28.9	3.2	0.49	0.58	25.5	32.8	21.1
27	8.35	7.08	32	57	29.2	3.2	0.47	0.55	26.4	33.8	21.2
28	8.36	7.11	32	57	29.4	3.2	0.46	0.53	27.4	34.8	21.4
29	8.38	7.12	32	57	29.6	3.2	0.44	0.51	28.3	35.7	21.5
30	8.40	7.14	32	57	29.8	3.2	0.43	0.49	29.3	36.7	21.6

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PERFORMANCE PREDICTIONS

BOAT LIBERTY

SEA STATE STD ROUGH LEG UPWIND

PERFORMANCE PREDICTIONS - WINDWARD - LIBERTY.FT

VT	VS	VMG	GAMMA	TACK	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	5.08	3.75	42	81	5.0	2.0	1.00	0.77	6.0	10.3	21.0
7	5.72	4.22	42	81	7.0	2.1	1.00	0.77	7.0	11.8	21.3
8	6.26	4.63	42	80	9.1	2.1	1.00	0.76	8.0	13.3	21.7
9	6.72	4.98	42	80	11.2	2.2	1.00	0.77	8.9	14.6	22.1
10	7.10	5.26	42	80	13.3	2.3	1.00	0.77	9.9	15.9	22.4
11	7.38	5.48	42	79	15.5	2.4	1.00	0.77	10.9	17.1	22.9
12	7.58	5.63	42	79	17.7	2.6	1.00	0.78	11.9	18.2	23.3
13	7.69	5.72	42	78	19.9	2.7	1.00	0.78	12.8	19.3	23.7
14	7.76	5.77	42	78	22.0	2.9	1.00	0.79	13.8	20.2	24.2
15	7.81	5.81	42	78	23.7	3.0	0.99	0.78	14.8	21.2	24.7
16	7.86	5.85	42	78	25.1	3.1	0.96	0.77	15.7	22.2	25.2
17	7.90	5.87	42	78	26.1	3.1	0.92	0.76	16.7	23.2	25.7
18	7.94	5.89	42	78	26.9	3.2	0.87	0.74	17.7	24.2	26.2
19	7.97	5.91	42	78	27.6	3.2	0.83	0.72	18.6	25.1	26.6
20	8.00	5.92	42	78	28.3	3.3	0.79	0.70	19.6	26.1	27.1
21	8.03	5.94	42	78	28.9	3.3	0.76	0.68	20.6	27.1	27.5
22	8.05	5.95	42	78	29.5	3.3	0.73	0.66	21.5	28.0	27.9
23	8.08	5.96	42	78	30.0	3.4	0.70	0.65	22.5	29.0	28.3
24	8.10	5.96	43	78	30.5	3.4	0.67	0.63	23.4	29.9	28.6
25	8.12	5.97	43	79	30.9	3.4	0.64	0.61	24.4	30.9	29.0
26	8.14	5.97	43	79	31.3	3.5	0.62	0.59	25.3	31.8	29.4
27	8.16	5.97	43	79	31.7	3.5	0.59	0.57	26.3	32.7	29.7
28	8.17	5.97	43	79	32.0	3.5	0.57	0.54	27.3	33.7	30.1
29	8.19	5.97	43	79	32.3	3.5	0.55	0.52	28.2	34.6	30.4
30	8.20	5.96	43	80	32.5	3.5	0.54	0.50	29.2	35.6	30.7

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PERFORMANCE PREDICTIONS

BOAT LIBERTY

SEA STATE Smooth or Rough LEG DOWNWIND

PERFORMANCE PREDICTIONS - DOWNWIND - LIBERTY.FT

VT	VS	VMG	GAMMA	GYBE	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.16	3.47	146	67	0.0	0.0	1.00	1.00	6.0	3.4	104.2
7	4.99	4.07	145	70	0.4	0.0	1.00	1.00	7.0	4.1	101.1
8	5.72	4.64	144	71	0.7	0.0	1.00	1.00	8.0	4.7	99.9
9	6.34	5.18	144	71	0.9	0.0	1.00	1.00	9.0	5.2	100.8
10	6.85	5.67	146	69	1.1	0.0	1.00	1.00	10.0	5.7	103.7
11	7.26	6.14	147	65	1.1	0.0	1.00	1.00	11.0	6.2	108.6
12	7.56	6.56	150	59	1.1	0.0	1.00	1.00	12.0	6.6	115.5
13	7.75	6.95	154	52	1.0	0.0	1.00	1.00	13.0	7.0	124.4
14	7.90	7.30	158	44	0.8	0.0	1.00	1.00	14.0	7.3	133.7
15	8.05	7.62	161	38	0.6	0.0	1.00	1.00	15.0	7.8	141.7
16	8.22	7.91	164	32	0.5	0.0	1.00	1.00	16.0	8.4	148.4
17	8.39	8.16	166	27	0.4	0.0	1.00	1.00	17.0	9.1	153.8
18	8.57	8.39	168	23	0.3	0.0	1.00	1.00	18.0	9.8	158.0
19	8.75	8.60	170	21	0.3	0.0	1.00	1.00	19.0	10.5	161.0
20	8.93	8.80	170	19	0.4	0.0	1.00	1.00	20.0	11.3	162.9
21	9.10	8.98	171	19	0.6	0.0	1.00	1.00	21.0	12.1	163.5
22	9.28	9.15	170	19	0.8	0.0	1.00	1.00	22.0	13.0	163.6
23	9.46	9.33	170	19	1.1	0.0	1.00	1.00	23.0	13.8	163.7
24	9.64	9.50	170	20	1.4	0.0	1.00	1.00	24.0	14.6	163.7
25	9.81	9.67	170	20	1.6	0.0	1.00	1.00	25.0	15.5	163.8
26	9.99	9.84	170	20	1.9	0.0	1.00	1.00	26.0	16.3	163.9
27	10.16	10.01	170	20	2.2	0.0	1.00	1.00	27.0	17.1	164.0
28	10.33	10.18	170	20	2.6	0.0	1.00	1.00	28.0	17.9	164.2
29	10.51	10.34	170	20	2.9	0.0	1.00	1.00	29.0	18.7	164.3
30	10.68	10.51	170	20	3.3	0.0	1.00	1.00	30.0	19.6	164.4

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PERFORMANCE PREDICTIONS

BOAT LIBERTY

SEA STATE Smooth or Rough LEG Reaching (135°)

PERFORMANCE PREDICTIONS - REACHING LEG - LIBERTY.FT

VT	VS	VMG	GAMMA	****	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.78	4.78	135	0	0.1	0.0	1.00	1.00	6.0	4.3	82.7
7	5.56	5.56	135	0	0.7	0.0	1.00	1.00	7.0	4.9	83.5
8	6.26	6.26	135	0	1.3	0.0	1.00	1.00	8.0	5.6	84.5
9	6.88	6.88	135	0	1.9	0.0	1.00	1.00	9.0	6.3	85.9
10	7.41	7.41	135	0	2.7	0.0	1.00	1.00	10.0	7.0	87.5
11	7.86	7.86	135	0	3.4	0.0	1.00	1.00	11.0	7.7	89.4
12	8.22	8.22	135	0	4.3	0.0	1.00	1.00	12.0	8.5	91.6
13	8.51	8.51	135	0	5.2	0.0	1.00	1.00	13.0	9.2	94.0
14	8.74	8.74	135	0	6.1	0.0	1.00	1.00	14.0	9.9	96.5
15	8.97	8.97	135	0	7.1	0.0	1.00	1.00	15.0	10.7	98.7
16	9.18	9.18	135	0	8.2	0.0	1.00	1.00	16.0	11.5	100.6
17	9.39	9.39	135	0	9.3	0.0	1.00	1.00	17.0	12.3	102.3
18	9.59	9.59	135	0	10.4	0.0	1.00	1.00	18.0	13.1	103.8
19	9.78	9.78	135	0	11.6	0.0	1.00	1.00	19.0	13.9	105.1
20	9.97	9.97	135	0	12.8	0.0	1.00	1.00	19.9	14.7	106.3
21	10.16	10.16	135	0	14.1	0.0	1.00	1.00	20.9	15.5	107.4
22	10.34	10.34	135	0	15.3	0.0	1.00	1.00	21.9	16.3	108.4
23	10.51	10.51	135	0	16.6	0.0	1.00	1.00	22.9	17.1	109.3
24	10.68	10.68	135	0	17.9	0.0	1.00	1.00	23.8	17.9	110.1
25	10.84	10.84	135	0	19.1	0.0	1.00	1.00	24.8	18.8	110.9
26	10.99	10.99	135	0	20.4	0.0	1.00	1.00	25.7	19.6	111.7
27	11.14	11.14	135	0	21.6	0.0	1.00	1.00	26.7	20.4	112.4
28	11.28	11.28	135	0	22.9	0.0	1.00	1.00	27.6	21.2	113.0
29	11.42	11.42	135	0	24.2	0.0	1.00	1.00	28.6	22.0	113.6
30	11.55	11.55	135	0	25.4	0.0	1.00	1.00	29.5	22.8	114.1

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PERFORMANCE PREDICTIONS

BOAT S-83 (H)

SEA STATE Smooth LEG UPWIND

PERFORMANCE PREDICTIONS - WINDWARD - SPIRITH.FT

VT	VS	VMG	GAMMA	TACK	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.95	3.64	43	82	4.4	1.6	1.00	0.75	6.0	10.2	21.9
7	5.65	4.19	42	81	6.6	1.7	1.00	0.76	7.0	11.8	21.9
8	6.25	4.68	42	80	8.7	1.7	1.00	0.76	8.0	13.3	21.8
9	6.75	5.12	41	78	10.8	1.8	1.00	0.77	8.9	14.7	21.8
10	7.17	5.49	40	77	12.8	1.8	1.00	0.77	9.9	16.1	21.7
11	7.49	5.80	39	75	14.8	1.9	1.00	0.78	10.9	17.4	21.5
12	7.71	6.06	38	72	16.7	2.0	1.00	0.78	11.9	18.6	21.3
13	7.84	6.25	37	70	18.5	2.1	0.98	0.78	12.9	19.7	21.0
14	7.92	6.41	36	68	20.1	2.2	0.95	0.78	13.8	20.8	20.8
15	7.99	6.54	35	66	21.5	2.3	0.92	0.78	14.8	21.8	20.6
16	8.06	6.66	34	64	22.6	2.3	0.88	0.77	15.8	22.9	20.5
17	8.11	6.75	34	63	23.4	2.4	0.83	0.75	16.8	23.9	20.5
18	8.16	6.83	33	62	24.1	2.4	0.79	0.73	17.7	25.0	20.5
19	8.21	6.90	33	61	24.7	2.5	0.74	0.71	18.7	26.0	20.5
20	8.25	6.96	32	60	25.4	2.5	0.71	0.70	19.7	27.0	20.5
21	8.28	7.01	32	59	25.9	2.5	0.67	0.68	20.7	28.0	20.6
22	8.32	7.06	32	59	26.5	2.5	0.64	0.66	21.6	29.0	20.6
23	8.35	7.10	32	58	27.0	2.6	0.61	0.64	22.6	30.0	20.7
24	8.38	7.14	32	58	27.5	2.6	0.59	0.62	23.6	31.0	20.8
25	8.41	7.18	31	57	27.9	2.6	0.56	0.60	24.5	32.0	20.9
26	8.43	7.21	31	57	28.3	2.6	0.54	0.58	25.5	33.0	21.0
27	8.46	7.24	31	57	28.7	2.7	0.52	0.56	26.4	34.0	21.1
28	8.48	7.26	31	57	29.0	2.7	0.50	0.54	27.4	34.9	21.2
29	8.50	7.28	31	57	29.3	2.7	0.48	0.52	28.4	35.9	21.4
30	8.52	7.30	31	57	29.6	2.7	0.47	0.50	29.3	36.9	21.5

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PERFORMANCE PREDICTIONS

BOAT S-83 (4)

SEA STATE STD. ROUGH LEG UPWIND

PERFORMANCE PREDICTIONS - WINDWARD - SPIRITH.FT

VT	VS	VMG	GAMMA	TACK	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.95	3.64	43	82	4.3	1.6	1.00	0.75	6.0	10.2	21.9
7	5.63	4.16	42	82	6.2	1.6	0.99	0.75	7.0	11.8	22.0
8	6.21	4.61	42	81	8.1	1.7	0.99	0.75	8.0	13.2	22.2
9	6.70	5.00	42	80	10.1	1.7	0.99	0.75	8.9	14.6	22.4
10	7.10	5.31	42	80	12.1	1.8	0.99	0.75	9.9	15.9	22.6
11	7.40	5.56	41	79	14.1	1.9	1.00	0.75	10.9	17.2	22.9
12	7.62	5.73	41	78	16.1	2.0	1.00	0.76	11.9	18.3	23.3
13	7.73	5.84	41	78	18.1	2.2	1.00	0.76	12.9	19.4	23.6
14	7.80	5.90	41	77	20.1	2.3	1.00	0.77	13.8	20.4	24.0
15	7.86	5.96	41	77	21.8	2.4	1.00	0.76	14.8	21.4	24.4
16	7.92	6.00	41	76	23.3	2.5	0.99	0.76	15.8	22.4	24.8
17	7.97	6.04	41	76	24.7	2.6	0.96	0.75	16.7	23.4	25.3
18	8.01	6.07	41	76	25.8	2.6	0.93	0.74	17.7	24.3	25.7
19	8.05	6.10	41	76	26.8	2.7	0.89	0.73	18.7	25.3	26.1
20	8.09	6.12	41	76	27.6	2.7	0.86	0.71	19.6	26.3	26.5
21	8.12	6.14	41	76	28.3	2.8	0.82	0.69	20.6	27.3	26.8
22	8.15	6.16	41	76	28.9	2.8	0.79	0.67	21.5	28.2	27.2
23	8.17	6.18	41	76	29.5	2.8	0.76	0.65	22.5	29.2	27.5
24	8.20	6.19	41	76	30.0	2.9	0.73	0.63	23.5	30.1	27.8
25	8.22	6.20	41	76	30.5	2.9	0.70	0.62	24.4	31.1	28.2
26	8.24	6.21	41	76	31.0	2.9	0.67	0.60	25.4	32.0	28.5
27	8.26	6.22	41	77	31.4	2.9	0.65	0.58	26.3	33.0	28.8
28	8.28	6.22	41	77	31.8	3.0	0.63	0.56	27.3	33.9	29.1
29	8.30	6.22	41	77	32.1	3.0	0.61	0.54	28.2	34.9	29.4
30	8.31	6.22	42	77	32.4	3.0	0.59	0.52	29.2	35.8	29.7

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PERFORMANCE PREDICTIONS

BOAT 5-83 (H)

SEA STATE SMOOTH (OR ROUGH) LEG DOWNWIND

PERFORMANCE PREDICTIONS - DOWNWIND - SPIRITH.FT

VT	VS	VMG	GAMMA	GYBE	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.03	3.37	147	67	0.0	0.0	1.00	1.00	6.0	3.4	106.6
7	4.89	3.99	145	70	0.4	0.0	1.00	1.00	7.0	4.1	103.0
8	5.65	4.58	144	71	0.7	0.0	1.00	1.00	8.0	4.7	101.3
9	6.29	5.13	145	71	0.9	0.0	1.00	1.00	9.0	5.2	101.7
10	6.82	5.64	146	69	1.0	0.0	1.00	1.00	10.0	5.7	104.1
11	7.25	6.11	147	65	1.0	0.0	1.00	1.00	11.0	6.2	108.6
12	7.56	6.55	150	60	1.0	0.0	1.00	1.00	12.0	6.6	115.0
13	7.77	6.94	153	53	0.9	0.0	1.00	1.00	13.0	7.0	123.5
14	7.93	7.29	157	46	0.8	0.0	1.00	1.00	14.0	7.4	132.5
15	8.09	7.62	160	39	0.7	0.0	1.00	1.00	15.0	7.9	140.3
16	8.25	7.91	163	33	0.5	0.0	1.00	1.00	16.0	8.4	147.1
17	8.42	8.17	166	28	0.4	0.0	1.00	1.00	17.0	9.1	152.8
18	8.60	8.41	168	24	0.3	0.0	1.00	1.00	18.0	9.8	157.3
19	8.78	8.63	169	21	0.3	0.0	1.00	1.00	19.0	10.5	160.5
20	8.96	8.83	170	20	0.4	0.0	1.00	1.00	20.0	11.3	162.5
21	9.14	9.01	170	19	0.6	0.0	1.00	1.00	21.0	12.1	163.3
22	9.32	9.19	170	19	0.8	0.0	1.00	1.00	22.0	12.9	163.4
23	9.50	9.36	170	20	1.0	0.0	1.00	1.00	23.0	13.8	163.5
24	9.67	9.53	170	20	1.2	0.0	1.00	1.00	24.0	14.6	163.6
25	9.85	9.70	170	20	1.5	0.0	1.00	1.00	25.0	15.4	163.8
26	10.02	9.87	170	20	1.7	0.0	1.00	1.00	26.0	16.2	164.0
27	10.19	10.04	170	20	2.0	0.0	1.00	1.00	27.0	17.1	164.1
28	10.36	10.21	170	20	2.3	0.0	1.00	1.00	28.0	17.9	164.3
29	10.53	10.37	170	20	2.5	0.0	1.00	1.00	29.0	18.7	164.5
30	10.69	10.54	170	20	2.8	0.0	1.00	1.00	30.0	19.5	164.8

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PERFORMANCE PREDICTIONS

BOAT 5-83 (H)

SEA STATE Smooth (or Rough) LEG REACHING (135°)

PERFORMANCE PREDICTIONS - REACHING LEG - SPIRITH.FT

VT	VS	VMG	GAMMA	****	HEEL	LEE	TRIM	TWIST	VT-O	VA-O	BET-O
6	4.60	4.60	135	0	0.1	0.0	1.00	1.00	6.0	4.2	85.1
7	5.43	5.43	135	0	0.6	0.0	1.00	1.00	7.0	4.9	85.2
8	6.17	6.17	135	0	1.1	0.0	1.00	1.00	8.0	5.6	85.7
9	6.82	6.82	135	0	1.7	0.0	1.00	1.00	9.0	6.3	86.6
10	7.38	7.38	135	0	2.4	0.0	1.00	1.00	10.0	7.0	87.8
11	7.85	7.85	135	0	3.1	0.0	1.00	1.00	11.0	7.7	89.5
12	8.24	8.24	135	0	3.9	0.0	1.00	1.00	12.0	8.5	91.5
13	8.53	8.53	135	0	4.7	0.0	1.00	1.00	13.0	9.2	93.9
14	8.77	8.77	135	0	5.6	0.0	1.00	1.00	14.0	9.9	96.3
15	9.00	9.00	135	0	6.5	0.0	1.00	1.00	15.0	10.7	98.5
16	9.22	9.22	135	0	7.4	0.0	1.00	1.00	16.0	11.5	100.4
17	9.43	9.43	135	0	8.4	0.0	1.00	1.00	17.0	12.3	102.1
18	9.64	9.64	135	0	9.5	0.0	1.00	1.00	18.0	13.1	103.6
19	9.83	9.83	135	0	10.6	0.0	1.00	1.00	19.0	13.9	105.0
20	10.02	10.02	135	0	11.7	0.0	1.00	1.00	20.0	14.7	106.2
21	10.21	10.21	135	0	12.8	0.0	1.00	1.00	20.9	15.5	107.2
22	10.39	10.39	135	0	14.0	0.0	1.00	1.00	21.9	16.3	108.2
23	10.56	10.56	135	0	15.1	0.0	1.00	1.00	22.9	17.1	109.2
24	10.73	10.73	135	0	16.3	0.0	1.00	1.00	23.9	18.0	110.0
25	10.89	10.89	135	0	17.5	0.0	1.00	1.00	24.8	18.8	110.8
26	11.04	11.04	135	0	18.7	0.0	1.00	1.00	25.8	19.6	111.6
27	11.19	11.19	135	0	19.8	0.0	1.00	1.00	26.7	20.4	112.3
28	11.33	11.33	135	0	21.0	0.0	1.00	1.00	27.7	21.2	112.9
29	11.46	11.46	135	0	22.2	0.0	1.00	1.00	28.6	22.1	113.5
30	11.59	11.59	135	0	23.4	0.0	1.00	1.00	29.6	22.9	114.1

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SECTION 3

MISCELLANEOUS DATA

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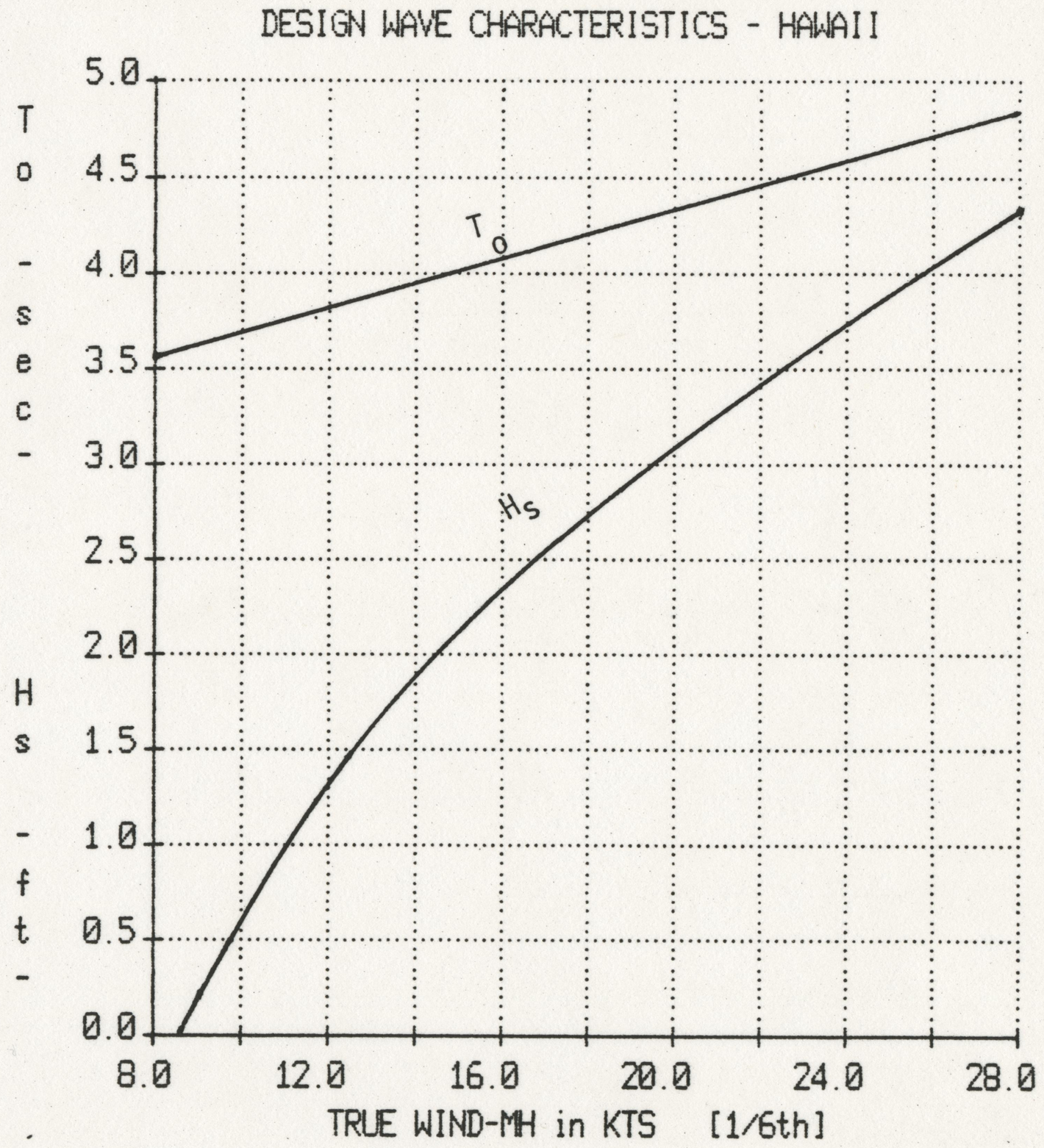

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How a change of +75 ft² RSA
affects performance for a 48' MWL boat.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	8.6	9.7	6.8	208.2
9	7.5	8.4	5.5	177.9
10	6.4	7.2	4.3	151.0
11	5.5	6.0	3.4	127.3
12	4.7	5.0	2.6	106.9
13	4.1	4.0	2.2	89.7
14	3.5	3.2	1.8	75.0
15	2.9	2.5	1.6	61.8
16	2.3	2.1	1.5	50.1
17	1.6	1.8	1.4	39.8
18	1.1	1.6	1.5	31.5
19	0.6	1.5	1.5	25.2
20	0.4	1.5	1.5	21.2
21	0.3	1.4	1.5	19.4
22	0.2	1.4	1.5	18.7
23	0.2	1.4	1.4	18.0
24	0.1	1.4	1.4	17.4
25	0.1	1.4	1.4	16.8
26	0.0	1.4	1.4	16.2
27	0.0	1.4	1.4	15.7
28	-0.0	1.4	1.3	15.3
29	-0.0	1.5	1.3	14.9
30	-0.1	1.5	1.3	14.5

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How a change of +200 ft-lbs/deg R.M.
affects performance for a 48' MWL boat.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	0.5	0.0	0.0	6.8
9	0.7	0.0	0.0	9.0
10	0.8	0.0	0.0	11.2
11	1.0	0.0	0.0	13.4
12	1.2	0.0	0.0	15.6
13	1.3	0.0	0.0	17.7
14	1.5	0.0	0.0	20.1
15	1.7	0.0	0.0	22.6
16	1.9	0.0	0.0	25.4
17	2.2	0.0	0.1	28.5
18	2.4	0.0	0.1	31.4
19	2.6	0.0	0.1	34.0
20	2.7	0.0	0.1	36.2
21	2.9	0.0	0.1	38.0
22	3.0	0.0	0.1	39.5
23	3.1	0.0	0.2	40.9
24	3.2	0.0	0.2	42.2
25	3.2	0.0	0.2	43.3
26	3.3	0.0	0.2	44.4
27	3.4	0.0	0.2	45.4
28	3.4	0.0	0.3	46.3
29	3.5	0.0	0.3	47.0
30	3.5	0.0	0.3	47.6

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How a change of -0.1 ft² drag area affects performance for a 48' MWL boat.

DELTAS - SECONDS PER MILE-MADE-GOOD

VT	UPWIND	DOWNWIND	REACHING	PERTH
6	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0
8	15.4	11.0	8.1	311.0
9	13.2	9.4	6.3	263.4
10	11.2	8.0	4.8	221.4
11	9.5	6.6	3.6	185.0
12	8.1	5.4	2.6	154.3
13	7.0	4.3	1.9	129.2
14	6.1	3.3	1.5	108.8
15	5.4	2.6	1.1	92.1
16	4.7	2.0	0.9	79.1
17	4.2	1.6	0.8	69.8
18	3.8	1.4	0.7	62.9
19	3.5	1.2	0.7	57.2
20	3.3	1.0	0.6	52.8
21	3.1	0.9	0.6	49.6
22	3.0	0.8	0.6	47.2
23	2.9	0.8	0.5	45.0
24	2.8	0.7	0.5	42.9
25	2.7	0.6	0.5	41.2
26	2.6	0.6	0.4	39.6
27	2.5	0.5	0.4	38.3
28	2.4	0.5	0.4	37.1
29	2.4	0.5	0.4	36.3
30	2.3	0.5	0.4	35.6

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