

Interpreting The Scratch Sheet Page for Monday Time-on-Time Handicapping

Scratch Sheet for Race 4 of 20 on Mon Jun 03 2019

Boat	Std	Imputed from before (oldest ... newest)							Bf(mm:ss)	ΔBf
619 No Resistance	1000	0943	0876	0976	0930	0911	0993	0963	944(15:44)	-43
485 Sail Away 3	915	0895	0935	1015	0978	0929	0940	0943	945(15:45)	-42
56 Bulldog	950	0940	0889	0953	1044	0983	0923	0955	951(15:51)	-36
64065 Restless	980	0978	1028	0970	0979	0948	0949	0908	965(16:05)	-22
749 Vagabond	1000	0994	0949	0961	0993	1004	1316	0983	987(16:27)	★
421 Against the Wind	935	1009	1019	0970	0975	1074	1015	0884	997(16:37)	+10
511 Nauti Dog	1010	1049	1005	1167	0989	1010	0990	1064	1023(17:03)	+36
1701 Idalen II	1040	1080	1149	1118	1068	1106	1242	1092	1109(18:29)	+122

Table Headings for Handicaps

Std	Standard handicap as deduced from initial registration
Imputed from before	Up to seven imputed (or seeded) handicaps from before the race
Bf (<i>short for Before</i>)	Rolling handicap computed from the imputed handicaps from before the race — geometric mean of five imputed excluding extreme two
(mm:ss)	Rolling handicap in minutes and seconds per mile
ΔBf	Differences in rolling handicap suitable for the upcoming race

For Example

South Port's scratch sheets are published on the web in a form that makes it easy to compare your progress against your competitors while on the water. The scratch sheet publishes handicaps to be applied for the upcoming race. A short explanation is called for.

Pace and the General Purpose Handicap

Pace is a measure of how many seconds it takes to complete a mile and varies inversely to speed measured in knots. For example: an average speed of 6 kt corresponds to a pace of 600 seconds/mile; an average speed of 4 kt corresponds to a pace of 900 seconds/mile — pace and speed multiplied together always results in 3600 seconds/hour. A slower pace is represented by a greater number of seconds per mile. Pace is the natural measure of performance prediction and handicapping.

The Monday handicap is a time-on-time handicap gauged to be a *general-purpose handicap*; i.e. a boat's expected pace as averaged over all race courses and over a typical range of winds.

Scratch Sheet Table Columns

Monday's scratch sheet is a little more involved than for PHRF racing because the rolling handicap needs to be recomputed before each race. The legend above gives a short explanation of the different columns. See the handicapping synopsis document to fully understand these calculations.

Your Boat Relative to Your Competitors

Denote your own boat with a star. For this example assume this is Vagabond: the rolling handicap from *before* the race is ★Bf = 987 s/mile or 16 min 27 s/mile and the "deltas" are the differences in each competitor's handicap from your own.

To determine which of either you or your competitor has won at the finish line at an elapsed time ★*t* you would calculate the time allowance Δ*t*, which is difference in elapsed time necessary for you to tie, using this proportionality

$$\Delta t : \Delta Bf = \star t : \star Bf$$

This states that the ratio of the time allowance to the

difference in handicaps is equal in proportion to the ratio of your elapsed time to your handicap. Note that we have implicitly dropped *per mile* from all the paces on the right hand side of the ratios to balance the units.

Instead of having you perform long division in your head while racing we will prepare a table of time allowances beforehand. Clicking on your own boat in the scratch sheet web page on the club web site prepares for you a table of values (increasing in proportion) of distance sailed in average conditions, elapsed times for your own boat and time allowances against each of your competitors (skipping those who have the same handicap as you). The table is keyed on the second column, the elapsed time while the first column is simply an average and not to be used for looking up time allowances.

The row in the table at distance 1.0 has the **★Bf** in minutes:seconds in the elapsed time column and the ΔBf for each of our competitors in the following columns. The rows at distances 1.0, 2.0, 3.0, ... yields exact time allowances at exact elapsed times. However, the intermediate rows which interpolate between these values will be rounded to the closest second. Looking up the closest elapsed time should be sufficient for most purposes.

Conveniently

We can also calculate time allowances in parts. In the race, your elapsed time at the finish was 1 h 49 min 42 s. Knowing the time allowance at 6.0 mi / 1 h 38 min 42 s we have an excess of 11 min of elapsed time to be accounted for. Looking up 0.7 mi / 11 min 31 s from the beginning of the table we can add the rows together column-by-column to get the time allowances at 6.7 mi / 1 h 50 min 7 s which is sufficiently close to your actual finish for our purposes.

No Resistance finished 7 min 7 s earlier than you. The time allowance for her is 4 min 44 s in your favour (4 min 14 s from the 6.0 row and 30 s from the 0.7 row). You lost to Resistance by 2 min 27 s. This agrees with the time delta on the results page when your boat, Vagabond, is selected as scratch.

Corrected times and time allowances represent the exact same handicapping relationship. For competitors, time allowances are far easier to apply.

Time Allowance Tabulation on the Web

★	Vagabond	+Against the Wind	- Restless	+ Nauti Dog - Bulldog	- Sail Away	- No Resistance	- Idalen II
0.1	0:01:39	1	2	4	4	4	12
0.2	0:03:17	2	4	7	8	9	24
0.3	0:04:56	3	7	11	13	13	37
0.4	0:06:35	4	9	14	17	17	49
0.5	0:08:14	5	11	18	21	22	1:01
0.6	0:09:52	6	13	22	25	26	1:13
0.7	0:11:31	7	15	25	29	30	1:25
0.8	0:13:10	8	18	29	34	34	1:38
0.9	0:14:48	9	20	32	38	39	1:50
1.0	0:16:27	10	22	36	42	43	2:02
2.0	0:32:54	20	44	1:12	1:24	1:26	4:04
2.2	0:36:11	22	48	1:19	1:32	1:35	4:28
2.4	0:39:29	24	53	1:26	1:41	1:43	4:53
2.6	0:42:46	26	57	1:34	1:49	1:52	5:17
2.8	0:46:04	28	1:02	1:41	1:58	2:00	5:42
3.0	0:49:21	30	1:06	1:48	2:06	2:09	6:06
3.2	0:52:38	32	1:10	1:55	2:14	2:18	6:30
3.4	0:55:56	34	1:15	2:02	2:23	2:26	6:55
3.6	0:59:13	36	1:19	2:10	2:31	2:35	7:19
3.8	1:02:31	38	1:24	2:17	2:40	2:43	7:44
4.0	1:05:48	40	1:28	2:24	2:48	2:52	8:08
4.2	1:09:05	42	1:32	2:31	2:56	3:01	8:32
4.4	1:12:23	44	1:37	2:38	3:05	3:09	8:57
4.6	1:15:40	46	1:41	2:46	3:13	3:18	9:21
4.8	1:18:58	48	1:46	2:53	3:22	3:26	9:46
5.0	1:22:15	50	1:50	3:00	3:30	3:35	10:10
5.2	1:25:32	52	1:54	3:07	3:38	3:44	10:34
5.4	1:28:50	54	1:59	3:14	3:47	3:52	10:59
5.6	1:32:07	56	2:03	3:22	3:55	4:01	11:23
5.8	1:35:25	58	2:08	3:29	4:04	4:09	11:48
6.0	1:38:42	1:00	2:12	3:36	4:12	4:18	12:12
7.0	1:55:09	1:10	2:34	4:12	4:54	5:01	14:14
8.0	2:11:36	1:20	2:56	4:48	5:36	5:44	16:16
9.0	2:28:03	1:30	3:18	5:24	6:18	6:27	18:18
10.0	2:44:30	1:40	3:40	6:00	7:00	7:10	20:20
15.0	4:06:45	2:30	5:30	9:00	10:30	10:45	30:30
20.0	5:29:00	3:20	7:20	12:00	14:00	14:20	40:40
25.0	6:51:15	4:10	9:10	15:00	17:30	17:55	50:50
30.0	8:13:30	5:00	11:00	18:00	21:00	21:30	61:00