



ORC



Stan Honey:

“Weather Routing Scoring uses three highly complex technologies, **sailboat performance prediction, weather forecasting, and optimal routing**, to make racing simpler. With TCFs for each boat issued prior to the start, time allowances are easy to figure so sailors can race tactically, knowing who to cover and when to split. ORC should be commended for the best possible use of technology to make racing simpler and more fun.”





International
Certificate
2024

Boat
Sopu Tres
FIN-12150

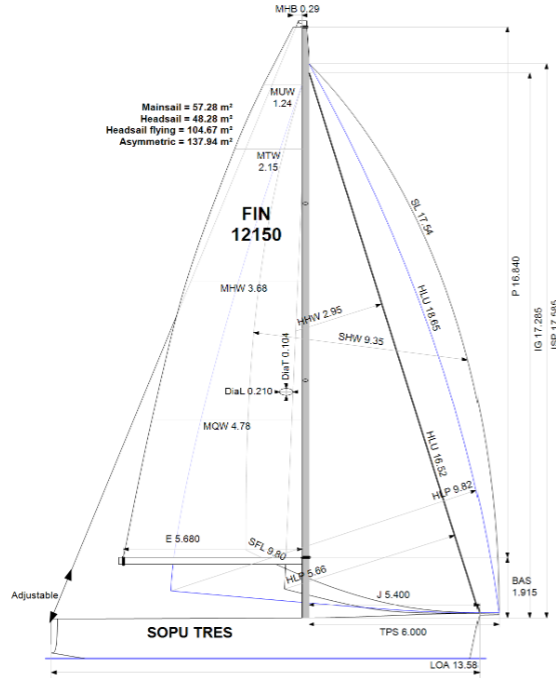
Avomeripurjehtijat ry
c/o Mainoskauppa Oy
Melkonkatu 16 B
00210 HELSINKI



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APH ToD: **505.9** CDL: **11.437**

APH ToT: **1.1861** CertNo: **12150**

BOAT

Class **Grand Soleil 45**
Designer **Judel&Vrolijk**
Builder **Grand soleil**
Age date **01/2004**
Series date **01/2004**
Offset file **GS45JV-FK.off**
Data file **FIN12150**

HULL

Length Overall **13.578 m**
Maximum Beam **4.262 m**
Draft **2.757 m**
Displacement **10,349 kg**
DLR **5.9328**
IMS Division **Cruiser/Racer**
Dynamic Allowance **0.210%**
Age Allowance **0.487%**

PROPELLER

Installation **Strut**
Type **Folding 2 blades**
Diameter **0.450m**

CREW

Maximum weight **600 kg** (declared)
Minimum weight **470 kg** * when applied
Non Manual Power **No**
Crew Arm Extension

SAIL AREAS (m²)

	Measured	Rated
Mainsail	57.28	58.37
Headsail Luffed	48.28	48.28
Headsail Flying	104.67	104.67
Symmetric		
Asymmetric	137.94	137.94

(All asymmetric spinnakers with SHW/SFL > 85%)

STORM SAIL AREAS (m²)

Trysail **16.74**
Storm Jib **14.94**
Heavy Weather Jib **40.34**

SAIL LIMITS

Headsails **7**
Spinnakers **5** * Asymmetric SHALL NOT be luffed on the pole

STABILITY

Righting Moment **279.4 kg-m**
Stability Index **117.4**

The owner and any other person in charge is responsible that boat is complying with her certificate in accordance with RRS 78.1 and ORC Rule 30.4.

Rated boat velocities in knots								
Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Beat Angles	42.4°	40.4°	39.1°	38.0°	37.5°	37.2°	37.0°	38.2°
Beat VMG	3.80	4.64	5.23	5.55	5.71	5.80	5.90	5.89
52°	5.87	6.94	7.53	7.88	8.03	8.13	8.24	8.27
60°	6.31	7.33	7.76	8.09	8.26	8.36	8.47	8.52
75°	6.69	7.66	8.12	8.33	8.52	8.68	8.87	8.97
90°	6.75	7.75	8.28	8.61	8.82	8.98	9.25	9.47
110°	6.35	7.48	8.14	8.60	8.97	9.31	9.89	10.30
120°	5.95	7.19	8.02	8.55	9.00	9.43	10.08	10.62
135°	5.29	6.58	7.58	8.22	8.70	9.17	10.16	11.48
150°	4.45	5.66	6.70	7.51	8.04	8.42	9.10	9.86
Run VMG	3.85	4.91	5.80	6.50	6.96	7.36	8.30	9.01
Gybe Angles	142.8°	146.5°	148.4°	149.2°	149.8°	170.5°	175.9°	176.2°

Time Allowances in secs/NM								
Wind Velocity	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Beat VMG	947.8	776.6	688.8	648.8	630.9	620.5	609.8	611.7
52°	613.2	518.5	477.9	456.9	448.1	442.9	437.1	435.5
60°	570.8	491.3	463.9	444.9	435.8	430.8	425.0	422.8
75°	537.7	469.7	443.1	432.2	422.6	414.7	406.0	401.3
90°	533.6	464.7	434.7	418.2	408.1	401.0	389.1	380.1
110°	566.6	481.2	442.0	418.5	401.4	386.5	364.2	349.6
120°	605.0	500.5	448.7	421.2	400.0	381.9	357.0	339.1
135°	680.9	546.8	475.2	438.0	413.9	392.8	354.2	313.5
150°	809.0	635.6	537.4	479.5	447.8	427.8	395.6	365.2
Run VMG	934.2	733.9	620.6	553.6	517.0	489.0	433.5	399.7
Selected Courses								
Windward / Leeward	941.0	755.2	654.7	601.2	574.0	554.8	521.7	505.7
All purpose	711.9	585.6	521.5	487.9	469.0	455.3	434.3	420.5

Single Number Scoring Options		
Course	Time On Distance	Time On Time
Windward / Leeward	630.2	0.9520
All purpose	505.9	1.1861

Custom scoring options for Finland

Scoring Option	Time On Distance	Time On Time
FinRating (Coastal/Long Distance)	552.8	1.0853
Triple Number Coastal/Long Distance Low	648.7	0.9249
Triple Number Coastal/Long Distance Medium	502.5	1.1940
Triple Number Coastal/Long Distance High	450.8	1.3309
Triple Number Windward/Leeward Low	848.1	0.7075
Triple Number Windward/Leeward Medium	625.1	0.9599
Triple Number Windward/Leeward High	547.1	1.0966

Performance Curve	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Coastal/Long Distance	940.3	708.8	589.4	521.3	486.8	459.9	417.2	404.1

- AUS
- AUT
- BRA
- BUL
- CAN
- CYP
- DEN
- ESP
- EST
- FIN
- FRA
- GER
- GRE
- HUN
- ISR
- JPN
- KOR
- LTU
- NED
- NOR
- POR
- RSA
- RUS
- SLO
- SUI
- SWE
- UKR
- USA

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60°	570.8	491.3	463.9	444.9	435.8	430.8	425.0	422.8
75°	537.7	469.7	443.1	432.2	422.6	414.7	406.0	401.3
90°	533.6	464.7	434.7	418.2	408.1	401.0	389.1	380.1
110°	566.6	481.2	442.0	418.5	401.4	386.5	364.2	349.6
120°	605.0	500.5	448.7	421.2	400.0	381.9	357.0	339.1
135°	680.9	546.8	475.2	438.0	413.9	392.8	354.2	313.5
150°	809.0	635.6	537.4	479.5	447.8	427.8	395.6	365.2
Run VMG	934.2	733.9	620.6	553.6	517.0	489.0	433.5	399.7
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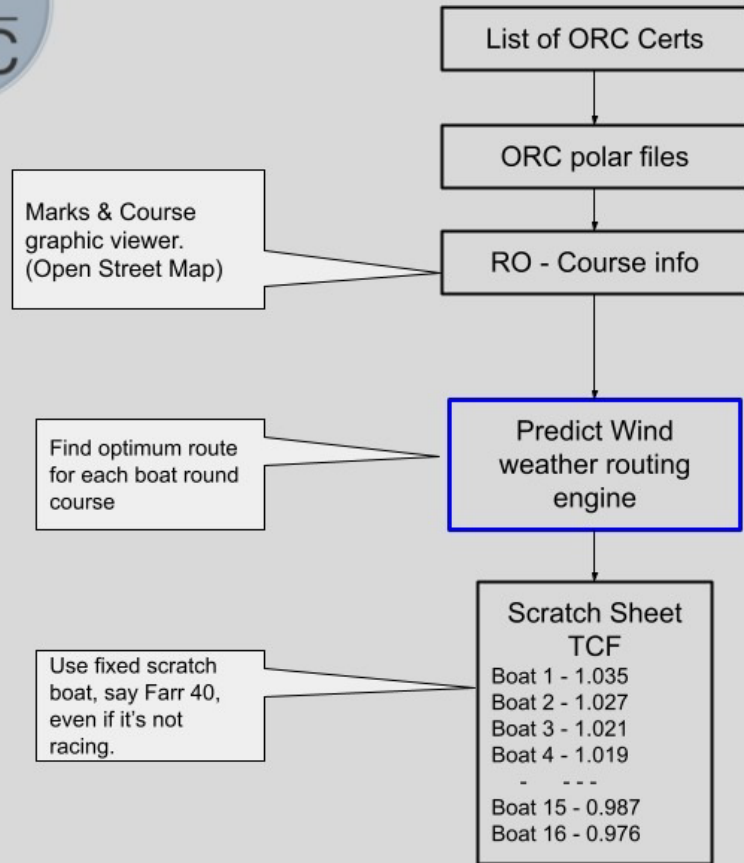
Performance Curve	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt	24 kt
Coastal/Long Distance	940.3	708.8	589.4	521.3	486.8	459.9	417.2	404.1

APH

TWS	6 kt	8 kt	10 kt	12 kt	14 kt	16 kt	20 kt
Time allowance%	5%	10%	20%	30%	20%	10%	5%



2024 Weather Routing Scoring



1. Collect entrants
2. Extract polars from the certificate
3. Load the Fleet Polars
4. Set up the course
5. Choose the Grib files
6. Load the grib files
7. Run the weather routing
8. Plot the tracks
9. Extract the elapsed time data to excel
10. Calculate the Scratch sheet
11. Load scratch sheet into the Scoring software.

Predict Wind have adapted their online routing engine to work directly with the ORC online certificate database and scorer.

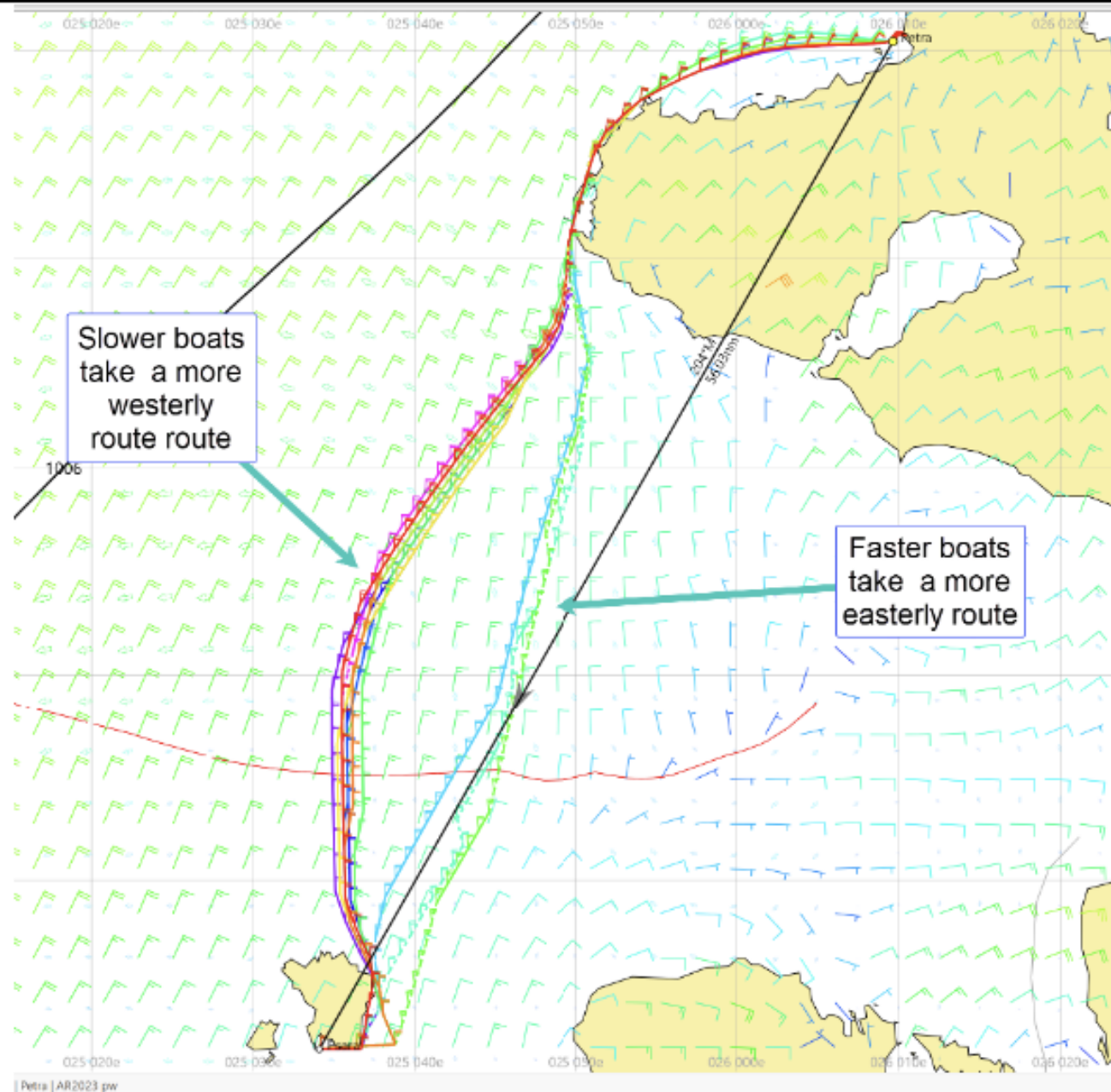
1-4 are done in the ORC scorer

5-8 are done by Predict Wind

8 - 9 are returned from Predict Wind

10 -11 are done by the ORC scorer.

Predicted tracks for Race.



Output from Routing Simulation

Fastest Boat 'Liberte'
completes the course in
05:18:06

Routing solutions

Summary	Draw	Name	Colour	Route nm	Optimal nm	Elapsed ... ▲	Finish
ANATELOUSSA AFRODITI~66	<input checked="" type="checkbox"/> G	LIBERTE~46		56.28	69.07	05h 18m 06s	21-Aug-2023 12:18:06
ANTELOPE~19	<input checked="" type="checkbox"/> G	FAVORIT~4		56.28	70.32	06h 06m 54s	21-Aug-2023 13:06:54
BAXIMUS~7	<input checked="" type="checkbox"/> G	ERYTOS II~43		56.28	65.69	06h 46m 29s	21-Aug-2023 13:46:29
ELLINIXX~9	<input checked="" type="checkbox"/> G	ANTELOPE~19		56.28	65.96	07h 03m 25s	21-Aug-2023 14:03:25
ERYTOS II~43	<input checked="" type="checkbox"/> G	RAFFICA~2		56.28	66.71	07h 15m 13s	21-Aug-2023 14:15:13
FAVORIT~4	<input checked="" type="checkbox"/> G	ELLINIXX~9		56.28	66.54	07h 29m 09s	21-Aug-2023 14:29:09
GRANMA X~44	<input checked="" type="checkbox"/> G	METATRON II~48		56.28	66.75	07h 32m 50s	21-Aug-2023 14:32:50
LIBERTE~46	<input checked="" type="checkbox"/> G	SARANAIA V~3		56.28	66.70	07h 42m 01s	21-Aug-2023 14:42:01
METATRON II~48	<input checked="" type="checkbox"/> G	BAXIMUS~7		56.28	66.49	07h 47m 35s	21-Aug-2023 14:47:35
RAFFICA~2	<input checked="" type="checkbox"/> G	GRANMA X~44		56.28	66.16	07h 52m 13s	21-Aug-2023 14:52:13
SARANAIA V~3	<input checked="" type="checkbox"/> G	VORRAS~56		56.28	65.37	07h 57m 59s	21-Aug-2023 14:57:59
VORRAS~56	<input checked="" type="checkbox"/> G	ANATELOUSSA AFRODITI~66		56.28	66.95	08h 27m 04s	21-Aug-2023 15:27:04

"Scratch Boat"
'Vorras' completes
the course in
07:57:59

Slowest Boat
'Anatelooussa'
completes the
course in
08:27:04

Boat Name	Predicted Elapsed Time (hh:mm:ss)	Predicted Elapsed Time (seconds)	Time Correction Factor (TCF)
Liberte	05:15:06	18906	1.523 (28799÷18906)
Vorras	07:59:59	28799	1.000 (28799÷27899)
Anatelousa	08:27:04	30424	0.947 (28799÷30424)