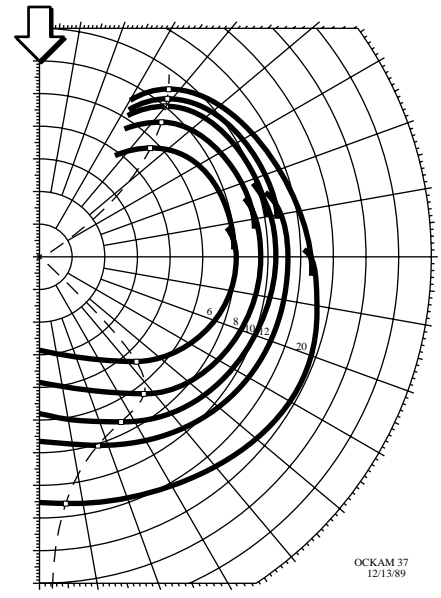


## Polars on the Ockam System

**Polars have become** an indispensable tool for the serious racer. For 15 years, no America's Cup yacht has put to sea without an entire staff devoted to the care and feeding of its polars. On the grand prix circuit, everybody knows that you can't go racing without one. Adding a polar to any boat's tool kit produces an immediate performance improvement.

### What is a Polar

A "Polar" is a description of how fast a boat should sail at a given wind speed and angle. For example, a polar will tell you that in 10 knots, your boat should sail upwind at 40 degrees and make 6.11 knots. The most important data available from a polar is "Target Speed", the boatspeed at maximum Vmg (the point of optimum up and downwind performance).



### Why do I need one

- Polars define the optimum up and downwind sailing speeds (Targets). Targets get the boat into the groove quickly and coordinate the actions of the helmsman and trimmer by providing a common goal.
- For offwind legs, polars allow calculation of optimum sailing angles (Vmc sailing).
- In all sailing conditions, polars allow extra performance to be wrung out of small wind shifts (the Wally).

### How to get one

It is possible to build a polar by observing and recording boatspeed and wind data. However, the amount of information required far exceeds the time available or the wind conditions available to sail in. You could take data for an entire season and not get enough. The lack of a deterministic mathematical model also prevents converting readings into a smooth and coherent representation.

Polars are most commonly created from the output of the "VPP", a program developed at MIT that is the basis of the IMS rating rule. In the 19 years since its introduction, a cottage industry has sprung up to provide services based on the VPP. Polars are available from yacht designers, the US Sailing Association and VPP services. Getting a polar from the VPP lets you start to use polar technology immediately, and provides a baseline on which to build experience about your boat relative to the VPP polar.

### How to use it

Ockam provides complete support for polars, including on-deck display of polar and target speeds, Wally deltas, Time to Laylines, Routing, Vmc courses, next leg apparent prediction, and Ockam U, a seminar on maximum use of instruments and polars on the racecourse.

The basic prerequisite to using a polar in Ockam is a standard Lotus worksheet containing the Polar data (available from VPP services). This data can be permanently burned into the system or used as-is in OckamSoft, our on-board tactical program.

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## How to use it...

The 037 Polar Interface displays target and polar speed on deck on standard system indicators. For this interface, the polar worksheet is burned into an EPROM before shipment. This form of use is rugged, care-free and a simple plug-in installation. No on-board computer is required when this interface is installed.

Ockam 037 Polar Interface with 2 function cards ..... \$725  
037P VPP analysis & EPROM chip for 037 Interface ..... \$575

OckamSoft III running on a PC uses the polar spreadsheet to calculate and display polar and target speeds, accurate time to the laylines and starting line, Wally deltas and Next Leg Apparent Windspeed and Angle. The values can be adjusted for changes in wind gradient and shear. Output is shown on the PC screen and optionally output to instrument displays.

OckamSoft III for the PC ..... \$1,800  
Upgrade from OckamSoft II to III ..... \$600  
050 RS-232 Interface with 10 user function cards ..... \$1,045

The Ockam ESP is a hand-held water resistant computer that does everything OckamSoft does, but with the operator on the rail. An RS-232 interface is also required.

Ockam ESP ..... \$4,220

## How to learn more

- Ockam U is a 1 day seminar that includes the theory of polars and how to use them. This course, held at scheduled intervals, describes polars and targets, how and why to Wally and several other uses of instruments (anybody's instruments) during racing. The course manual is also available separately.

Ockam U Manual..... \$30

- The Ockam U section on polars and the Wally is also available in condensed form on our home page <http://www.ockam.com>.
- For further information on VPP services, contact the following vendors

Velocity Inc.  
(301)927-9254  
schwenn@access.digex.net

Yacht Research International  
(410)267-7899  
72102.2322@compuserve.com