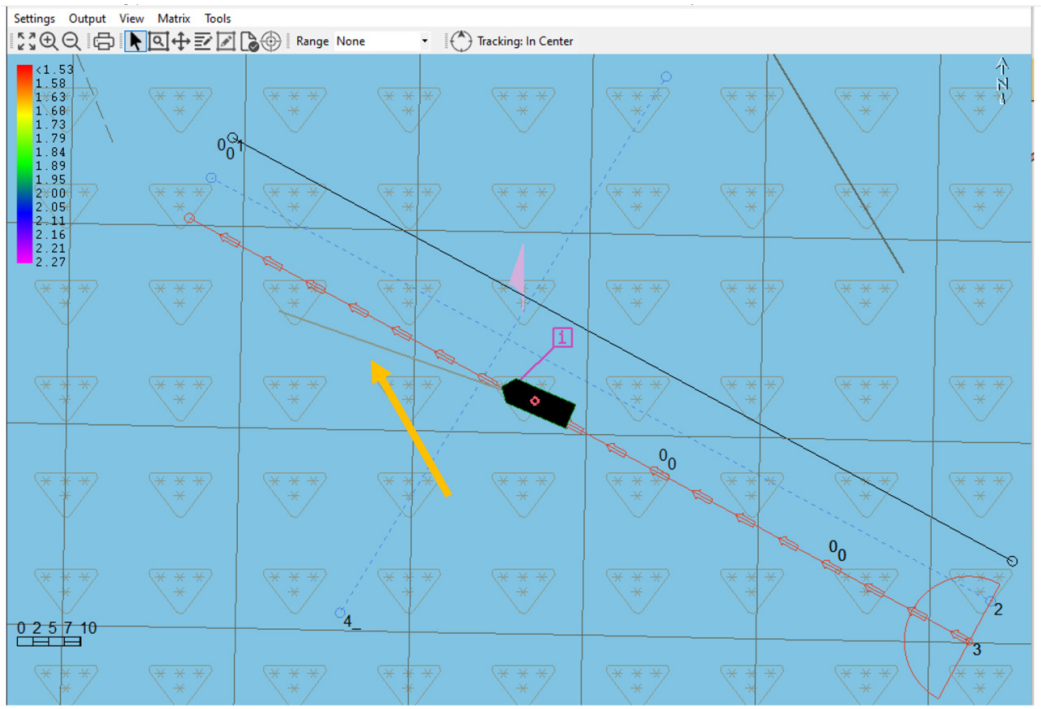
Understanding and Utilizing the Course Made Good (CMG) Vector in HYPACK® SURVEY

By Josh Sampey

In hydrographic data acquisition, accurate real-time navigation is crucial to ensure efficient and precise surveys. The Course Made Good (CMG) vector is a fundamental tool in HYPACK® SURVEY that provides key insights into a vessel's actual path through the water. This article explores the purpose, configuration, and practical applications of the CMG vector within the SURVEY program.

The CMG vector represents the vessel's course made good, which is the actual path the vessel takes over the ground. Unlike the heading, which shows the direction the vessel's bow is pointing, the CMG vector shows the direction the vessel is moving.

In the following example image, the yellow arrow was added to point to the CMG vector, which is the thin gray line at the front of the vessel.



Purpose of the CMG Vector

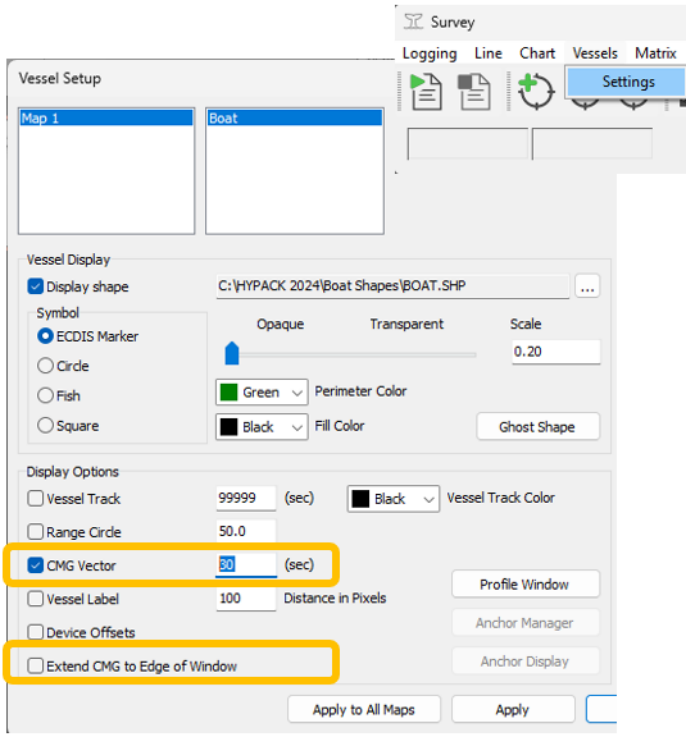
Several critical functions during surveys are addressed by the CMG vector, which:

1. Displays the vessel's true trajectory, allowing operators to adjust for drift caused by currents, wind, or other environmental factors.
2. Helps the surveyor ensure that the vessel follows planned survey lines accurately.

3. Reduces time spent on corrections and re-surveys by providing immediate feedback on deviations from the intended path.
4. Ensures consistent data collection by keeping the vessel aligned with survey requirements.

Activating the CMG

The CMG vector is activated in the Vessel Setup window of HYPACK® SURVEY, which is accessed from the Survey window by clicking Vessels -> Settings. The CMG vector length is speed/time dependent. For example, if you enter 30s as the CMV Vector value, the length of the vector will change with speed, and the end of the vector is where the boat will be in 30s if the course and speed are maintained. There is also the option “Extend CMG to Edge of Window”, which extends the vector off the screen, keeping a constant length regardless of speed.



Using the CMG Vector in Practical Scenarios

Here are some real-world use cases where using the CMG vector will come in handy:

Scenario 1: Aligning with Survey Lines

When conducting a survey along predefined lines:

- Use the CMG vector to identify deviations from the planned line.
- Adjust the vessel's course to minimize overlap or gaps in data collection.

Scenario 2: Correcting for Environmental Influences

In environments with strong currents or wind:

- The CMG vector shows the drift caused by these factors, allowing real-time corrections to maintain survey quality.

Scenario 3: Tracking Stationary Drift

During stationary data collection (e.g., ADCP stationary measurements or ROV operations):

- Monitor the CMG vector for unexpected movement, ensuring the vessel remains within allowable limits.

Conclusion

The CMG vector in HYPACK® SURVEY is a powerful tool that enhances navigation precision and ensures high-quality hydrographic data collection. By understanding its configuration and applications, surveyors can significantly improve efficiency and accuracy during operations. Whether aligning with planned lines or compensating for environmental influences, the CMG vector is a vital component of a surveyor's toolkit.