Parallax Converters and Battery Charging Concerns

from International Rally attendees…

Q. I've been told the Parallax converter is a single stage charger and will "overcharge my batteries." Is this true?

A. The Parallax 7300 series converter delivers a nominal constant "float voltage" of 13.6 volts DC. The converter only supplies a "pool" of available current for loads to draw "from" and does not "push" or control the current into the loads or the batteries. The battery bank determines what current it takes from the converter/charger based on (1) the ambient temperature of the batteries, (2) the internal resistance of the batteries (which is determined by the batteries state of charge), and (3) the charge voltage applied to the batteries.

The battery or batteries accept current from the charger based on their voltage; a lower voltage (discharged) battery draws more current from the converter, while a higher voltage (charged) battery will draw less current. After the batteries are fully charged, some current flow is still allowed by the batteries. This current loss is caused by the batteries own internal self-discharge, so the batteries will continuously draw this "self discharge current" from the converter. This current rate is typically in the 50 to 100 milliamp range per battery (if the batteries are good).

If the batteries are "overcharging," they should be tested by specifc gravity to determine if leaky or shorted cells could be the reason the batteries are taking excessive current from the converter. A defective battery will mimic the symptoms of "overcharging" since the "effective" charge state of the battery system remains low and the defective battery or batteries will constantly take excessive current from the charger. This leads to an overheated battery, excessive out gassing, swelled battery cases and typically the concern of "my converter is "overcharging" my batteries.

Q. Can I use Gel or AGM batteries with my Parallax converter?

A. The maximum DC voltage provided to charge batteries from most converter models is 13.78 VDC which would be measured after the battery has fully recharged. Voltage from the converter will basically be between 13.00 VDC at full DC output current, and up to 13.80 VDC at no DC output current. As long as the batteries chosen are compatible with this voltage range, there should be no issues with using gel cell or AGM type batteries as opposed to flooded wet cell lead acid batteries.