



TRANSECT Sound Speed Calculation Bug

Date: _____

Abstract

TRANSECT 2.xx and *TRANSECT* 4.04 and earlier require manually setting the EZ-command to EZ1xxxxxx to calculate the sound speed within the ADCP. A bug in *TRANSECT* 4.04 does not allow the user to compute the sound speed for each ensemble.

Instrument/Program Affected

TRANSECT 2.xx and *TRANSECT* 4.04 and earlier.

Description

We recently discovered a bug in *Transect* 4.04 and earlier as well as the *TRANSECT* 2.xx series. *TRANSECT* sends the EZ0111111 command to the ADCP before the other direct commands contained within the configuration are sent. If the configuration file does not have an EZ1xxxxxx command, the ADCP will use the fixed sound speed as given by EC to determine velocities. The default value of EC is 1500 m/s which is not appropriate for freshwater applications, and the result is that the velocities displayed in *TRANSECT* are biased high.

TRANSECT 4.04 has an additional bug. If "Compute for Every Ensemble" is chosen as the Speed of Sound Correction, *TRANSECT* will change it to "Default to ADCP". This means that the fixed sound speed values output by the ADCP cannot be re-scaled using the "Compute for Every Ensemble" option.

Solution/Action

Short-Term Solution

ACQUIRING Data - add EZ1011101 to the Direct Commands section of your configuration file either within the Planning/ADCP/Expert Menu or by hand using a text editor. With EZ set to 1011101, the ADCP calculates the speed of sound from the parameters ED, ES and the temperature sensor.

Use the "DEFAULT to ADCP" choice for *TRANSECT* sound speed correction ((NO -1) in the configuration file).

PLAYBACK Data - if you need to re-scale the velocities, determine the corrected sound speed by using the SS.exe program in which you can enter the Temperature, Salinity, and ADCP Depth. Then change the configuration file so that the Speed of Sound Correction is set to Enter Value, and enter the correct sound speed ((NO Value) in the configuration file).

Long-Term Solution

These bugs will be fixed in *TRANSECT* 4.05 which we anticipate releasing mid-September 1999.