



Heading and Side Scan Sonars

By Caryn Zacharias

HYPACK® was recently contacted with a side scan data issue. The client said they processed their data and everything looked great. They had selected contacts, made a mosaic, saved as HS2 files, and closed the data. When they reopened the edited HS2 files days later to re-mosaic the project, every other line looked like it was mirrored (Figure 1). If they reprocessed the data from the RAW files the mosaic was fine. Now, what happened and how can this be fixed so they do not have to reprocess from RAW and re-select contacts for the whole dataset?

FIGURE 1. *Provided by Client – Side Scan Data Looks Mirrored*

This was an interesting issue that I had not encountered before. It was like the port and starboard channels had been switched. I received the client's HS2 files, opened the data and everything looked fine. Why? How did the client process and open the HS2 files?

After talking with the client, it was mentioned that they had selected HYPACK Mobile for heading. I was selecting COG (Course Over Ground) for heading when opening the HS2 files. (Towed side scans usually do not have their own heading sensor and using COG is the HYPACK® preferred method.) I went back and used HYPACK Mobile for heading and I was able to repeat what they were seeing. I also noticed that the data now had no heading input, the spreadsheet listed COG as 0.0 for the entire dataset. I reopened the HS2 lines with COG selected and I had a nice smooth heading (Figure 2).

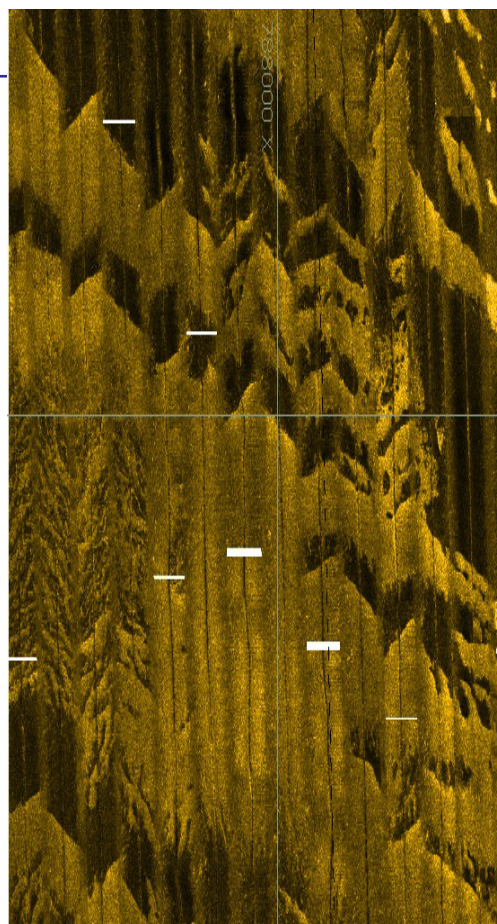
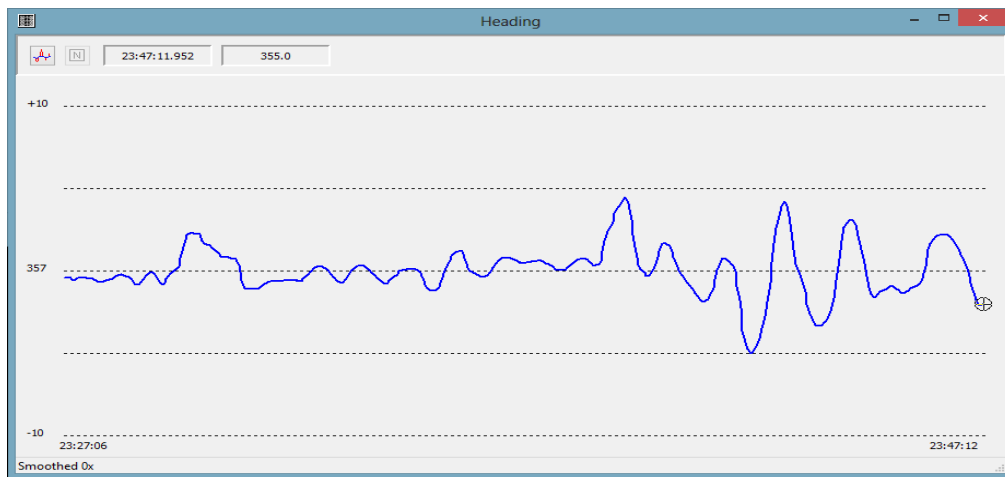


FIGURE 2. *Heading from COG*



The Solution: COG should have been selected to process and reopen the HS2 lines as the heading from HYPACK Mobile was bad. The client was able to choose COG when reopening the HS2 files to avoid reprocessing the data from the RAW files.

It just so happened the project had a base course of 000 and 180, therefore, every other line looked correct since the heading equaled 0.0 for the entire dataset. If the surveys base course were anything but 000 and 180, we might have been able to pinpoint the issue quicker, as the entire dataset would have looked wrong. The two images below are mosaics of the same three (3) side scan lines. The middle line overlaps the outer two. The outer two lines are northbound lines and the middle one is a south bound line. Figure 3 has the correct heading applied and Figure 4 has no heading. You can see the sand waves in the middle of Figure 4 overlapping in a crisscross pattern. This pattern is very subtle and some people might not even catch that Figure 4 is not correct. It is important to look at all of the data along with associated graphs to avoid processing data incorrectly.

FIGURE 3. *Correct Heading*

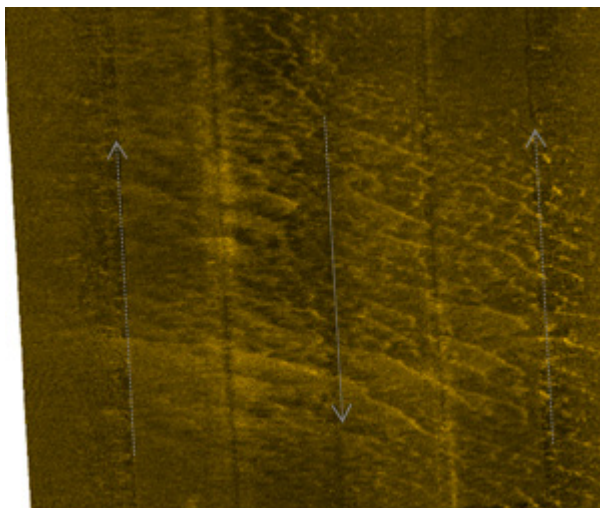


FIGURE 4. *Heading = 0.0*

