**Seismic line 3 – acoustic anomalies**

Acoustic anomalies in recordings obtained by seismic profiling are often restricted to certain frequency bands, i.e. they are easily overlooked unless a matching frequency filtering is applied. This should ot happen with recordings taken from Oden, as several filter settings must be applied and tested to each record in order to optimize the signal to noice ratio. During this process the location of anomalies should be noted.

Along seismic line 3 at the approaches to the Lomonosov Ridge a major anomaly was recorded at 80° 13.1’N, 143° 12.3’E (IBCAO coordinates N=862000, E=644727). The anomaly is located at a calculated depth of c. 1.850 m bsl and a length along the line of c. 8 km. Water depth is c. 1500 m.

The anomaly forms a “bright spot” as the reflectivity of the reflectors passing through the anomaly are greatly enhanced (Fig. 1). This is most likely due to a lowering of the sound propagation velocity, typical for gas-charged sediments. In this case it might indicate the presence of gas hydrates, too. The strata directly below the anomaly are void of reflectors, but reflectors are present on both sides, which is another typical feature in connection to gas-charged sediments.

GasLayers_100Hz.TIF

Fig. 1. Acoustic anomaly, gas or gas hydrates. Filtered around 100 Hz.

WaterSeeps_250Hz.TIF

Fig. 2. Water or gas seep. Filtered around 250 Hz.

Along seismic line 3 there are also some outlet structures for gas or water. In one location at the foot of the Lomonosov Ridge slight dislocations of the sediment bedding are observed below a pockmark in the seafloor (Fig. 2). No indications of velocity anomalies are seen here. The location is 80° 46.6’N, 142° 47’E (IBCAO coordinates N=808132, E=613783), and water depth c. 1735 m.

On the northern slope of the Lomonosov Ridge was recorded a fault zone. The deeper parts of this fault has been described previously (Fig. XX). The structure at the deep, proposed bedrock, level indicates that the northern side is downfaulted, wheras the sediment structures in the shallow part indicates that the northern side is uplifted (Fig. 3). Thus, the observed fault may be part of a still active zone.

Lomonosov_Fault.TIF

Fig. 3. The Lomonosov Ridge fault. A and B point to proposed connecting surfaces.