

Interactive comment on “Sparse 3D reflection seismic survey for deep-targeting iron-oxide deposits and their host rocks, Ludvika Mines-Sweden” by Alireza Malehmir et al.

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We appreciate the positive and favorable review and comments of the reviewer. They are all to the point and will be addressed in our revised manuscript. We here detail our response to the particular questions raised by the reviewer.

(1) The abstract should be prepared more succinctly, in particular, it is unnecessary to introduce the parameters for seismic data acquisition in so many details.

We will shorten the abstract and remove some of the acquisition details. There are also information about the assay and deposits that will be moved to the geology section.

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(2) Line 25. What do you indicate for 10 Mt additional resources? Iron ? How did you estimate this potential source? Please indicate the grade of this ore deposit used in the estimate.

Sorry if this was unclear; the ca. 10 Mt estimated additional resources from the seismic data/volume, is based on a lateral and vertical extent of 300 m (300 m by 300 m) and a thickness of 30 m. We have the lateral and depth extent controls from the seismic volume however the thickness is unresolved and is only based on an assumption that the sheet-like deposits have this thickness where drilled through at other locations. The density was assumed around 4000 kg.m³, a reasonable density for economic Fe-content rocks (40-50% Fe). Obviously, this is then is not Fe content rather tonnage of the rocks worth mining. We will detail this in the revised manuscript.

(3) To be outspoken, I did not see significant improvements of 3D survey compared to 2D survey in Figure 14. Could you please explain this improvement better?

Well-noted and our bad! Figure 14 is only showing the earlier 2D section but with features/surfaces extracted from the 3D volume. Our intention was to show how the 3D cube helped to identify features that are not in the plane of the 2D section. We will rework the figure caption and text to clarify this. Sorry and thanks for noting this.

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