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Interactive comment on "Inversion tectonics: a brief petroleum industry perspective" *by* Gábor Tari et al.

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Response to the comments made by Mark Rowan (Referee) We very much appreciate the constructive and helpful comments and also the extra effort to go through the draft document in details. All the comments were taken on board, one way or the other. Here are the specific responses to the comments made. 1) We agree with the statement that surface observations cannot be ignored when it comes to identifying inversion. However, we believe that in the common industry practice surface geology constraints are considered as a luxury and that is why we focus our overview on subsurface examples. Many of the basins we keep working on are either located offshore and/or have a post-inversion sedimentary blanket which rules out field work as a meaningful additional source of observations. Yet, we will acknowledge the existence of case studies

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where surface work can make a critical difference, like in the examples mentioned by the referee. 2) We deliberately tried to stay away from the topic of salt tectonics versus inversion as it is a very complex subject on its own with lots of relevant work done by many folks in the last few decades. We are just as aware the importance of this field as the referee, so we will make a short detour in the text to highlight this class of inverted structures. 3) In our industry experience these two different class of structures are mixed up easily. But the point made by the referee is a very good one which we will shamefully take as is, with a reference to him. 4) Again, working in the petroleum industry, we quite often see statements about inversion made in a very loose way. It is not our goal to quote many examples from published literature where structures are referred to as being "inverted", even if the structures are not even remotely fulfilling the original definition of structural inversion. In our experience, inversion is generally used as a positive "selling point" when it comes to prospect evaluation. As another referee (Bill Bosworth) pointed out, perhaps "overrated" should be replaced "overstated". Our data implies not necessarily the overstated perception of the positive effects of structural inversion by explorationists but rather the disinterest by petroleum engineers who inherit the project at a later stage. 5) These questions posed by the referee will be answered in the final version. 6) An easy fix and we will redesign the figure with less vertical exaggeration. We just redrafted the original as is, but indeed it should be stretched horizontally. 7) This is not so easy to answer based on the published literature. There are some cases in the Palmyrides where the basement is shown to be involved, but in our view this folded belt is largely detached on the Triassic salt and, therefore, should not be regarded as the simple prolongation of the "Syrian Arc" inversional belt in the Levant region. 8) Will be reworded, given the issue mentioned above. 9) This meant to be one of the messages in this paper, i.e. the distinction between the more classical looking Syrian Arc I structures and the Syrian Arc II structures in the offshore Levant where the thick post-rift sedimentary cover results in more subtle asymmetry of the structures. The giveaway for the inversional origin of these anticlines is the presence of coinciding underlying Triassic(?)-Jurassic rift basins. 10) The pub-

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lished seismic line across Mango is indeed not very convincing on its own. Therefore we will replace it with another published seismic line across the nearby Goliath inversion structure which is a much clearer example of the process. 11) We agree with these statements. Here we are constrained by what has been published as to regional seismic examples. On the published line we use, Leviathan is clearly a much better example. As to the interpretation of Tamar, we had access to much more seismic data in this area to be certain that there is, indeed, a coincidence between an underlying rift basin, with its master fault, and the Tamar structure high above it. We will highlight the basin-scale analogy using the inboard examples documented by Gardosh, for example. 12) Correct, will be reworded to remove the contradiction. 13) Correct, will be shown on the figures. 14) Correct, will be done. 15) Well, it is a matter of style as many people these days will only glance at the figures and expect to have a fairly complete explanation in the captions... But we will shorten the captions to minimize the overlap with the text. Again, we acknowledge here the extra effort by the referee correcting many other minor items in the text/figures and sending the annotated draft directly to us. We consider this effort by the referee quite exceptional these days and we are very grateful for it!

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