Reviewer's report

Title: Rapid T1 Quantification based on 3D Phase Sensitive Inversion Recovery

Version: 3 Date: 15 April 2010

Reviewer: Daniel Messroghli

Reviewer's report:

The authors have responded to all comments from my first review. I fully agree with their response to the minor points that were raised. However, the response to the one major compulsory revision is not quite comprehensible from my point of view. The authors state that they do not feel that the use of a phantom with near-physiological T2 would be necessary, since T2 does not play a major role in the mathematical description of their pulse sequence. However, T2 still is a major confounding factor in MR signal generation. It is true that phantoms can never fully reproduce the in-vivo situation. However, it should be attempted to use phantoms that at least come close to the in-vivo situation for the most basic aspects. If such aspects are ignored purely based on a mathematical description, I don't see the value of performing an in-vitro validation at all.

In summary, I still do not think that the phantom measurements in their current form are valuable enough. In order to strengthen the validity of the conclusions, these measurements should be replaced by ones on phantoms with near-physiological T2.

If the authors should lack such a phantom or have trouble building one, I'd like to suggest that I provide one temporarily if they wish, so they can easily repeat their measurements.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.