



September 7, 2012

VIA EDGAR

Securities and Exchange Commission
Attn.: Mr. Russell Mancuso
100 F Street, N.E.
Washington, D.C. 20549

RE: MRI Interventions, Inc.
Registration Statement on Form S-1
Filed August 13, 2012
File No. 333-183279

Dear Mr. Mancuso:

MRI Interventions, Inc. (the "Registrant," "we" or "our") submits this response to the letter of August 31, 2012 from the staff (the "Staff") of the United States Securities and Exchange Commission to Mr. Kimble L. Jenkins regarding the above-referenced Registration Statement on Form S-1 (the "Registration Statement"). On the date hereof, the Registrant filed Pre-effective Amendment No. 1 to the Form S-1 (the "Amended S-1") that reflects the responses provided below. For convenience, we have reproduced the Staff's comments immediately preceding the Registrant's responses.

Comment

1. Please supplementally provide us with any written materials that you or anyone authorized to do so on your behalf provides in reliance on Section 5(d) of the Securities Act to potential investors that are qualified institutional buyers or institutional accredited investors. Similarly, please supplementally provide us with any research reports about you that are published or distributed in reliance upon Section 2(a)(3) of the Securities Act of 1933 added by Section 105(a) of the Jumpstart Our Business Startups Act by any broker or dealer that is participating or will participate in your offering.

Response

We hereby confirm that (i) no written materials have been provided by us or on our behalf to potential investors in reliance upon Section 5(d) of the Securities Act and (ii) no research reports about us have been published or distributed by any broker or dealer that is participating or will participate in our offering in reliance upon Section 2(a)(3) of the Securities Act.

Signatures

Comment

2. Please indicate below the second paragraph of text required on the signatures page who signed your document in the capacity of principal accounting officer or controller.

Response

We have revised the signature page in the Amended S-1 to indicate that David W. Carlson signed the Registration Statement in the capacity of both principal financial officer and principal accounting officer.

Exhibits

Comment

3. Please revise to include the interactive data file required by Regulation S-K Item 601.

Response

We have included the interactive data file exhibit required by Regulation S-K Item 601 with the Amended S-1.

Exhibit 5.1

Comment

4. We note the assumption contained in the last sentence of the second paragraph of this exhibit. Please tell us which documents relevant to the opinion required by Regulation S-K Item 601(b)(5) require due execution and delivery to be effective. Also tell us the effect on the opinion if the documents were not duly executed and delivered, and why you believe it is necessary and appropriate for the opinion to include this assumption.

Response

Baker, Donelson, Bearman, Caldwell & Berkowitz, PC has removed the assumption contained in the last sentence of the second paragraph of their legal opinion, and the revised opinion is filed with the Amended S-1.

5. The opinion that you file to satisfy your obligations per Regulation S-K Item 601(b)(5) may not include the limitation on use and reliance on the third paragraph of this exhibit. Please file a revised opinion.
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September 7, 2012
Page 3

Response

Baker, Donelson, Bearman, Caldwell & Berkowitz, PC has removed the limitation on use and reliance in the third paragraph of their legal opinion, and the revised opinion is filed with the Amended S-1.

* * *

The Registrant hereby acknowledges that:

- the Registrant is responsible for the adequacy and accuracy of the disclosure in the filing;
- Staff comments or changes to disclosure in response to Staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the Registrant may not assert Staff comments as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

We trust that this letter and the Amended S-1 are responsive to the Staff's comments. If there are additional questions or comments, please contact the undersigned.

Very truly yours,

MRI Interventions, Inc.

By :/s/ _____ Oscar
Thomas
Oscar Thomas
Vice President, Business Affairs

