



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

DIVISION OF
CORPORATION FINANCE

August 31, 2012

Via E-Mail

Kimble L. Jenkins
Chief Executive Officer
MRI Interventions, Inc.
One Commerce Square, Suite 2550
Memphis, TN 38103

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

Dear Mr. Jenkins:

We have limited our review of your registration statement to those issues we have addressed in our comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. Where you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

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.

Signatures

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.

Exhibits

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

Exhibit 5.1

4. We note the assumption contained in 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.
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 in the third paragraph of this exhibit. Please file a revised opinion.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes the information the Securities Act of 1933 and all applicable Securities Act rules require. Since the company and its management are in possession of all facts relating to a company's disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

Notwithstanding our comments, in the event you request acceleration of the effective date of the pending registration statement please provide a written statement from the company acknowledging that:

- should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

Please refer to Rules 460 and 461 regarding requests for acceleration. We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. Please allow

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adequate time for us to review any amendment prior to the requested effective date of the registration statement.

You may contact Jay Mumford at 202-551-3637 or me at 202-551-3617 with any questions.

Sincerely,

/s/ Russell Mancuso

Russell Mancuso
Branch Chief

cc: (via e-mail) Robert J. DelPriore, Esq.