



DIVISION OF
CORPORATION FINANCE

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

September 13, 2011

Via E-mail

Jeffery A. Baird
Chief Financial Officer
CAS Medical Systems, Inc.
44 East Industrial Road
Branford, CT 06405

**Re: CAS Medical Systems, Inc.
Registration Statement on Form S-3
Filed August 30, 2011
File No. 333-176560**

Dear Mr. Baird:

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.

Summary, page 2

1. Please prominently disclose in your prospectus summary your net losses and accumulated deficit.

Selling Stockholders, page 10

2. Please provide us with your analysis showing how you determined that none of the selling shareholders are underwriters with respect to this offering. In your response, please address the nature of the relationships between you and the selling shareholders and the length of time the selling shareholders have held the securities. If you are unable to conclude that the selling shareholders are not underwriters, please demonstrate to us that you are eligible to conduct a primary offering on Form S-3.

Signatures, page 24

3. Please tell us why you do not state in the “Capacity” column that your principal accounting officer is signing is the capacity of principal accounting officer.

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

Jeffery A. Baird
CAS Medical Systems, Inc.
September 13, 2011
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You may contact Louis Rambo at (202) 551-3289 or me at (202) 551-3617 with any questions.

Sincerely,

/s/ Russell Mancuso

Russell Mancuso
Branch Chief

cc (via e-mail): Michael Grundei, Esq.
Wiggin and Dana LLP