

Mail Stop 6010

August 7, 2006

Michael D. Dale  
President and Chief Executive Officer  
ATS Medical, Inc.  
3905 Annapolis Lane, Suite 105  
Minneapolis, Minnesota 55447

**Re:   ATS Medical, Inc.  
      Amendment No. 1 to Form S-4 Filed July 20, 2006  
      File No. 333-133341**

Dear Mr. Dale:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or on any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Security Ownership of Certain Beneficial Owners and Management, page 149

1. We note your response to prior comment 48 and reissue the comment with respect to Domain Partners IV, L.P.

Item 22. Undertakings, page II-2

2. We note your response to prior comment 55. Please include the undertakings required by Items 512(a)(3), (5)(ii) and (6) of Regulation S-K.

Michael D. Dale  
ATS Medical, Inc.  
August 7, 2006  
Page 2

Exhibit 8.1

3. We note your response to prior comment 58 and will review the opinion when filed with your next amendment.

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As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested supplemental information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing your amendment and responses to our comments.

You may contact Gary Todd at (202) 551-3605 if you have questions regarding comments on the financial statements and related matters. Please contact Donald C. Hunt at (202) 551-3647 or me at (202) 551-3800 with any other questions.

Sincerely,

Peggy A. Fisher  
Assistant Director

cc (via fax): Timothy S Hearn, Esq. – Dorsey & Whitney LLP