

April 13, 2007

Mail Stop 6010

Stephen C. Hathaway  
Chief Financial Officer and Treasurer  
TomoTherapy Incorporated  
1240 Deming Way  
Madison, Wisconsin 53717

**Re: TomoTherapy Incorporated  
Registration Statement on Form S-1  
Filed March 22, 2007  
File No. 333-140600**

Dear Mr. Hathaway:

We have the following comments to your filing. 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 supplemental information so we may better understand your disclosure. After reviewing this information, we may or may not 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.

1. We note your response to our prior comment 4 and the materials you provided. If you desire to retain any claims of leadership or performance or product superiority, please provide us independent, objective support for such statements.
  - Some of the materials you provide do not appear to be independent or objective. For example, the information you use to support your statements about being “one of the most advanced and versatile radiation therapy systems” are supported by materials authored by individuals associated with you or your employees (tabs 11 and 14). In addition, your materials do not appear to support your statement compared with your competitors.
  - Please clarify to whom you are comparing your system, as your support materials (tab 13) compare your product to systems using fixed stereotactic

frames, rather than a rotating arm. In addition, we note one of the authors of the materials provided (tab 1), Dr. Mackie, appears to be associated with your company as disclosed in tab 14.

Management's Discussion and Analysis of Financial Condition and Results of Operations, page 32

Overview, page 32

2. Please refer to prior comment 3 from our March 8, 2007 letter. We continue to note your disclosure of net income excluding a deferred income tax benefit and expense related to the fair value of outstanding warrants in the fourth paragraph of this section. As previously requested, please revise your filing to remove this non-GAAP disclosure or provide the disclosures required by Item 10(e) of Regulation S-K and Question 8 of the Frequently Asked Questions Regarding the Use of Non-GAAP Financial Measures dated June 13, 2003.

Contractual Obligations and Commitments, page 42

3. Please revise to present, in a tabular format, all of the information specified in Item 303(a)(5) of Regulation S-K as of December 31, 2006 with respect to your known contractual obligations. For example, you should include long-term debt obligations and other long-term liabilities reflected on your balance sheet under GAAP. Otherwise, tell us why the current presentation complies with Item 303(a)(5) of Regulation S-K.

Critical Accounting Policies and Estimates, page 44

4. Please refer to prior comment 14 from our March 8, 2007 letter. As previously requested, please revise this section to include an enhanced discussion of the methodology and significant assumptions used to value any of instruments you carry at fair value and not just refer to an independent valuation.
5. Please refer to prior comment 16 from our March 8, 2007 letter. We could not locate the revised disclosure referred to in your response. As previously requested, please disclose the aggregate intrinsic value of all outstanding options based on the midpoint of the estimated IPO price range, or tell us where you provide this disclosure. Please also discuss each significant factor contributing to the difference between the fair value as of the date of grant and the estimated IPO price for options granted during the twelve months prior to the date of the most recent balance sheet.

Competition, page 62

6. We note your response to our prior comment 17. Please expand your disclosure to better describe the differences between the products and the markets they target. For example, you disclose that Accuray and BrainLAB AG target the stereotactic radiosurgery market. If true, disclose that your product targets the radiotherapy market and explain the difference. In addition, support your statement that you compete to a lesser extent with Accuray due to the fact that Accuray markets primarily to neurosurgeons. We note disclosure in Accuray's registration statement on Form S-1 which appears to suggest that it markets to radiation oncologists, general surgeons, oncology specialists and other referring physicians as well.-

Compensation Discussion and Analysis, page 77

7. We note your response to our prior comment 19. You state in your response that the compensation committee selected the median level of compensation and that "was the committee's conclusion and there is no additional reason beyond the committee's conclusion." Are you suggesting that there was no deliberation whatsoever by the compensation committee as to why it chose the median level of salaries and awards made to other executive officers in comparable companies? In addition, please disclose why the compensation committee chose to include in its determination of compensation of your executive officers not only companies in the medical device industry, but companies in general industry as well. Further, if the committee's determination of the target bonus levels considered bonuses paid to executive officers of comparable companies, please disclose this fact in your registration statement.

Elements of Compensation, page 78

8. You briefly reference on page 78 that a potential element of compensation is post-termination severance. While you provide a discussion of the specific provisions of each named executive officers' severance package on page 90, you do not provide the necessary information required by Item 402(b) of Regulation S-K. For example, but without limitation, please explain how the registrant determined the amount of severance for each officer.

Base Salaries, page 78

9. We note your response to our prior comment 22 and that you have not disclosed the quantitative discussion of the factors applicable to the determination of Mr. Hughes' commission. Please expand your disclosure to provide the information

that you submitted supplementally to the Staff. Alternatively, tell us why you believe that disclosure of such information would result in competitive harm such that the information could be excluded under Instruction 4 to Item 402(b). Please see Instruction 4 to Item 402(b) of Regulation S-K.

Director Compensation, page 92

10. We note your response to our prior comment 25. Please tell us where the director compensation described on page F-27 has been provided in the table.

Principal and Selling Shareholders, page 94

11. We note your response to our prior comment 28. We reissue the comment.

Index to Consolidated Financial Statements, page F-1  
-Pro Forma Shareholders' Equity (Deficit), page F-7

12. Please refer to prior comment 37 from our March 8, 2007 letter. Given that the conversion is conditioned upon several factors, including the approval by at least 75% of your preferred shareholders of the underwriter, please tell us and disclose in further detail why you believe the conversion is probable.
13. Please refer to prior comments 15 and 46 from our March 8, 2007 letter. We note that you refer to using a valuation of an independent third party when determining the fair value of your preferred stock in this note and also in Note E on pages F-21 and F-23. Please revise the filing to name the independent valuation expert in the Experts section and to include its consent as an exhibit. Refer to Rule 436 and Item 601(b)(23) of Regulation S-K. Please also revise to disclose the method and significant assumptions used to value the preferred stock.

Note E. Temporary Equity and Shareholders' Equity (Deficit), page F-20  
-Warrants, page F-22

14. Please refer to prior comment 47 from our March 8, 2007 letter. Please disclose the method and significant assumptions used to determine the fair value of the warrants as of December 31, 2006.

15. Please refer to prior comments 48 and 37 from our March 8, 2007 letter. We note your added disclosure that the warrants will be exercisable for common stock upon the closing of the offering. We also note the conditions for conversion of the preferred stock into common stock added to page F-7. Please revise the disclosure in this note to the extent necessary to explain any conditions associated with the underlying change in the warrants.

-Contingent Common Shares, page F-24

16. Please refer to prior comment 49 from our letter dated March 8, 2007. Please revise your filing to include all the significant terms of these contingent common shares. For instance, please disclose if the contingent shares are automatically issuable upon the completion of an IPO to the holders of the Series A preferred stock and if there are any other conditions that need to be met for these contingent shares to be issued. Within your revised disclosure, please explain in more detail your statement from your response that "...in some circumstances, shares could be issued to the holders of the Series A preferred stock without the holders converting their Series A preferred stock." Also clarify how the number of shares issuable is determined under the agreement.
17. Further to the above, please tell us and revise your filing to explain in sufficient detail why you have accounted for these contingent shares by analogy as an adjustment of a conversion option based upon a contingent event outlined in Issue 2 of EITF 00-27. Cite any other accounting literature upon which you relied and how you applied that literature to your situation.

Note F. Stock Options, page F-24

18. Please refer to prior comment 50 from our March 8, 2007 letter. Please note that we are deferring any final evaluation of stock compensation until the estimated offering price is specified, and we may have further comments in that regard when you file the amendment containing that information.
19. Further to the above, we note the following from your response:
- Four investment banking firms made presentations to the company's board of directors on October 2 and 3, 2006, related to undertaking an IPO and the general indication that you received was that the pricing would be in the range of \$500-\$550 million.
  - You valued the 1,440,000 stock options to purchase shares of common stock granted on December 7, 2006 at \$9.18, which was based upon three sales of your common stock to independent third parties from the holdings of your president and chairman of the board of directors on October 23, 2006.

- You engaged Virchow, Krause & Company LLP (VK) to perform an independent valuation of your common stock at December 31, 2006 and VK valued the company's common stock at \$11.42 per share at December 31, 2006.

Considering these factors and the significance of the December 7, 2006 option grant, please tell us in more detail why you believe it was appropriate to use the value of the sale on October 23, 2006, especially since the implicit valuation in this sale of \$300 million was considerably below the range provided by the investment bankers. Discuss why you did not obtain a valuation as of December 7, 2006, but did as of December 31, 2006. Please refer to the guidance in paragraphs 10 and 15 and Appendix A of SFAS 123 (R).

#### Exhibits

20. We note your response to comment 53. Please file complete exhibits. We note you have not filed the exhibits to Exhibit 10.11.
21. We note your new consent at exhibit 23.3. Please remove the last two sentences of the consent, as they are inappropriate.

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.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filings reviewed by the staff to be certain that they have provided all information investors require for an informed decision. 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.

Stephen C. Hathaway  
TomoTherapy Incorporated  
April 13, 2007  
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You may contact Tara Harkins at (202) 551-3639 or in her absence, Kaitlin Tillan at (202) 551-3604 if you have questions regarding comments on the financial statements and related matters. Please contact Jay Mumford at (202) 551-3637 or me at (202) 551-3444 with any other questions.

Sincerely,

Perry Hindin  
Special Counsel

cc: Gregory J. Lynch, Esq.  
Geoffrey R. Morgan, Esq.