

April 18, 2007

Mail Stop 6010

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

**Re: TomoTherapy Incorporated
Amendment No. 2 to Registration Statement on Form S-1
Filed April 16, 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.

Prospectus Summary, page 1

1. We note your new Recent Developments disclosure. The summary should represent a balanced description of your business. Please balance the financial disclosure in this section. For example, please provide your net income along with your revenues. Please revise to make similar changes to your disclosure on page 42.
2. Please provide us with a copy of the Advisory Board Company data you have included in your prospectus on page 56. Clearly mark the relevant sections that support the data you have included and the page number of your prospectus where such data has been used. Also tell us whether they have consented to your use of their name and data and whether this report was commissioned by you or prepared specifically for your use.

Dilution, page 30

3. The disclosure describing the table on page 31 indicates that the table gives effect to the exercise of vested options and warrants outstanding as of December 31, 2006. However, the additional shares listed in the table's first column, as compared to the first column of the table on page 30, appear to only reflect the 1,288,669 shares of common stock issuable pursuant to the Series A Investment Agreement and not the shares listed in the two bullet points on the top of page 31. Please reconcile.

Critical Accounting Policies and Estimates, page 46

4. We note on pages F-23-24 that you disclose that you utilized the Black Scholes model to value the warrants issued for the purchase of Series A and Series D preferred stock. Please revise to include a discussion of how each input was derived within the model similar to your disclosures for your stock options accounted for under SFAS 123(R).

Compensation Discussion and Analysis, page 80

5. We note your response to our prior comment 7. You disclose on page 80 that the "compensation committee considered data regarding comparable positions in other medical device companies of similar size for *those executives* where the required education, training and experience in the medical device industry was relevant." Please clarify the executive positions to which you are referring.
6. We note your new disclosure on page 81 regarding your general compensation philosophy. Please describe the "region" the compensation committee used in its analysis.
7. We note your response to our prior comment 8. The Compensation Discussion and Analysis disclosure should explain all material elements of your compensation of the named executive officers and is intended to put into perspective the numbers and narrative that follow it. Please relocate to the Compensation Discussion and Analysis section the relevant disclosure on pages 94 and 96 regarding the variable pay plan and post termination severance.

Variable Pay Plan, page 94

8. Disclosure on page 81 suggests that you already made cash payments to named executive officers under your variable pay plan. Reconcile this with the disclosure on page 94 which suggests that you have only set target payouts for 2007.
9. Disclose the performance and reliability goals for 2007 for each of the named executive officers. 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), and disclose how difficult it will be for the executive or how likely it will be for the registrant to achieve the undisclosed targets. Please see Instruction 4 to Item 402(b) of Regulation S-K.

Principal and Selling Stockholders, page 100

10. We note your response to our prior comment 11. According to disclosure on page 106, you issued to the Wisconsin Alumni Research Foundation 644,640 shares of your common stock in connection with your February 1999 license transaction. According to disclosure in the table on page 100, WARF is the beneficial owner of 2,019,119 shares of your common stock. Please tell us in your response letter how WARF acquired these additional shares.
11. We note you have identified two selling stockholders who are affiliates of broker-dealers at footnotes 27 and 28. Please disclose in the prospectus whether such selling stockholders purchased such shares in the ordinary course of business and whether at the time of such purchases, the selling stockholders had any agreements or understandings, directly or indirectly, with any person to distribute the shares. Alternatively, please specifically state in your prospectus that such affiliates are underwriters. Also, please confirm that there are no other selling stockholders who are broker-dealers or affiliates of broker-dealers.

Experts, page 127

12. Please revise to also state that Virchow Krause Valuation, LLC also provided a valuation of the fair value of your preferred stock in connection with the preparation of your audited financial statements for the years then ended December 31, 2004, 2005, and 2006.

Index to Consolidated Financial Statements, page F-1

Report of Independent Registered Public Accounting Firm, page F-2

13. We note your independent auditors have issued a “draft” report that includes a dual-date of May __, 2007 for the effect of the stock split transaction described in Note J and for the subsequent event described in Note I as to which the date is April 15, 2007. We note similar references within your independent auditors’ consent. It is unclear if your independent auditors are dual-dating their audit opinion as of April 15, 2007 for all of the events that are described in Note I since the majority of the events took place on or before March 21, 2007, the original date of their audit opinion. Please revise or advise.

14. It also appears that your independent auditors' report should reference and be dual-dated for the disclosure related to the same aforementioned stock split that occurred after the balance sheet date described in Note A.
15. Further to the above, prior to going effective the audit report should be signed and unrestricted. This also applies to your independent auditors' consent.

Notes to Consolidated Financial Statements, page F-7

Note F. Stock Options, page F-25

16. Please refer to prior comments 4, 5, and 19 from our April 13, 2007 letter. Please respond to the following comments to help us gain a better understanding of the methods used to value your preferred and common stock during 2006 and the sufficiency of the related disclosures included in MD&A and your financial statements.
17. We note from your disclosures on pages 51 - 52 that there were two principal reasons for the difference in the fair value of your common stock as of December 31, 2006 of \$8.40 per share and the mid-point of your estimated initial public offering price range of \$16.00, as shown in Amendment No. 2 to Form S-1 filed April 16, 2007. You disclose that the difference of \$7.60 (an increase of 90.5%) is due to the lack of marketability of your common stock and the improved prospects of your initial public offering since the grant date due to a successful public offering of another company in your segment. In addition, we note from your response to prior comment 19 that the December 31, 2006 valuation included "appropriate valuation-related discount factors." For each of the equity valuations performed during fiscal 2006, please tell us the date of the valuation, the type of discount factor (e.g., marketability), the amount of the discount, the underlying reasons for using the discount factors, and how the discount factors were calculated.
18. To the extent practicable, please quantify the impact of each of the factors cited above on the increase between December 31, 2006 and April 16, 2007. Your response should address the extent to which the improved prospects of your initial public offering since December 31, 2006 impacted the valuation of your company.

19. Please tell us the overall valuation of the company as of December 31, 2005 and 2006, as of each date in 2006 when you performed a valuation and as of April 16, 2006 based on the mid-point of your estimated initial public offering price range of \$16.00. Tell us the significant factors, to the extent not already addressed in your prior responses, for any significant changes in the valuation of the company between each of those dates.
20. Further, please tell us the extent to which these valuations were affected by your quarterly results of operations. Specifically address how the increase in revenues from \$27.5 million in the first quarter of 2006 to \$31.9 million in the second quarter of 2006 affected your valuations. We note that your backlog also increased from \$104 million to \$139 million, to 34%, during this period. Given these factors, discuss why the fair value of the common stock only increased from \$4.99 to \$5.35, or 7.2%. Please also compare with the 12% increase in backlog between the third and fourth quarters and the increase in the fair value of your common stock from \$6.75 to \$8.40, or 24%, during that period.
21. It appears from your September 30, 2006 interim financial statements that you performed a valuation of your company and the preferred stock as of that date. In your response, please discuss that valuation and compare it to the valuation of the company from October 23, 2006 through December 7, 2006. Tell us the reasons for any significant changes.
22. Also, we note from your recent developments that revenues for the first quarter of 2007 compared to the fourth quarter of 2006 have declined. We also note that backlog decreased from \$164 million to \$162 million. Please tell us whether these results had any significant impact on the valuation of your company.

Exhibit 23.2

23. Please refer to prior comments 15 and 46 from our March 8, 2007 letter and prior comment 13 from our April 13, 2007 letter. We note that you make reference to Virchow Krause Valuation LLC on pages F-21, F-24 and F-26, which is within the audited financial statements, in connection with the valuation of certain of your equity instruments. Please obtain and include a revised consent that appropriately references all of the sections where you name Virchow Krause Valuation LLC in connection with the valuation of these instruments.

Exhibits

24. We note you have omitted certain data from Exhibit 10.30. Please include all information in that exhibit or seek confidential treatment under Rule 406 of Regulation C.

25. We note your reference on page 60 and 66 regarding your research collaboration agreement. Please file this agreement as an exhibit or tell us why you have not filed it.
26. Please file complete exhibits. We note the blanks on page 1 of Exhibit 3.2.

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.

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.