

August 21, 2007

Mail Stop 6010

Richard Randall  
President and Chief Executive Officer  
TranS1, Inc.  
411 Landmark Drive  
Wilmington, NC 28412-6303

**Re: TranS1, Inc.  
Registration Statement on Form S-1  
Filed July 24, 2007  
File No. 333-144802**

Dear Mr. Randall:

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 any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Prospectus

1. Please confirm that any preliminary prospectus you circulate will include all non-Rule 430A information. This includes the price range and related information based on a bona fide estimate of the public offering price within that range, and other information that was left blank throughout the document. Also, note that we may have additional comments after you file this information.

Summary, page 1

2. Please explain whether you intend to commercialize your AxiaLIF 2L, PNR and/or PDR products in the United States. Also clarify the domestic regulatory status of each product.

3. We note that you have disclosed your revenues for fiscal year 2006 and for the three-month period ending March 31, 2007. Please also disclose in the same location in the summary your net losses for these time periods.
4. Please provide us with supplemental support for the data referenced here and in your "Business" section, marking the relevant sections to support the disclosure. Also, please tell us whether this data was obtained through studies financed by you or prepared for you or at your direction or for the registration statement and whether the studies are publicly available.

Risks, page 3

5. Please present the risks in bullet format.

Summary Financial Data, page 5

6. In order to enhance an investors understanding of the separate events that will impact your equity in connection with this offering, please revise the balance sheet data to insert a "pro forma" column that presents the impact of the automatic conversion of all of the outstanding shares of your preferred stock into shares of common stock. This column should reconcile to the amount presented on the face of the consolidated balance sheet in the financial statements on page F-3. Please note this comment also applies to the capitalization table on page 29 and selected financial data on page 33.
7. We note from your disclosures on page F-15 that the Series A, Series AA, Series B and Series C preferred stock is automatically converted into common stock upon the closing of a firm commitment underwritten public offering of shares of common stock at a price per share of at least \$16.50 per share resulting in gross proceeds of at least \$40,000,000. Given these conditions, please tell us why you believe the pro forma balance sheet that reflects the preferred shares conversion is based on a factually supportable transaction. Please note this comment applies to your pro forma presentation of the conversion of preferred shares throughout the filing.

Risk Factors, page 7

Our international operations . . . , page 12

8. We note your disclosure that your company may be significantly impacted by "laws restricting business with suspected terrorists." Please explain with specificity how this risk is applicable to your business, industry or offering. Also disclose the countries where your products are sold.

Dilution, page 31

9. We note your disclosure on page 32 that the preceding tables assume the conversion of all your outstanding shares of preferred stock into 11,992,424 shares of common stock. We also note on page 78 that there are currently 14,751,668 shares outstanding. However, the second table on page 31 identifies only 2,759,244 shares held by existing shareholders. Please reconcile these disclosures.
10. With a view toward clarified disclosure in the prospectus, please disclose in tabular form how the numbers, amounts and percentages in the second table on page 31 would change, assuming all outstanding options are exercised.

Management's Discussion and Analysis . . . , page 35

Results of Operations, page 37

11. Please revise to quantify the effects of volume and pricing changes on your revenues for each period presented. Refer to Item 303(a)(3)(iii) of Regulation S-K.

Liquidity and Capital Resources, page 38

Cash Flows, page 39

12. Please discuss material changes in the underlying drivers of your working capital changes (e.g. cash receipts from the sale of goods and cash payments to acquire supplies and components or goods for resale), rather than merely describing items identified on the face of the statement of cash flows to provide a sufficient basis for a reader to analyze the change. Refer to Item 303(a) of Regulation S-K and Release 33-8350.

Operating Capital and Capital Expenditures, page 39

13. We note your disclosure on page 7 that spine surgeons may be slow to adopt your AxiaLIF products because of the lack of long-term clinical data supporting its benefits. We also note your disclosure here and on page 28 that you intend to fund clinical trials with the proceeds of this offering. Given your disclosure on page 7 that sales of your AxiaLIF products will account for substantially all of your revenues for the foreseeable future, please clarify whether the clinical trials you intend to fund include those for your currently marketed AxiaLIF products.

Stock-based Compensation, page 41

14. We note that you refer to using the valuation of an independent third party here when determining fair value of certain of your equity instruments. While management may elect to take full responsibility for valuing the equity instruments, if you choose to continue to refer to the expert in any capacity, please revise the filing to name the independent valuation expert and include its consent as an exhibit. Refer to Rule 436 and Item 601(b)(23) of Regulation S-K.
15. We note that the estimated fair value of your common stock was determined retrospectively. Please revise to provide the following disclosures, which we believe would be helpful to an investor since changes in your methodologies and assumptions could have a material impact upon your financial statements:
  - The aggregate intrinsic value of all outstanding options based on the midpoint of the estimated IPO price range.
  - Discuss in more detail the significant factors, assumptions, and methodologies used in determining fair value. Specifically, we believe you could enhance your discussion regarding the methodologies used in determining fair value.
  - 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. In this regard, we note from your disclosures on page F-15 that in order for your preferred stock to automatically convert, the offering must be at least \$16.50 per share.

Please note that we are deferring any final evaluation of your stock compensation recognized until the estimated offering price is specified, and we may have further comments in that regard when you file the amendment containing that information.

Business, page 44

16. We note your disclosure on page F-8 that you had several customers who accounted for more than 10% of your revenues and accounts receivable balance during 2005 and 2006. Please expand your disclosure to include the information required by Item 101(c)(1)(vii). Please also include similar disclosure for any periods subsequent to fiscal year 2006, if applicable.

AxiaLIF Clinical Data Summary, page 51

17. Given your disclosure on pages 52 and 53 summarizing the results of three studies, please file the consents required by Rule 436. Also, please furnish a marked copy of these studies for our review.

Third Party Reimbursement, page 54

18. Disclose whether third parties currently reimburse for medical procedures using the registrant's products.

Manufacturing and Supply, page 56

19. We note your disclosure here and page 35 that you rely on third parties to manufacture your products and their components. We also note your disclosure here that you or specialty vendors manufacture "products that are more proprietary," and your disclosure on page 16 that third parties manufacture "some" of your products. Additionally, your disclosure on page 17 appears to suggest that you currently manufacture all of your products. Please clarify the extent to which you rely on third parties to manufacture your products. Also specify which of your products are manufactured by third parties and which are manufactured by you or by specialty vendors.
20. We note your disclosure on page 11 that "some of the key components of our products and related services are currently provided by only a single vendor." Please identify this vendor here and describe the components and related services it provides. Please also identify the duration of your contract with this vendor, if one exists, and describe the availability of other suppliers in the event such contract or arrangement is terminated.

Facilities, page 61

21. Please clarify the nature of your facilities. Quantify the portion of leased space that is used for manufacturing and the portion that is used for offices.

Management, page 62

22. Please briefly explain the business of W.F. Jackson Associates, Ltd.
23. We note that section 3.7 of Exhibit 4.2 to your registration statement appears to describe an arrangement between TranS1 and your prior investors concerning the designees for and election of directors. Please expand your disclosure here to briefly describe such arrangement. Also identify each of your current directors who was designated and elected pursuant to this arrangement. See Item 401(a) of Regulation S-K.
24. We note your disclosure that Mssrs. Carusi, Dann and Osgood are currently employed as a general partner and managing members of Advanced Technology Ventures, Sapient Capital and Cutlass Capital, respectively. Given your

disclosure on page 78 that each of these entities and persons beneficially owns at least 12% of your outstanding shares and in light of the arrangement identified in comment 23, please explain to us your basis for excluding from the directors' business backgrounds an identification of these entities as affiliates of your company. Refer to Item 401(e)(1) of Regulation S-K.

Board Composition, page 63

25. Please disclose whether a majority of your board of directors is independent. See Item 407(a)(1)(iii) of Regulation S-K.

Compensation Committee Interlocks . . . , page 65

26. We note that Mssrs. Dann and Shapiro, who are directors and the sole members of your compensation committee, are also associated with Sapient Capital and Thomas Weisal Healthcare, respectively. Given your related-party transaction disclosure on page 76 regarding your sale of preferred stock to these entities, please revise your disclosure here to provide the information required by Item 407(e)(4)(i)(C) of Regulation S-K.

Compensation Discussion and Analysis, page 66

Role of Compensation Committee, page 66

27. We note your disclosure that your compensation committee recommends executive compensation packages to your board of directors after soliciting recommendations from Mr. Randall. Expand to state whether the compensation committee and ultimately the board of directors approved the recommendations made by Mr. Randall. If the compensation packages established by your board of directors were different from those recommended by your compensation committee, explain how they differed. Also disclose whether the recommendations of Mr. Randall were adopted without change by your compensation committee, or explain how they differed.
28. We note your disclosure that you attempt to compensate your executive officers at a level at least comparable to the compensation amounts of executives at similarly sized medical device companies. Please expand to identify these other companies and define what you mean by "comparable," given your disclosure that you "do not attempt to target . . . compensation at any particular percentile relative to peer group companies." Additionally, given that your compensation committee utilizes benchmarking data to determine your executive compensation packages, explain whether the compensation packages of these other companies contain similar types and structures of compensation that you have provided to your

executive officers. Also specify how each element of compensation relates to the data you have analyzed from peer companies. See Item 402(b)(2)(xiv).

Base Salary, page 67

29. We note your disclosure here that your compensation committee recommends changes in salaries based on individual performance during the prior year. We also note your disclosure in the next subsection that cash incentive payments are based on the degree to which an executive's objectives are achieved. Given your disclosures noted in comment 28, please clarify the extent to which benchmarking applies in setting or changing executive compensation, including base salary and bonus, and the degree to which individual performance is taken into account. For example, do you only benchmark which components are included in your compensation program, or do you also benchmark the actual compensation paid to your executives?
30. We note your disclosure that because Mr. Randall's salary was "below market for executives with similar experience levels and with similar responsibilities," his base salary was increased in May 2007. Please identify the other registrants used for comparative purposes for Mr. Randall's salary and describe and analyze how the experience, responsibilities and salary of their executives compare with Mr. Randall's. Also explain why this increase was applied retroactively.
31. Please expand your disclosure to discuss in more detail how you determined the compensation levels for each of your other named executive officers. Your revised disclosure should compare and discuss the differences in compensation among all of your executive officers and should address all components of your compensation program. Please also explain the factors considered in setting Mr. Jackson's base salary at double the amount of his predecessor.

Short-Term Incentive Programs, page 67

32. Please disclose with specificity for each of your named executive officers all personal and corporate objectives referenced in your disclosure and the weight assigned to each goal or objective. Please provide such disclosure or, alternatively, tell us why you believe that the disclosure of such information would result in competitive harm such that the information could be excluded under instruction 4 to Item 402(b). Further, qualitative goals generally need to be presented to conform to the requirements of Item 402(b)(2)(v). To the extent that it is appropriate to omit specific targets, discuss how difficult it would be for the executive, or how likely it will be for the registrant, to achieve the target levels or other factors. Please see instruction 4 to Item 402(b). Your revised disclosure should clearly and specifically address how your incentive structure works,

avoiding vague statements like “incentive payments are based on a combination of corporate objectives and personal objectives.”

33. As a related matter, please clarify whether Mr. Randall participates in setting the corporate objectives upon which his incentive payment is based. See Item 402(b)(2)(xv).
34. We note your disclosure that target levels for cash bonuses are based on a percentage of your executive officers’ base salary. Please disclose each such target level for your executive officers.
35. Please refer to comment 27 above and expand to state whether Mr. Randall’s recommendations as to the cash bonus target levels for each executive were adopted without change by your compensation committee, or explain how they differed. Also explain whether your board of directors has the ability to modify or reject such target levels.
36. We note your disclosure that Mr. Randall elected to receive a portion his 2006 incentive payment in fully vested stock options rather than cash, while your other executives received a cash payment. Please clarify whether each of your executives may also elect the form of their incentive compensation and, if so, under what circumstances. Also explain whether such elections are subject to the approval of your compensation committee or board of directors.
37. As a related matter, it appears from your disclosure on page 69 that Mr. Randall and two other executives were awarded a cash bonus for 2006. Please disclose with specificity the basis for each of these bonuses, including the individual and corporate achievements upon which such awards were based. Please provide similar disclosure with respect to any awards of options to your executives. See Item 402(b)(2)(v)-(vii).

Summary Compensation Table, page 68

38. We note your disclosure in note 3 to your summary compensation table that your former CFO terminated his employment in October 2006 and that your current CFO was appointed in April 2007. Compensation information must be disclosed for all individuals who served as your CFO or acted in a similar capacity at any time during your 2006 fiscal year. Given that you have not provided such disclosure for any individual who served or acted as your CFO from October 2006 through April 2007, please confirm that your company operated without a CFO during that time period and expand your disclosure accordingly.



Certain Relationships and Related Party Transactions, page 76

39. Please expand your disclosure to include the information required by Item 404(b).

Offering Price Determination, page 91

40. Please clarify whether the offering price will be determined by negotiations between you and representatives of the underwriters.

Legal Matters, page 95

41. Please tell us what legal matters will be passed upon for the representative of the underwriters.

Where You Can Find More Information, page 95

42. Please disclose the Commission's Web site address, as required by Item 101(e)(2) of Regulation S-K.

Financial Statements, page F-1

43. Please update your financial information as required by Rule 3-12 of Regulation S-X.

Revenue Recognition, page F-9

44. Please revise to state, if true, that your European distributors do not have any right of return. Otherwise, revise to disclose your policy for any right of return. Please also revise to discuss any other post-shipment obligations you have with respect to your European distributors.

Stock-Based Compensation, page F-10

45. We note that you historically used the minimum value method for purposes of your pro forma disclosures under SFAS 123. Please revise to remove the pro forma disclosures for 2005 and 2004. Refer to paragraph 85 of SFAS 123R.

Note 6. Capital Stock – Convertible Preferred Stock, page F-14

46. We note that you have presented your convertible preferred stock outside of permanent equity on your balance sheet. Please tell us and revise the filing to disclose the significant terms of the preferred stock that led to your conclusion that the preferred stock should be classified outside of permanent equity.

Part II

Item 16. Exhibits

47. Please file a copy of the stock purchase agreement for your September 2005 preferred stock financing as an exhibit to this registration statement. Refer to Item 601(b)(10).

Exhibit 10.7

48. Identify in the exhibits table the indemnitees who signed the draft indemnification agreement.

Exhibit 23.2

49. Please provide a currently dated and signed consent from your independent registered public accounting firm prior to requesting effectiveness.

Item 17. Undertakings, page II-3

50. Please include the full undertaking referenced in number three. Refer to Item 512(a)(5) of Regulation S-K.

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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 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 filing to be certain that the filing includes all information required under the Securities Act of 1933 and that they have provided all information investors require for an informed investment 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.

Notwithstanding our comments, in the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, 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.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with our review of your filing or in response to our comments on your filing.

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. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

We direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

You may contact at David Burton at (202) 551-3378 or Kevin Vaughn, Accounting Branch Chief, at (202) 551-3676 if you have questions regarding comments on the financial statements and related matters. Please contact Geoffrey Kruczek at (202) 551-3641 or me at (202) 551-3800 with any other questions.

Sincerely,

Peggy Fisher  
Assistant Director

cc (via fax): Bruce Feuchter, Esq.—Stradling Yocca Carlson & Rauth  
Michael A. Hedge, Esq.—Stradling Yocca Carlson & Rauth