

May 21, 2008

Mail Stop 6010

Edwin L. Lewis
General Counsel
GT Solar International, Inc.
243 Daniel Webster Highway
Merrimack, New Hampshire 03054

**Re: GT Solar International, Inc.
Amended Registration Statement on Form S-1
Filed April 18, 2007
File No. 333-142383**

Dear Mr. Lyman:

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 Summary, page 1

1. We note your response to the fourth bullet point of prior comment 6. With a view towards disclosure in the summary please tell us what "contractual criteria," as you describe in the risk factor on page 17, needs to be satisfied before you recognize revenue from the sale of your CVD reactors.
2. We note your response to the fourth bullet point in prior comment 7. Please revise the last two sentences in the fourth paragraph of page 1 to provide an investor with appropriate context with which to understand that backlog does not represent a guarantee of future revenues and that you have not had significant experience in determining the level of realization that you will actually achieve on your backlog.

Market Opportunity, page 2

3. We note your response to prior comment 8. It is unclear how the “green world” scenario fits your description as “the most balanced” of three forecasts when it appears that this scenario assumes a wider development of incentive programs than currently in place. Please clarify your disclosure to more accurately describe the assumptions in the scenario you have chosen to describe.

Risk Factors, page 8

We rely on a limited number of suppliers..., page 19

4. We note your disclosure regarding a limited number of manufacturers who provide “essential” components to your products. Please demonstrate whether your business is substantially dependent on any of the contracts. See Regulation S-K Item 601(b)(10)(ii)(B).

Turnkey solutions capability, page 61

5. We note your response to prior comment 4 and your revised summary disclosure. Please clarify your reliance on third-party equipment in your disclosure in this section as well.

Backlog by product category, page 65

6. We reissue the first sentence in prior comment 21. Please disclose this information in your prospectus. Further, please expand your response to tell us how you have determined that your business is not substantially dependent on any of these contracts. For example, please tell us about your agreements with Trina Solar that appear to have been cancelled in April of 2008. As another example, we note disclosure in the second risk factor on page 8 that \$556 million of your order backlog was attributable to two customers and disclosure in the fourth paragraph on page 46 that through December 31, 2007 you have received committed orders for CVD reactors, STC converters and other related equipment from six customers having an aggregate value of over \$417 million.

Executive Compensation, page 81

Compensation Discussion and Analysis, page 81

7. Please identify all of the companies against which you benchmark your compensation for the fiscal year ended March 31, 2008. Alternatively, if you are not using such surveys to benchmark compensation but rather are relying on such additional information to provide your compensation committee with general information to assist in its compensation level deliberations, please indicate such in your response letter and clarify your disclosure accordingly.

8. We note your response to prior comment 24.

- Please clarify what it means to have a study “presented” by management that “served as the foundation” for your fiscal 2008 compensation program as disclosed in the last paragraph on page 81.
- To the extent your CEO was involved in setting his own compensation, please disclose the details involving such activities. We note your disclosure in the last full paragraph on page 82 where management “analyzed” and “proposed” compensation amounts.

Base Salary, page 84

9. We note your response to prior comment 25. Please clarify what it means to be “around the 15th percentile of base salaries” and further expand your disclosures to discuss the determination of base salaries for your other named executive officers.

Annual Cash Bonus Incentive, page 85

10. We note your disclosure that the cash bonus amounts are expected to be finalized in May 2008. Please update this section and your Summary Compensation Table to reflect the actual bonus amount paid to your named executive officers.

Outstanding Equity Awards at Fiscal Year-End, page 93

11. Please disclose the vesting dates of the options listed in this table. See Instruction 2 to Item 402(f)(2) of Regulation S-K.

Director Compensation, page 97

12. Disclose the aggregate number of stock awards and option awards outstanding at fiscal year end. See Instruction to Item 402(k)(2)(iii) and (iv) of Regulation S-K.

Principal and Selling Stockholders, page 99

13. Please identify the individuals with beneficial ownership over the shares held by GT Solar Holdings, LLC.

Certain Relationships and Related Transactions, page 101

14. We note your response to prior comment 38. Please file these guarantees as exhibits.
15. We note your response to prior comment 40. Due to the similarities in entity names and the two mergers, for clarification please provide a diagram showing the mergers. Also, please clarify here the entities identified as the “Main Fund” and the “Cayman Fund” which are defined in footnote 1 to the beneficial ownership table.
16. Please expand your response to prior comment 42 to more fully describe the nature of the write-off of your investment.

Statement of Policy, page 104

17. We note your response to prior comment 44. It is unclear how a related party could determine whether an opportunity is presented to them “solely in his or her capacity as a director of the Company.” Please expand your disclosure to more clearly describe the interaction of this disclosure and your disclosure regarding corporate opportunities on page 108.

Financial Statements, page F-1

18. Please update the financial statements when required by Rule 3-12 of Regulation S-X.

Note 2. Significant Accounting Policies, page F-9

Warranty, page F-12

19. We note your response to prior comment 56. However, we note your disclosures on page F-12 that you generally warrant your products for a period of one year. Please reconcile this with your revised disclosures on pages 15 and 68 which state that your DSS products are generally sold with a warranty equal to the shorter of twelve months from the date of acceptance or fifteen months from the date of shipment and that your polysilicon products are generally sold with a warranty for a period not exceeding twenty-four months.

Note 13. Stockholders' Equity, page F-34

20. We note your response to prior comment 60 in which you state that you have not estimated an IPO price per share and that you will provide additional disclosure when an estimated IPO price per share has been determined. We may have additional questions after we review your response.

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.

Edwin L. Lewis
GT Solar International, Inc.
May 21, 2008
Page 6

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 Lynn Dicker at (202) 551-3616 or in her absence, Gary Todd at (202) 551-3605 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 (via Fax): Eva Davis, Esq.
Dennis M. Myers, Esq.