



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549-7010

DIVISION OF
CORPORATION FINANCE

July 3, 2006

Mail Stop 7010

By U.S. Mail and facsimile to (303) 279-7300

James E. Alexander
President
Isonics Corporation
5906 McIntyre Street
Golden, Colorado 80403

**Re: Isonics Corporation
Form S-3
Filed June 7, 2006
File No. 333-134816**

**Form 10-KSB for the year ended April 30, 2005
Filed June 29, 2005**

**Form 10-QSB for the period ended January 31, 2006
Filed March 17, 2006**

Dear Mr. Alexander:

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.

General

1. It appears that the number of shares issuable upon exercise of the issued warrants and full conversion of the convertible debenture, whether at its fixed price or pursuant to the floating conversion terms, would constitute a very significant portion of your outstanding securities to Cornell Capital Partners. Accordingly, we do not believe that this transaction comports with the requirements of an at the market secondary shelf offering but appears to be an indirect primary offering. See, e.g., Manual of Publicly Available Telephone Interpretations, Securities Act Section 415, no. 29 (July 1997), available at http://www.sec.gov/interps/telephone/cftelinterps_rule415.pdf. Please note that in reaching this determination, we have disregarded applicability of beneficial ownership caps, as these contractual arrangements do not affect our determination of what constitutes a valid secondary shelf offering.
2. We note that \$3 million of the 6% convertible debenture have not been issued and may not be issued until no later than two days prior to the date this registration statement is declared effective. To the extent that you are seeking to register shares underlying convertible debentures that have not yet been funded, it does not appear that you have a completed private sale of the convertible debentures, and is therefore the inconsistent with the guidance set out in paragraph 3S in the March 1999 Supplement to our Manual of Publicly Available Telephone Instructions. Please advise.
3. Similarly, we note that you amended the terms of the transaction in the Surrender and Reissuance Agreement after filing this registration statement on June 7, 2006. Note that shares registered for resale must be outstanding or, if the company has completed a Section 4(2)-exempt sale of the securities, the investor must be at market risk at the time of filing. Revision of the terms of a completed transaction while in registration is inconsistent with the exemption from registration provided by Section 4(2) of the Securities Act. Please provide us with a detailed legal analysis addressing the consequences of this renegotiation. We may have additional comments upon review of your response.
4. Please update to disclose the reasons surrounding your entering into the Surrender and Reissuance Agreement, i.e. the factors surrounding the Nasdaq deficiency letter

Documents Incorporated by Reference, page 8

5. Please file updated financial statements, as necessary, to comply with Item 310(g) of Regulation S-B. In this regard, it appears that you should update your financial statements to April 30, 2006 in your next amendment.

Risk Factors, page 10

Holders of the remaining 8% Debentures, page 13

6. Please revise to disclose in detail the covenant giving rise to possible default claims under the 8% debentures, the basis for your assertion that you believe you have significant grounds to contest the existence of any default, and the number of non-consenting holders.

We have an insufficient number of shares of common stock authorized...., page 13

7. We note from your disclosures here and on page 26 that you have an insufficient number of shares of common stock authorized as of June 6, 2006 to cover all of your convertible instruments. Please tell us what impact the insufficient number of authorized shares will have on your accounting for the embedded conversion feature of your 8% debentures and on your outstanding stock warrants. Refer to SFAS 133 and EITF 00-19.

SEC penny stock regulations, page 17

8. We note your disclosure of the Nasdaq Capital Market's \$1 minimum bid price listing standard. In light of your current stock price, please consider adding a new risk factor discussing your compliance with the standard and the liquidity risk to investors if your stock were to be delisted.

Outstanding 6% and 8% Debentures, page 18

9. Please revise your discussion to disclose the number of shares of common stock issuable upon conversion of the 6% and 8% debentures at their respective floating conversion terms, as though those terms were already in effect. Revise the percentage of shares represented by full conversion or exercise of all of your debentures, options, and warrants accordingly. Similarly revise Description of Securities on page 26.

As a public company, we are subject to, page 18

10. Please disclose the nature of the Nasdaq and SEC inquiries.

Forward-looking statements may prove to be inaccurate, page 19

11. Please delete this risk factor. Note that material risks identified in this section should apply specifically to your business, rather than to all companies generally. In addition, the substance of this risk factor is conveyed under Note of Caution Regarding Forward-Looking Statements on page 9.

Use of Proceeds, page 20

12. Please disclose your intended use of the proceeds derived from the placement of the 6% convertible debentures.
13. Please revise to reflect all of the warrants issued pursuant to the transaction with Cornell Capital, rather than only the 2,000,000 warrants with a \$1.25 exercise price.

Selling Shareholders and the Plan of Distribution, page 20

14. Please revise your table to reflect the aggregate number of shares of common stock beneficially owned before and after the offering, as well as the number of shares being offered, while indicating by footnote or otherwise the portion of the aggregate amount that is issuable upon the exercise or conversion of derivative securities. See Regulation S-B, Item 507.

Description of Securities, page 26

6% Debentures and Warrants Issued in the May and June 2006 Transaction, page 27

15. We read on page 28 that the maximum number of shares that may be issued upon conversion of the principal amount of your 6% debentures is 64 million shares. In light of the variable conversion rate for these debentures after September 27, 2006, please tell us how you determined this maximum share issuance. If this maximum conversion is specified in your debenture agreement, please revise to clarify this matter.

Registration Rights Agreement, page 30

16. We note that the registration rights agreement associated with your 6% debentures and related stock warrants requires you to pay liquidated damages if you fail to meet certain registration statement requirements. Please tell us what consideration you have given to EITF 05-4 in determining if or how to account for this liquidated damages clause.

8% Debentures and Warrants Issued in the February 2005 Transaction, page 31

Warrants Issued With the 8% Debentures, page 33

17. Please revise to clarify the effect, if any, of the issuance of the common stock underlying the 6% convertible debentures at a floating conversion price of less than \$1.25 on the “ratchet adjustment” of the warrants issued in conjunction with the 8% debentures, i.e. if the issuance at a the floating rate triggers a downward adjustment in the exercise price, please disclose this.

Part II
Undertakings, page 38

18. Please delete the undertakings that you state are inapplicable to your offering, such as paragraphs (b) through (d), or that are otherwise applicable only to offerings conducted in reliance upon rules on which you do not rely.

Signatures

19. Please revise your signature page to indicate the individual serving as chief financial officer and as controller or principal accounting officer. Refer to Instruction 1 to the signature requirement of Form S-3.

Form 10-KSB for the Fiscal Year Ended April 30, 2005
Note 1 – Organization and Significant Accounting Policies
Income Taxes, page F-9

20. We read that you record a valuation allowance when deferred tax assets are not expected to be realized. Please revise future filings to clarify, if true, that you record a valuation allowance when it is *more likely than not* that some or all of the deferred tax assets will not be realized. Refer to paragraph 17(e) of SFAS 109.

Revenue Recognition, page F-9

21. Please update this disclosure in your April 30, 2006 Form 10-KSB to address revenue recognition for services provided by your acquired PPSC business.

Note 4 – Significant Acquisitions and Combinations, page F-16

22. We read that the allocation of the purchase price for EMG is based on an independent third party valuation. Given that this filing has been incorporated by reference into your Form S-3, please tell us how you determined that you did not need to identify and provide a consent from these experts in your Form S-3. Refer to Section 436(b) of Regulation C.

Note 9 – Stockholders' Equity, page F-23

23. For each issuance of common stock warrants that are outstanding at April 30, 2006, please provide us with a detailed explanation of how the warrants are to be settled and which party determines how settlement occurs to support your classification of these warrants in your balance sheet as either equity or liabilities. In this regard, we assume that at April 30, 2006, you had warrants outstanding related to your 8% debenture and related to various issuances of preferred stock.

Please see SFAS 133 and EITF 00-19 for guidance.

Form 10-QSB for the Period Ended January 31, 2006
Note 4 – Segment Information, page 9

24. We read that reconciling items for your operating loss and total assets consist primarily of corporate expenses or assets that have not been allocated to a specific reportable segment. Please revise future filings to provide better insight into the kinds of expenses and assets that are generally not allocated to specific reportable segments. Refer to paragraphs 31-32 of SFAS 131.

Management's Discussion and Analysis of Financial Condition, page 20
Results of Operations, page 24

25. We note that you are analyzing revenues on a segmental basis and analyzing all other income statement line items on a consolidated basis. Please revise future filings to analyze your segmental measure of profit or loss, or the individual line items comprising this measure, on a segmental basis. Refer to our Release 33-8350, available on our website at www.sec.gov/rules/interp/33-8350.htm.

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;

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- 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 Dale Welcome, Staff Accountant, at (202) 551-3865 or Jennifer Thompson, Senior Staff Accountant, at (202) 551-3737 in you have questions regarding comments on the financial statements and related matters. Please contact Matt Franker, Staff Attorney, at (202) 551-3749 or me, at (202) 551-3767 with any other questions.

Sincerely,

Jennifer Hardy
Branch Chief

cc: Herrick K. Lindstone, Jr., Esq. (*via facsimile* 303/796-2777)
Burns, Figa & Will, P.C.
6400 S. Fiddlers Green Circle
Suite 1000
Greenwood Village, Colorado 80111