

July 25, 2006

Via EDGAR

Mr. Martin F. James
Senior Assistant Chief Accountant
Securities and Exchange Commission
Mail Stop 6010
102 F Street, N.E.
Washington, D.C. 20549-0306

Re: Vicor Corporation
Form 10-K for the year ended December 31, 2005
File No. 0-18277

Dear Mr. James:

This letter is submitted on behalf of Vicor Corporation (“Vicor” or “the Company”) in response to comments of the staff of the Division of Corporation Finance (the “Staff”) of the Securities and Exchange Commission (the “Commission”) with respect to the Company’s Form 10-K for the year ended December 31, 2005, as set forth in the letter dated June 29, 2006 from the Staff to Mr. Patrizio Vinciarelli (the “Comment Letter”).

For reference purposes, the text of the Comment Letter has been reproduced herein with responses below each numbered comment.

Form 10-K as of December 31, 2005

Note 14. Segment Information, page 47

1. We note your response to prior comments 1 and 2 where you indicate that you provide one group of similar products and have one operating segment. Your reasons for reaching these conclusions are still unclear to us.
 - While you told us that your CEO and Chief Operating Decision Maker (“CODM”) does not regularly review the operating results of the V•I Chip, Picor and Brick business units, we note that in each of the quarterly earnings press releases furnished on Form 8-K dated April 14, 2005, July 18, 2005, October 18, 2005, February 8, 2006 and April 24, 2006, your CODM provided a discussion of the performance of the business units. For example, in the press release dated July 18, 2005, we note statements such as “continued efficiencies and productivity improvements in our Brick business unit yielded improved gross margins.” Similarly, in the press release dated February 2, 2006, in discussing your fiscal year results, your CODM stated, “While revenues and profitability in our legacy brick business are improving, the V•I Chip and Picor business units are entering their next phase with product roadmaps
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that support significant penetration of new markets. V•I Chips have completed customer qualification and a production ramp is due to start in Q2. We anticipate that the 2nd half of '06 will see tangible V•I Chip revenues from initial programs in volume production and that 2007 will see further expansion driven by additional, major programs.”

- *Your response indicates that your CODM makes allocation and resource decisions based on the consolidated results of the company. However, in the press release dated July 18, 2005, we note statements such as “V•I Chip and Picor business units advanced their respective product plans...V•I Chip and Picor are actively recruiting key individuals to contribute to the next phase of their evolution.” Similarly, we note in the press release dated October 18, 2005, statements by your CODM indicating that V•I Chip and Picor business units continued to reach milestones in their product plans and that continued investments in business units with innovative technology was being financed by the profitability of your brick business.*
 - a) *Since the statements appear to indicate that your CODM has reviewed discrete financial information for these business units, and used that information to assess their performance and to allocate resources, tell us how you considered these statements in reaching the conclusions outlined in your response.*
 - b) *As the statements appear to strongly indicate that the business units are operating segments which do not have similar economic characteristics, please explain how you concluded that you have one operating and reportable segment.*
 - c) *Please explain how your CODM obtained the information he presented to investors.*
 - d) *Provide us with a copy of the detailed reporting package reviewed by your CODM for each of the quarterly periods in 2005 and 2006, and on which he based these statements. We may have further comments after reviewing your response.*
 - e) *Otherwise, please confirm that in all future filings you will provide segment results for each of the V•I Chip, Picor and Brick business units identified by your CODM.*
 - f) *Similarly, confirm that in all future filings you will include revenue by product disclosures required by paragraph 37 of SFAS 131.*
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Response to Comment No. 1

In order to clarify the Company's evaluation of there being one operating and reportable segment, we believe an overview of the "stage of life" and status of each of the business units identified in the various press releases furnished on Form 8-K identified in the Comment Letter, and the Company's chief operating decision maker's ("CODM") involvement with each of these units, is warranted. The Company's singular business is the design, manufacture and marketing of modular power components and complete power systems. All of the Company's products provide the same basic functionality, converting electric power from a primary source, for example, a wall outlet or a battery source, into the stable DC voltages required by electronic circuits. The Brick business unit is comprised of substantially all of the Company current revenue-generating products, and this business unit generates substantially all of the Company's revenues. These products are based on technology first commercialized by the Company in the mid-1980s and are the established power conversion products sold by the Company. These products are a mature line of power conversion products. Revenues and gross margin contribution derived from these products over the years are primarily responsible for the current levels of cash and investments, working capital and retained earnings. The V•I Chip business unit is comprised of power conversion products based on the Company's latest power conversion technology, which was developed by the Company beginning in 2000. The V•I Chip technology was first incorporated into power conversion products offered by the Company in May 2003, and the Company remains in the process of developing additional products incorporating this technology to fill out its V•I Chip product lines. The V•I Chip product lines are in their early stages. Although the V•I Chip technology does represent a dramatic advance over the technology incorporated in the Company's existing Brick products, the function of the V•I Chip products is the same as the Company's existing products based on its earlier technology (i.e., power conversion). In this respect, the V•I Chip products merely represent the Company's next generation of new and improved power conversion products, much the same as many companies periodically develop and offer new and improved versions of existing products. The Company has not yet generated material revenues from its V•I Chip products, and the primary activities of the V•I Chip business unit have been research and development and, to a more limited extent, sales and marketing.

Picor Corporation ("Picor") was incorporated as a wholly-owned subsidiary of Vicor in November 2001. As noted in our response to the Comment Letter dated June 13, 2006, the majority of its efforts since inception have been to assist Vicor with research and development for its products. This assistance has been principally related to the conversion of Vicor second-generation products, which are part of the Brick business unit, to the FasTrak platform and assistance in the development of certain aspects of the V•I Chip products. To a limited extent, Picor has also developed and sold certain products for use in a variety of power system applications. These products perform functions similar to certain of Vicor's accessory power system components. However, sales to date have not been material.

The CODM is the principal inventor of the Company's products and spends most of his time in direct product research and development for all new product development, from conception to initial product design to refinement of existing product designs. He works closely with engineering personnel that are responsible for the development of both VŸI Chip and Picor products and with those responsible for product enhancement and development of Brick products. He is therefore very familiar with the status of new product developments, product status and the overall new product roadmap for VŸI Chip and Picor products, as well as the status and development of Brick products. As a result of his overall involvement in the business, the CODM is aware of the relative magnitude of revenues generated by VŸI Chip and Picor (i.e., a very small percentage of the Company's consolidated revenue) and research and development spending on VŸI Chip and Picor products (approximately 80 – 90% of total research and development spending).

Responses to the specific questions from the Comment Letter are as follows:

- a) *Since the statements appear to indicate that your CODM has reviewed discrete financial information for these business units, and used that information to assess their performance and to allocate resources, tell us how you considered these statements in reaching the conclusions outlined in your response.*

Response to Comment a).

We note the Staff's comment. As we noted in our response to the Comment Letter dated June 13, 2006, discrete financial information is available for Picor, due to its status as a separate subsidiary, but the CODM does not review that information nor does he use it to assess performance or to allocate resources. In addition, certain limited discrete financial information for the VŸI Chip business was generated in November and December 2005. However, the limited discrete financial information for VŸI Chip was not complete nor in a form for review by senior management, and is therefore not used by the CODM to assess performance or to allocate resources. We would point out that in the statements that the Staff references from our quarterly earnings press releases furnished on Form 8-K dated July 18, 2005, October 18, 2005 and February 2, 2006, the only comments that were related to specific financial performance made by the CODM were relative to the Brick business unit, specifically addressing its revenues, profitability and gross margins. As noted in our overview section, above, since substantially all of the net revenues and gross margin of the Company on a consolidated basis is derived from sales of products from the Brick business unit, the CODM can make these statements and come to these conclusions regarding the revenues, profitability and gross margins of the Brick business unit by simply reviewing the consolidated operating results of the Company. Statements made by the CODM relative to VŸI Chip and Picor (for example "...the VŸI Chip and Picor business units are entering their next phase with product roadmaps..." and "...VŸI Chip and Picor

business units advance their respective product plans...”) were directed at product status and product development efforts, and not specific financial performance. He is able to make these statements concerning V•I Chip and Picor products or the level of R&D investment in Picor and V•I Chip due to his close involvement and familiarity with the Company’s product development efforts, as noted in the overview section, above. Since substantially all of the Company’s cash and working capital is generated from the Brick business unit, as noted above, which in turn funds the high percentage of spending on research and development for the V•I Chip and Picor products, the CODM can conclude that investments “... in business units with innovative technology... are being financed by the profitability of our 1st and 2nd gen proprietary brick business” (per the press release dated October 15, 2005) by reviewing the consolidated financial statements.

- b) *As the statements appear to strongly indicate that the business units are operating segments which do not have similar economic characteristics, please explain how you concluded that you have one operating and reportable segment.*

Response to Comment b)

We note the Staff’s comment. In coming to our conclusion that the Company has only one operating and reportable segment, we have determined that we do not meet the definition for multiple operating and reportable segments per paragraph 10 of SFAS 131 for the following reasons:

- Discrete financial information is not available for each business unit.
 - The CODM only reviews the consolidated financial results of the Company in order to assess performance and to allocate resources. He does not review the discrete financial information for any individual business unit.
- c) *Please explain how your CODM obtained the information he presented to investors.*

Response to Comment c)

We note the Staff’s comment. We believe this comment has been addressed in our responses in a) and b) above, based on the CODM’s review of the consolidated financial results of the Company.

- d) *Provide us with a copy of the detailed reporting package reviewed by your CODM for each of the quarterly periods in 2005 and 2006, and on which he based these statements. We may have further comments after reviewing your response.*
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Response to Comment d).

We note the Staff's comment. We are supplementally providing a copy of the form of the detailed reporting package reviewed by the CODM for each of the quarterly periods in 2005 and 2006, and on which he based the statements referred to in the Comment Letter. This package includes:

- Form of consolidated quarterly press release schedules
- Form of consolidated monthly income statement summary analysis
- Form of consolidated quarterly forecast update
- e) *Otherwise, please confirm that in all future filings you will provide segment results for each of the V•I Chip, Picor and Brick business units identified by your CODM.*

Response to Comment e).

We note the Staff's comment. Based on the considerations noted above and in our response to the Comment Letter dated June 13, 2006, the Company believes it has only one operating segment and has therefore complied with the disclosure requirements of SFAS 131 in the Company's annual report filed on Form 10-K for the year ended December 31, 2005. We will continue to evaluate these requirements and will provide the required disclosures regarding multiple operating segments in future filings if, in the future, the Company determines that it has multiple operating segments as defined in paragraph 10 of SFAS 131.

- f) *Similarly, confirm that in all future filings you will include revenue by product disclosures required by paragraph 37 of SFAS 131.*

Response to Comment f).

We note the Staff's comment. As we noted in our response to the Comment Letter dated June 13, 2006, we believe that the products offered by the Company comprise a single group of similar products. The basis for our belief continues to be the following:

- All of the Company's products provide the same basic functionality, converting electric power from a primary source, for example, a wall outlet or a battery source, into the stable DC voltages required by electronic circuits. Products may have different features in order to meet the specifications for certain customer and/or industry applications, but the basic functionality remains the same.
 - All of the Company's modular power components, whether for direct sale to customers or for sale to the Company's various subsidiaries and divisions for inclusion into their
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respective products, are manufactured in the Company's production facility in Andover, Massachusetts. All of these products are manufactured on the Company's automated manufacturing production lines using similar production processes.

- All of the Company's products are sold to similar types of customers in similar industries, such as telecommunications, industrial, military/defense and information technology.
- All of the Company's products are sold via the same distribution channels. The Company sells its products through a network of independent sales representative organizations in North and South America and internationally through independent distributors. Sales activities are managed by a staff of Regional and Strategic Sales Managers and sales personnel based at the Company's world headquarters in Andover, Massachusetts and certain other subsidiary and division locations.

We will continue to evaluate the disclosure requirements under paragraph 37 as the Company's product offerings change and will consider disclosure of revenues by product group, as required, in future filings.

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If you have further questions or need further clarification of our responses, we propose that arrangements be made for a conference call to discuss our responses, at your convenience.

If you should have any questions concerning the enclosed matters, please contact either Mark Glazer at (978) 749-3215 or Dick Nagel at (978) 749-3424.

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Regards,

/s/ Patrizio Vinciarelli
Patrizio Vinciarelli
President Chief Executive Officer

/s/ Mark A. Glazer
Mark A. Glazer
Chief Financial Officer

/s/ Richard J. Nagel, Jr.
Richard J. Nagel, Jr.
Vice President Chief Accounting Officer