



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549-4631

September 11, 2013

Via E-Mail

Mr. Alain J. Castro
Chief Executive Officer and Director
Ener-Core, Inc.
9400 Toledo Way
Irvine, CA 92618

Re: Ener-Core, Inc.
Amendment No. 1 to Current Report on Form 8-K
Filed August 29, 2013
File No. 333-173040

Dear Mr. Castro:

We have reviewed your response letter and the above-referenced filing, and have the following comments.

Description of Business, page 2

1. We note that the revised disclosure refers to “the EECT agreement” in the fourth paragraph. Explain the meaning of any acronym or abbreviation when introduced in the document so that the reader may understand the significance of this term. We note the disclosure on page seven.

Our Technology, page 4

2. We note your revisions in response to comment six of our letter dated August 6, 2013. However, we note that the disclosure on page nine states that you commissioned the FP250 field test at the U.S. Army base at Fort Benning, Georgia. Please reconcile your disclosure. Please also clarify what is meant by the statement that your technology “underwent testing and verification completed by an independent third party.” To the extent that you are referring to SRI as the third party, please clearly state this in the disclosure.

A Note About Forward-Looking Statements, page 21

3. We note your response to comment 13 of our letter dated August 6, 2013. Please delete your reference to the safe harbor of the Private Securities Litigation Reform Act of 1995 as it does

not appear that you are eligible to rely on this safe harbor. We note that Section 21E(b)(1)(C) provides that the safe harbor is not applicable to an issuer of penny stock, regardless of whether the company is offering securities through the report containing such statements.

Security Ownership of Certain Beneficial Owners and Management, page 33

4. We note your disclosure that the shares of stock beneficially owned do not include certain common stock underlying options held by the beneficial owners listed. However, we note disclosure on page 39 and elsewhere in the filing that all options outstanding at December 31, 2012 were exercised in the first quarter of 2013. Please reconcile your disclosure in this section as it suggests that the listed beneficial owners continue to hold these options. We also note references in footnotes 3, 5, and 6 to shares that are released on a monthly basis from “time-based vesting/repurchase rights.” Please clarify the form of such shares (whether restricted stock or another type of security) and whether the beneficial ownership table includes such shares.
5. We note that footnote 2 suggests that Mr. Castro was granted options representing 1.25 million shares of common stock. Please advise when this grant was made to Mr. Castro.

Executive Compensation, page 37

6. We note that Dr. Maslov and Mr. Levin exercised all of their options in January 2013 although it appears that not all options vested by such date. Please explain how Dr. Maslov and Mr. Levin were able to exercise their options prior to vesting. We further note that the all options granted to Dr. Maslov and Mr. Levin are listed as both exercisable and unexercisable as of December 31, 2012 in the table on page 28. Please advise. Please also include the market value of shares of stock that have not vested in this table as required by Item 402(p)(2)(viii) of Regulation S-K.

Related Party Transactions, page 32

7. We note that the revised disclosure refers to Note 13 to your annual and post-inception financial statements and Note 6 to your quarterly financial statements. It appears that the references should be to Note 12 to your annual and post-inception financial statements and Note 10 to your quarterly financial statements. Please revise. Please similarly correct the references to these Notes that appear throughout your Form 8-K, such as on page 31.

Mr. Alain J. Castro
Ener-Core, Inc.
September 11, 2013
Page 3

Other

8. We note that you are requesting confidential treatment of portions of Exhibit 10.10. We will process the confidential treatment application upon receipt from the Office of the Secretary and may have comments upon completion of our review.

Please respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a letter that keys your responses to our comments and provides any requested supplemental information. Detailed response letters greatly facilitate our review. Please file your response letter on EDGAR. Please understand that we may have additional comments after reviewing your responses to our comments.

You may direct questions on accounting comments to Kevin W. Stertz, Staff Accountant, at (202) 551-3723 or W. John Cash, Accounting Branch Chief, at (202) 551-3768. You may direct questions on other comments and disclosure issues to Edward M. Kelly, Senior Counsel, at 202-551-3728 or Erin K. Jaskot, Staff Attorney, at (202) 551-3442

Sincerely,

/s/ Erin K. Jaskot, *for*

Pamela A. Long
Assistant Director