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UNITED STATES SECURITIES AND EXCHANGE COMMISSION  
Washington, DC 20549

**FORM 8-A**

FOR REGISTRATION OF CERTAIN CLASSES OF SECURITIES  
PURSUANT TO SECTION 12(b) OR (g) OF THE  
SECURITIES EXCHANGE ACT OF 1934

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**HORIZON TECHNOLOGY FINANCE CORPORATION**

(Exact name of registrant as specified in its charter)

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**Delaware**

(State of incorporation or organization)

**27-2114934**

(I.R.S. Employer Identification No.)

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**312 Farmington Avenue, Farmington, Connecticut**

(Address of principal executive offices)

**06032**

(Zip Code)

Securities to be registered pursuant to Section 12(b) of the Act:

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**Title of each class to be so registered**

**7.375% Senior Notes due 2019**

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**Name of each exchange on which  
each class is to be registered**

**New York Stock Exchange**

If this form relates to the registration of a class of securities pursuant to Section 12(b) of the Exchange Act and is effective pursuant to General Instruction A. (c), check the following box. S

If this form relates to the registration of a class of securities pursuant to Section 12(g) of the Exchange Act and is effective pursuant to General Instruction A. (d), check the following box. £

Securities Act registration statement file number to which this Form relates: 333-178516

Securities to be registered pursuant to Section 12(g) of the Act: None

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## INFORMATION REQUIRED IN REGISTRATION STATEMENT

### Item 1. Description of Registrant's Securities to Be Registered.

A description of the 7.375% Senior Notes due 2019 (the "Senior Notes") of Horizon Technology Finance Corporation, a Delaware corporation (the "Registrant"), to be registered hereunder is contained in the section entitled "Description of Debt Securities That We May Issue" in the Prospectus dated February 6, 2012 included in the Registrant's Registration Statement on Form N-2 (File No. 333-178516) initially filed with the Securities and Exchange Commission (the "Commission") on December 15, 2011, as amended from time to time. In addition, a description of the Senior Notes is included under the headings "Description of the Notes" and "The Offering" in the Prospectus Supplement dated March 16, 2012, as filed with the Commission on March 19, 2012, pursuant to Rule 497 of the Securities Act of 1933, as amended. The foregoing Prospectus and Prospectus Supplement are incorporated herein by reference.

### Item 2. Exhibits.

- 4.1 Indenture, dated as of March 23, 2012, between the Registrant and U.S. Bank National Association, as trustee (1)
- 4.2 First Supplemental Indenture, dated March 23, 2012, between the Registrant and U.S. Bank National Association, as trustee, relating to the 7.375% Senior Notes due 2019 (2)
- 4.3 Form of 7.375% Senior Note due 2019 (3)

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- (1) Incorporated by reference to Exhibit (d)(7) of the Company's Post-Effective Amendment No. 2 on Form N-2, File No. 333-178516, filed on March 23, 2012
  - (2) Incorporated by reference to Exhibit (d)(8) to the Company's Post-Effective Amendment No. 2 on Form N-2, File No. 333-178516, filed on March 23, 2012
  - (3) Incorporated by reference to Exhibit (d)(9) to the Company's Post-Effective Amendment No. 2 on Form N-2, File No. 333-178516, filed on March 23, 2012

**SIGNATURES**

Pursuant to the requirements of Section 12 of the Securities Exchange Act of 1934, as amended, the Registrant has duly caused this registration statement to be signed on its behalf by the undersigned hereunto duly authorized.

Date: March 23, 2012

Horizon Technology Finance Corporation

By: /s/ Robert D. Pomeroy, Jr.

Robert D. Pomeroy, Jr.  
*Chairman and Chief Executive Officer*