

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



FORM S-8

REGISTRATION STATEMENT UNDER
THE SECURITIES ACT OF 1933

CATERPILLAR INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware

(State of Incorporation)

37-0602744

(IRS Employer Identification No.)

100 NE Adams Street
Peoria, Illinois 61629

(Address of Principal Executive Offices)

Caterpillar Inc. 2006 Long-Term Incentive Plan

(Full Title of the Plan)

James B. Buda
Vice President, Secretary and General Counsel
Caterpillar Inc.
100 NE Adams Street
Peoria, Illinois 61629-7310
(309) 675-4429

(Name, Address and Telephone Number, Including Area Code, of Agent for Service)

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

Large accelerated filer

Accelerated filer

Non-accelerated filer

Smaller reporting company

CALCULATION OF REGISTRATION FEE

Title of securities to be registered	Amount to be registered	Proposed maximum offering price per share	Proposed maximum aggregate offering price	Amount of registration fee
Common Stock, par value \$1.00 per share	20,000,000 shares ⁽¹⁾	\$67.39 ⁽²⁾	\$1,347,800,000	\$96,098.14
<small>(1) Together with an indeterminate number of additional shares that may be necessary to adjust the number of shares offered pursuant to the Caterpillar Inc. 2006 Long-Term Incentive Plan (the "Plan") as a result of a stock split, stock dividend or similar adjustment of the outstanding common stock pursuant to Rule 416(a).</small>				
<small>(2) Estimated solely for the purposes of calculating the registration fee, computed pursuant to Rules 457(c) and (h) under the Securities Act of 1933, as amended, on the basis of the average of the high and low sales prices of a share of Caterpillar Inc. Common Stock, as reported on the New York Stock Exchange - Composite Transactions System on August 12, 2010.</small>				

**PART I
EXPLANATORY NOTE**

This Registration Statement on Form S-8 is being filed for the purpose of registering an additional 20,000,000 shares of the Registrant's Common Stock, par value \$1.00 per share, to be issued pursuant to the Caterpillar Inc. 2006 Long-Term Incentive Plan (the "Plan"). In accordance with General Instruction E to Form S-8, the Registrant and the Plan hereby incorporate by reference the contents of the following Registration Statement previously filed by the Registrant and the Plan:

- Registration Statement on Form S-8 (Registration No. 333-135467) filed June 29, 2006 (the "2006 Form S-8").

The 2006 Form S-8 remains in effect. Of the shares of the Registrant's Common Stock registered on the 2006 Form S-8, 7,000,000 shares remain available for issuance under the Plan. These previously registered shares, together with the shares registered hereby, represent the total number of shares available for issuance under the Plan.

**PART II
INFORMATION REQUIRED IN THE REGISTRATION STATEMENT**

Item 8. Exhibits.

The following is a complete list of exhibits filed as a part of this Registration Statement:

<u>Exhibit No.</u>	<u>Description</u>
4.1	Caterpillar Inc. 2006 Long-Term Incentive Plan, as amended and restated effective June 9, 2010 (incorporated by reference from Exhibit 10.3 to the Registrant's Form 10-Q for the quarter ended June 30, 2010, filed with the Commission on July 30, 2010).
23.1	Consent of PricewaterhouseCoopers LLP

SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, as amended, the Registrant certifies that it has reasonable grounds to believe that it meets all the requirements for filing on Form S-8 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Peoria, and the State of Illinois.

CATERPILLAR INC.
(Registrant)

August 16, 2010

By: /s/James B. Buda
James B. Buda, *Secretary*

Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

August 16, 2010	<u>/s/James W. Owens</u> (James W. Owens)	Chairman of the Board and Director
August 16, 2010	<u>/s/Douglas R. Oberhelman</u> (Douglas R. Oberhelman)	Chief Executive Officer and Director
August 16, 2010	<u>/s/Richard P. Lavin</u> (Richard P. Lavin)	Group President
August 16, 2010	<u>/s/Stu L. Levenick</u> (Stu L. Levenick)	Group President
August 16, 2010	<u>/s/Edward J. Rapp</u> (Edward J. Rapp)	Group President and Chief Financial Officer
August 16, 2010	<u>/s/Gerard R. Vittecoq</u> (Gerard R. Vittecoq)	Group President
August 16, 2010	<u>/s/Steven H. Wunning</u> (Steven H. Wunning)	Group President
August 16, 2010	<u>/s/Jananne A. Copeland</u> (Jananne A. Copeland)	Controller and Chief Accounting Officer

August 16, 2010	<u>/s/W. Frank Blount</u> (W. Frank Blount)	Director
August 16, 2010	<u>/s/John R. Brazil</u> (John R. Brazil)	Director/Plan Administrator
August 16, 2010	<u>/s/Daniel M. Dickinson</u> (Daniel M. Dickinson)	Director
August 16, 2010	<u>/s/John T. Dillon</u> (John T. Dillon)	Director
August 16, 2010	<u>/s/Eugene V. Fife</u> (Eugene V. Fife)	Director
August 16, 2010	<u>/s/Gail D. Fosler</u> (Gail D. Fosler)	Director
August 16, 2010	<u>/s/Juan Gallardo</u> (Juan Gallardo)	Director
August 16, 2010	<u>/s/David R. Goode</u> (David R. Goode)	Director/Plan Administrator
August 16, 2010	<u>/s/Peter A. Magowan</u> (Peter A. Magowan)	Director
August 16, 2010	<u>/s/William A. Osborn</u> (William A. Osborn)	Director
August 16, 2010	<u>/s/Charles D. Powell</u> (Charles D. Powell)	Director
August 16, 2010	<u>/s/Edward B. Rust, Jr.</u> (Edward B. Rust, Jr.)	Director/Plan Administrator
August 16, 2010	<u>/s/Susan C. Schwab</u> (Susan C. Schwab)	Director
August 16, 2010	<u>/s/Joshua I. Smith</u> (Joshua I. Smith)	Director/Plan Administrator

Exhibit Index

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23.1	Consent of PricewaterhouseCoopers LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statement on Form S-8 of our report dated February 19, 2010 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in Caterpillar Inc.'s Annual Report on Form 10-K for the year ended December 31, 2009.

/s/ PricewaterhouseCoopers LLP
PricewaterhouseCoopers LLP
Peoria, Illinois
August 16, 2010