

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

FORM S-3
REGISTRATION STATEMENT
UNDER THE SECURITIES ACT OF 1933

USEC Inc.

(Exact name of registrant as specified in its charter)

Delaware
*(State or other jurisdiction of
incorporation or organization)*

52-2107911
*(I.R.S. Employer
Identification Number)*

**2 Democracy Center
6903 Rockledge Drive
Bethesda, Maryland 20817
(301) 564-3200**

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

**John K. Welch
President and Chief Executive Officer
2 Democracy Center
6903 Rockledge Drive
Bethesda, Maryland 20817
(301) 564-3200**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

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Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this Registration Statement in the event an Investor makes a Sale Election following the occurrence of a Closing Deadline Failure (as these terms are defined in the prospectus that is a part hereof). The earliest date that a Closing Deadline Failure and Sale Election could occur is October 1, 2011.

If the only securities being registered on this Form are being offered pursuant to dividend or interest reinvestment plans, please check the following box:

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box:

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

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.

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company

(Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of each class of securities to be registered	Amount to be registered (1)	Proposed maximum offering price per share (2)	Proposed maximum aggregate offering price	Amount of registration fee
Common stock, par value \$0.10 per share	22,826,407	\$2.29	\$52,272,472.03	\$6,068.83

(1) Represents the aggregate number of shares of common stock issuable upon conversion of the currently outstanding shares of convertible preferred stock and the exercise of warrants held by the selling security holders, capped at 19.99% of the shares of our common stock outstanding on May 25, 2010, in compliance with the rules of the New York Stock Exchange ("NYSE").

(2) Estimated solely for the purpose of calculating the registration fee pursuant to Rule 457(c) under the Securities Act of 1933, as amended, based on the average high and low prices of the common stock on the NYSE on August 24, 2011.

The registrant hereby amends this registration statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this registration statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933, as amended, or until the registration statement shall become effective on such date as the Securities and Exchange Commission acting pursuant to said Section 8(a), may determine.

The information contained in this prospectus is not complete and may be changed. These securities may not be sold until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any state or jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED AUGUST 30, 2011

PRELIMINARY PROSPECTUS

USEC Inc.

**22,826,407 Shares
Common Stock**

The selling security holders named herein may offer and sell from time to time in the event the applicable selling security holder makes a Sale Election following the occurrence of a Closing Deadline Failure (as these terms are defined below) up to 22,826,407 shares of our common stock covered by this prospectus. As a result of the standstill agreement, the earliest date that a Closing Deadline Failure could occur and that a selling security holder may elect to sell any shares of common stock pursuant hereto is October 1, 2011. The applicable selling security holder(s) will receive all of the proceeds from any sale of the shares offered hereby. We will not receive any of the proceeds, but we will incur expenses in connection with the offering. Our registration of the shares of common stock covered by this prospectus does not mean that the selling security holders will offer or sell any of the shares. The selling security holders may sell the shares of common stock covered by this prospectus in a number of different ways and at varying prices. The shares covered by this prospectus are subject to issuance upon conversion of currently outstanding shares of convertible preferred stock and exercise of warrants that are exercisable in the future and are subject to the Share Issuance Limitation (as defined in "Material Relationships" below), in compliance with the rules of the New York Stock Exchange. We provide more information about how the selling security holders may sell the shares in the section entitled "Plan of Distribution" beginning on page 17.

Our common stock is traded on the NYSE under the symbol "USU". On August 29, 2011, the last reported sale price of our common stock on the NYSE was \$2.29 per share.

Investing in our securities involves risks that are described in the section entitled "Risk Factors" on page 4 and in our filings with the Securities and Exchange Commission, or SEC.

Neither the SEC nor any state securities commission has approved or disapproved of these securities or passed upon the adequacy or accuracy of this prospectus. Any representation to the contrary is a criminal offense.

The date of this prospectus is , 2011.

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ABOUT THIS PROSPECTUS

This prospectus is a part of a “shelf” registration statement on Form S-3 that we filed with the SEC. Specific information about the terms of an offering may be included in a prospectus supplement relating to each specific offering of shares. The prospectus supplement may also add, update or change information contained in this prospectus. We urge you to read carefully both this prospectus and any prospectus supplement accompanying this prospectus, together with the information incorporated herein by reference under the heading “Where You Can Find Additional Information,” before deciding whether to invest in any of the securities being offered. Statements contained or deemed to be incorporated by reference in this prospectus or any prospectus supplement as to the content of any contract or other document are not necessarily complete, and in each instance we refer you to the copy of the contract or other document filed as an exhibit to a document incorporated or deemed to be incorporated by reference in this prospectus or such prospectus supplement, each such statement being qualified in all respects by such reference. Any information in such subsequent filings that is inconsistent with this prospectus will supersede the information in this prospectus or any earlier prospectus supplement.

We have not authorized any dealer, salesman or other person to give any information or to make any representation other than those contained or incorporated by reference in this prospectus and any accompanying supplement to this prospectus. You must not rely upon any information or representation not contained or incorporated by reference in this prospectus or any accompanying prospectus supplement. This prospectus and any accompanying prospectus supplement do not constitute an offer to sell or the solicitation of an offer to buy any securities other than the registered securities to which they relate, nor do this prospectus and any accompanying prospectus supplement constitute an offer to sell or the solicitation of an offer to buy securities in any jurisdiction to any person to whom it is unlawful to make such offer or solicitation in such jurisdiction. You should not assume that the information contained in this prospectus and any accompanying prospectus supplement is accurate on any date subsequent to the date set forth on the front of the document or that any information we have incorporated by reference is correct on any date subsequent to the date of the document incorporated by reference, even though this prospectus and any accompanying prospectus supplement is delivered or securities are sold on a later date.

Unless the context otherwise requires or as otherwise expressly stated, references in this prospectus to “USEC Inc.,” “USEC,” “we,” “us” and “our” and similar terms refer to USEC Inc. and its wholly owned subsidiaries.

SUMMARY

The Company

We are a global energy company and a leading supplier of low enriched uranium, or “LEU”, used to fuel commercial nuclear power plants. We:

- supply LEU to both domestic and international utilities for use in approximately 150 nuclear reactors worldwide;
- are deploying what we believe will be the world’s most advanced uranium enrichment technology, known as the American Centrifuge;
- enrich uranium at the Paducah gaseous diffusion plant that we lease from the U.S. Department of Energy (“DOE”);
- are the exclusive executive agent for the U.S. government under a nuclear nonproliferation program with Russia, known as Megatons to Megawatts;
- perform contract work for the DOE and its contractors at the Paducah and Portsmouth gaseous diffusion plants; and
- provide transportation and storage systems for spent nuclear fuel and provide nuclear and energy consulting services.

We are organized under Delaware law. Prior to July 28, 1998, when we completed our initial public offering of common stock, we were a U.S. government corporation. Our corporate headquarters are located at 2 Democracy Center, 6903 Rockledge Drive, Bethesda, Maryland 20817. Our telephone number is (301) 564-3200. Our website is www.usec.com. Information on our website is not deemed to be a part of this prospectus.

The Investment by Toshiba Corporation and Babcock & Wilcox Investment Company

On May 25, 2010, we announced that we had entered into a securities purchase agreement with Toshiba Corporation and Babcock & Wilcox Investment Company (“B&W”). Toshiba Corporation assigned its rights as an investor to Toshiba America Nuclear Energy Corporation (“Toshiba”), a subsidiary of Toshiba Corporation incorporated in Delaware and based in the United States. Pursuant to the securities purchase agreement, we agreed to sell and Toshiba and B&W agreed to purchase for an aggregate amount of \$200.0 million, subject to various terms and conditions, (1) shares of Series B-1 12.75% Convertible Preferred Stock, par value \$1.00 per share (“Series B-1 Preferred”), (2) shares of Series B-2 11.5% Convertible Preferred Stock, par value \$1.00 per share (“Series B-2 Preferred”), and (3) warrants to purchase up to 12.5 million shares of a newly created Class B Common Stock, par value \$.10 per share (“Class B Common”) at an exercise price of \$7.50 per share (each, a “Warrant” and collectively, the “Warrants”). The creation of the Class B Common requires the affirmative vote of the holders of a majority of our outstanding common stock. The Warrants will, in lieu thereof until such stockholder approval and any related regulatory approvals have been obtained, be exercisable for up to 12,500 shares of a newly created Series C Convertible Participating Preferred Stock, par value \$1.00 per share (“Series C Preferred” and together with the Series B-1 Preferred and the Series B-2 Preferred, the “Preferred Stock”), at an exercise price of \$7,500.00 per share. The Warrants are exercisable at any time from January 1, 2015 to December 31, 2016. The securities purchase agreement provides that the investments are to be made in three phases upon the satisfaction at each phase of certain closing conditions.

On September 2, 2010, we completed the first \$75 million phase of the investment and issued and sold to Toshiba and B&W an aggregate number of 75,000 shares of Series B-1 Preferred and Warrants to purchase 6.25 million shares of Class B Common (or 6,250 shares of Series C Preferred). The remaining two phases of the investment are subject to conditions that have not yet been satisfied, including the Company having entered into a loan guarantee conditional commitment with the DOE in an amount not less than \$2 billion for the American Centrifuge project (a condition to the second phase) and the Company achieving financial closing on a DOE loan guarantee in an amount not less than \$2 billion for the American Centrifuge project (a condition to the third phase). The third phase is also subject to USEC shareholder approval of certain matters.

The securities purchase agreement may be terminated by any party (in the case of Toshiba or B&W, as to its obligations under the agreement) if the applicable closing shall not have occurred by the relevant outside date (June 30, 2011 for the second phase closing; December 31, 2011 for the third phase closing), other than as a result of such party's breach, which events constitute a Closing Deadline Failure (as defined in more detail below). The second closing did not occur by June 30, 2011. As of June 30, 2011, USEC entered into a standstill agreement with Toshiba and B&W whereby each of the parties agreed not to exercise its right to terminate prior to August 15, 2011. As of August 15, 2011, USEC, Toshiba and B&W amended the standstill agreement to extend the date before which the parties would not terminate the securities purchase agreement to September 30, 2011. The outside date for the third phase closing may be extended by Toshiba and B&W up to December 31, 2012 if the only condition to closing that has not been satisfied or waived is the closing of a DOE loan guarantee and that condition is reasonably capable of being satisfied.

If the securities purchase agreement is terminated by any party as a result of the applicable closing not having occurred by the relevant outside date, each of Toshiba and B&W must elect to either sell or convert the shares of Series B-1 Preferred it holds, a Sale Election or Conversion Election, respectively, as such terms are defined in the securities purchase agreement. If an election to sell is made, Toshiba and/or B&W can sell the common stock underlying the Series B-1 Preferred pursuant to the orderly sale arrangement set forth in the securities purchase agreement and described under "Plan of Distribution" below. If a conversion election is made, the Series B-1 Preferred is converted into Series C Preferred (or, if the required shareholder and regulatory approvals have been obtained prior thereto, Class B Common) that is automatically converted into common stock in connection with a subsequent sale or transfer of such stock pursuant to the orderly sale arrangement. As a result of the standstill agreement, the earliest date that Toshiba or B&W may elect to sell pursuant hereto any shares of common stock underlying its shares of Series B-1 Preferred as a result of the failure of the second closing to occur, is October 1, 2011. For a discussion of the terms upon which shares of the Series B-1 Preferred may be converted into other securities of the Company, see "Description of Capital Stock - Series B-1 Preferred – Conversion; Redemption Rights, -- Automatic Conversion; and – Conversion Price; Conversion Cap".

Prior to obtaining shareholder approval, the Preferred Stock and the Class B Common may not be converted into an aggregate number of shares of our common stock in excess of 19.99% of the shares of our common stock outstanding on May 25, 2010 (22,826,407 shares), which we refer to as the Share Issuance Limitation (as defined in "Material Relationships" below), in compliance with the rules of the New York Stock Exchange. The exercise of the Warrants is also subject to the Share Issuance Limitation. If shareholder approval is not obtained, any shares of Series B-1 Preferred in excess of the Share Issuance Limitation, would remain outstanding until the earlier of such time as such shareholder approval is obtained and such time as the Series B-1 Preferred are redeemed by the Company in accordance with the terms of the Series B-1 Preferred. Upon a failure to close the second closing or third closing by the relevant outside date, the Company is required to redeem any remaining outstanding shares of Series B-1 Preferred for cash or separative work units ("SWU"), the standard measure of uranium enrichment upon the later of December 31, 2012 or one year following the applicable date of the failure to close. A SWU represents the effort that is required to transform a given amount of natural uranium into two streams of uranium, one enriched in the U235 isotope and the other depleted in the U235 isotope. On August 15, 2011, the Company agreed that, in the event that the second closing fails to occur by September 30, 2011 and Toshiba or B&W exercises its right to terminate the securities purchase agreement and such investor makes an election to sell the common stock underlying its Series B-1 Preferred, the Company will exercise its right to redeem any shares of Series B-1 Preferred held by Toshiba or B&W (as the case may be) that remain outstanding on August 31, 2012. Such redemption would be for cash or SWU at the Company's election and would be in advance of the mandatory redemption of such shares on December 31, 2012 which is otherwise required in such circumstances.

RISK FACTORS

Investing in our securities involves risks. You should carefully consider the risks, uncertainties and assumptions discussed below, under the section “Risk Factors” included in our Annual Report on Form 10-K for the year ended December 31, 2010 and under the section “Risk Factors” included in our Quarterly Report on Form 10-Q for the period ended June 30, 2011, which are incorporated by reference in this prospectus, and which may be amended, supplemented or superseded from time to time by other documents we file with the SEC in the future. See also “Where You Can Find Additional Information.” Additional risks not presently known to us or which we consider immaterial based on information currently available to us may also materially adversely affect us.

Risks Related to Offerings by the Selling Security Holders

Our stock price could continue to be volatile and therefore, it may be difficult for you to resell the shares of common stock at prices you find attractive.

Our stock price has been volatile. For example, during the eight months ended August 26, 2011, the market price for our common stock fluctuated between \$1.96 and \$6.35 per share. The following factors, among others, could have a significant impact on the market for our common stock:

- Our success in deploying the American Centrifuge project, in particular; (a) developments with respect to our efforts to obtain a DOE loan guarantee and other financing to complete the American Centrifuge Plant (including our ability to address DOE’s concerns regarding USEC’s deployment and financial depth including the development and consummation of a structuring option acceptable to DOE or a strategic alternative transaction), (b) risks related to the performance, cost and schedule of the American Centrifuge project and (c) any material adverse impact on our business and prospects of any decision to further demobilize or to terminate the American Centrifuge project;
- The market price of SWU and our perceived competitive position to obtain long-term contracts with customers;
- The market price of natural uranium;
- Conditions within the nuclear industry, including investors’ confidence in the nuclear power segment and its growth prospects, including in light of the recent events in Japan;
- Our reliance on imports from Russia to meet our delivery obligations to customers;
- General economic conditions and their impact on the capital markets; and
- Interest rates and the availability of credit in the United States.

Many of the factors listed above are beyond our control. These factors may cause the market price of our common stock to decline, regardless of our financial condition, results of operations, business or prospects. It is impossible to assure you that the market price of our common stock will not fall in the future. Therefore, you will be subject to the risk of volatile and depressed market prices of our common stock and it may be difficult for you to resell your shares of common stock at prices you find attractive.

There may be future sales or other dilution of our equity, which may adversely affect the market price of our common stock.

Future sales of our common stock, the perception that such sales could occur, or the availability for future sale of shares of our common stock or securities convertible into or exercisable for our common stock could adversely affect the market prices of our common stock and could impair our ability to raise capital through future offerings of equity or equity-related securities. In addition, we may issue common stock or equity securities senior to our common stock in the future for a number of reasons, including to finance our operations and business strategy (including completion of the American Centrifuge Plant), to adjust our ratio of debt to equity, to satisfy our obligations upon the exercise of options or for other reasons. Under certain circumstances, our \$530.0 million in convertible senior notes due October 1, 2014 may convert into 44,329,200 shares of our common stock at a conversion price of \$11.956 per share.

As of August 26, 2011, we had outstanding options to purchase 3,162,816 shares of our common stock with a weighted average exercise price of \$5.68 per share (approximately 882,356 of which have not vested) issued to employees, directors and consultants pursuant to our equity incentive plans. In order to attract and retain key personnel, we may issue additional securities, including restricted stock grants, restricted stock units and stock options in connection with our employee benefit plans. The sale, or the availability for sale, of substantial amounts of our common stock by our existing shareholders pursuant to an effective registration statement or under Rule 144, through the exercise of any registration rights agreements that we may enter into or the issuance of shares of common stock upon the exercise of stock options, or the perception that such sales or issuances could occur, could adversely affect the prevailing market prices for our common stock.

The issuance of additional Preferred Stock or Warrants and the conversion of the Preferred Stock and exercise of the Warrants could adversely affect holders of common stock.

If the second and third closings of the transactions with Toshiba and B&W occur, we will issue additional shares of Preferred Stock and Warrants to Toshiba and B&W. In addition, the Series B-1 Preferred has a 12.75% dividend and the Series B-2 Preferred, if issued at the third closing, will have an 11.5% dividend, in each case payable quarterly and, at our election, in cash or additional shares of such series, or a combination of both. We are currently restricted under our credit facility from paying such dividends in cash and so these dividends are expected to be paid in additional shares of such series. The conversion of the Preferred Stock or exercise of Warrants may result in substantial dilution to our existing shareholders. Any sales in the public market of the common stock issuable upon such conversion could adversely affect the prevailing market prices of our common stock. In addition, the existence of the Preferred Stock and the Warrants may encourage short selling by market participants because the conversion of the Preferred Stock and exercise of the Warrants could depress the price of our common stock.

FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference in this prospectus contain “forward-looking statements” — that is, statements related to future events. In this context, forward-looking statements may address our expected future business and financial performance, and often contain words such as “expects”, “anticipates”, “intends”, “plans”, “believes”, “will” and other words of similar meaning. Forward-looking statements by their nature address matters that are, to different degrees, uncertain. For USEC, particular risks and uncertainties that could cause our actual future results to differ materially from those expressed in our forward-looking statements include, but are not limited to: risks related to the deployment of the American Centrifuge technology, including risks related to performance, cost, schedule and financing; our success in obtaining a loan guarantee from the DOE for the American Centrifuge Plant, including our ability to address the technical and financial concerns raised by DOE and the timing of any loan guarantee; our ability to develop and consummate a structuring option acceptable to DOE or to develop and consummate a strategic alternative transaction, and the timing thereof; our ability to reach agreement with DOE on acceptable terms of a conditional commitment, including the timing of any decision and the determination of credit subsidy cost, and our ability to meet all required conditions to funding; our ability to obtain additional financing beyond the \$2 billion of DOE loan guarantee funding for which we have applied, including our success in obtaining Japanese export credit agency financing of \$1 billion; the impact of the demobilization of the American Centrifuge project and uncertainty regarding our ability to remobilize the project and the increased potential for further demobilization or termination of the project, particularly in light of limitations on our ability to continue to invest in the project without a DOE loan guarantee; our ability to meet the November 2011 financing milestone and other milestones under the June 2002 DOE-USEC Agreement; restrictions in our credit facility that may impact our operating and financial flexibility and spending on the American Centrifuge project; risks related to the completion of the remaining two phases of the three-phased strategic investment by Toshiba and B&W, including our ability to satisfy the significant closing conditions in the securities purchase agreement governing the transactions and the right of Toshiba and B&W to terminate the securities purchase agreement if the phase two closing does not occur prior to the outside date of September 30, 2011 under the standstill agreement, and the impact of a failure to consummate the transactions on our business and prospects; certain restrictions that may be placed on our business as a result of the transactions with Toshiba Corporation and B&W; our ability to achieve the benefits of any strategic relationships with Toshiba Corporation and B&W; uncertainty regarding the cost of electric power used at our gaseous diffusion plant; the economics of extended Paducah plant operations, including our ability to negotiate an acceptable power arrangement and our ability to obtain a contract to enrich DOE’s depleted uranium; our dependence on deliveries of LEU from Russia under a commercial agreement (the “Russian Contract”) with a Russian government entity known as Technobexport (“TENEX”) and on a single production facility; risks related to the implementing agreements needed for our new supply contract with TENEX to become effective; limitations on our ability to import the Russian LEU we buy under the new supply contract into the United States and other countries; our inability under many existing long-term contracts to directly pass on to customers increases in our costs; the decrease or elimination of duties charged on imports of foreign-produced low enriched uranium; pricing trends and demand in the uranium and enrichment markets and their impact on our profitability; movement and timing of customer orders; changes to, or termination of, our contracts with the U.S. government including uncertainty regarding the impacts on our business of the transition of government services performed by us at the former Portsmouth gaseous diffusion plant to the new decontamination and decommissioning contractor; limitations on our ability to compete for potential contracts with the U.S. government; changes in U.S. government priorities and the availability of government funding, including loan guarantees; the impact of government regulation by DOE and the U.S. Nuclear Regulatory Commission; the outcome of legal proceedings and other contingencies (including lawsuits and government investigations or audits); the competitive environment for our products and services; changes in the nuclear energy industry; the impact of the recent natural disaster in Japan on the nuclear industry and on our business, results of operations and prospects; the impact of volatile financial market conditions on our business, liquidity, prospects, pension assets and credit and insurance facilities; uncertainty regarding the continued capitalization of certain assets related to the American Centrifuge Plant and the impact on our results of operations; the timing of recognition of previously deferred revenue; and other risks and uncertainties discussed in this and our other filings with the Securities and Exchange Commission, including our Annual Report on Form 10-K and quarterly reports on Form 10-Q. We do not undertake to update our forward-looking statements except as required by law.

USE OF PROCEEDS

We will not receive any proceeds from the sale of the shares of common stock offered and sold pursuant to this prospectus. The shares offered pursuant to this prospectus are currently not outstanding but are subject to issuance upon conversion of the Preferred Stock or exercise of the Warrants held by the selling security holders.

If the Warrants are exercised for cash, we will receive an amount of cash equivalent to \$7.50 per underlying share of common stock resulting from the payment of the exercise price for the Warrants. If cash exercise is elected, and assuming that the Warrants are exercised in full for shares of Series C Preferred Stock representing 6,250,000 shares of common stock covered by this prospectus, we would receive proceeds of \$46,875,000 which we would use for general corporate purposes. If the Warrants are exercised on a “cashless exercise” basis, we will not receive any proceeds and the number of shares of common stock received by the selling security holders upon their exercise of the Warrants will be reduced to reflect payment of such exercise price in shares.

We, and not the selling security holders, will pay the costs, expenses and fees in connection with the registration and sale of the shares covered by this prospectus, but the selling security holders will pay all discounts, commissions or brokers’ fees or fees of similar securities industry professionals and transfer taxes, if any, attributable to sales of the shares.

SELLING SECURITY HOLDERS

The selling security holders are Babcock & Wilcox Investment Company and Toshiba America Nuclear Energy Corporation. Prior to the offering, neither selling security holder owned any shares of our common stock. Each selling security holder owns (1) 41,624.6271 shares of Series B-1 12.75% Preferred Stock which may be converted into shares of our common stock upon such terms and based on a formula taking into account the trading price of our common stock at the time of conversion as described more fully below in “Description of Capital Stock - Preferred Stock - Conversion; Redemption Rights” and (2) warrants to acquire shares of Series C Preferred Stock which, upon transfer to a third party, automatically converts into an aggregate of 3,125,000 shares of our common stock. As a result of the Share Issuance Limitation, the aggregate amount of shares of our common stock offered by the selling security holders pursuant to this registration statement is 22,826,407.

As a result of the restriction in the terms of the Preferred Stock that the conversion of such Preferred Stock is subject to the orderly sale arrangement, neither selling security holder currently beneficially owns or, in the future will beneficially own, within the meaning of Rule 13d-3 under the Securities Exchange Act of 1934, as amended, any shares of our common stock. The orderly sale arrangement is described in “Plan of Distribution” below.

Material Relationships

Securities Purchase Agreement

As described above under “Summary – The Investment by Toshiba Corporation and Babcock & Wilcox Investment Company,” on May 25, 2010, we entered into a securities purchase agreement with Toshiba and B&W (the “Investors”). The securities purchase agreement provides that the investments are to be made in three phases. The first phase closed on September 2, 2010, at which the Investors purchased in the aggregate 75,000 shares of Series B-1 Preferred and Warrants to purchase up to 6,250,000 shares of Class B Common (or Series C Preferred in lieu thereof), for an aggregate purchase price of \$75.0 million. At the second closing, upon satisfaction of certain conditions, the Investors will be required to purchase, in the aggregate, an additional 50,000 shares of Series B-1 Preferred for an aggregate purchase price of \$50.0 million. At the third closing, upon satisfaction of certain conditions, the Investors will be required to purchase, in the aggregate, 75,000 shares of Series B-2 Preferred and Warrants to purchase 6.25 million shares of Class B Common, for an aggregate purchase price of \$75.0 million.

The obligations of each of the parties at the closings are contingent upon the receipt of governmental approvals and determinations from the U.S. Nuclear Regulatory Commission (“NRC”), the DOE and other relevant authorities related to the foreign ownership, control, domination or influence of the Investors and other matters. We have received confirmation from the NRC that NRC consent is not required for the second and third closings based on their review of the transaction and the current information concerning the parties, although subsequent events may occur that could cause NRC and DOE to re-evaluate their determinations. Each of the closings is also subject to other customary conditions to closing, including the execution and delivery of related transaction documents, compliance with covenants, the accuracy of representations and warranties in the securities purchase agreement, and that no material adverse effect shall have occurred with respect to the Company. The obligations of the Investors at the second closing are subject to the Company having entered into a loan guarantee conditional commitment in an amount not less than \$2 billion for the American Centrifuge project with DOE. The obligations of the Investors at the third closing are subject to the approval by the holders of a majority of the Company’s common stock (“Ordinary Common” and together with the Class B Common, “Common Stock”) of (1) the amendment of the Company’s certificate of incorporation to create the Class B Common and increase the authorized shares of Common Stock; and (2) the issuance of the shares of Common Stock in excess of the Share Issuance Limitation (as defined below) upon conversion of the Preferred Stock and exercise of the Warrants, as required by the NYSE. The third closing is also subject to the Company achieving financial closing on a DOE loan guarantee in an amount not less than \$2 billion for the American Centrifuge project.

Until the earlier of the third closing or termination of the securities purchase agreement, for so long as either Investor holds shares of Preferred Stock representing at least 75% of the aggregate initial liquidation preference (defined below) of the Series B Preferred issued to such Investor in the first and second closings, the Investors will have certain special approval rights, including for the issuance of senior equity securities, the undertaking of certain new business, incurrence or repayment of certain indebtedness, certain redemptions, certain other transactions, and a liquidation or dissolution of the Company. The governance rights after the third closing are addressed in the investor rights agreement. In addition, holders of shares of the Series B-1 Preferred have certain voting rights described in “Description of Capital Stock – Series B-1 Preferred – Voting Rights” on page 13.

Preferred Stock and Warrants are not transferable except to the Investors and their wholly owned controlled affiliates or Westinghouse Electric Company, LLC (if controlled by Toshiba) that are considered U.S. tax persons (or a special purpose entity jointly formed and controlled by the Investors), and then only subject to any required regulatory approvals. Ordinary Common will only be issued upon conversion of any Preferred Stock, conversion of Class B Common or upon exercise of any Warrants pursuant to an orderly sale arrangement described in the securities purchase agreement and “Plan of Distribution” below (the “Orderly Sale Arrangement”). Until the receipt of shareholder approval, any issuance of Ordinary Common or Series C Preferred as a result of the transactions is limited in the aggregate to the total number of shares that may be issued in compliance with the NYSE listing requirements that the Company issue no more than 19.99% of the Company’s outstanding Ordinary Common or voting power on the date that the securities purchase agreement was executed (the “Share Issuance Limitation”). Following the shareholder approval, the issuance of Class B Common is limited in the aggregate to the total number of shares of Class B Common that, when combined with the number of shares of Class B Common issued or issuable upon the exercise of the warrants and issued upon the conversion of Preferred Stock, does not exceed 49.99% of the total number of shares of Common Stock outstanding at the time of such issuance.

The securities purchase agreement may be terminated prior to either of the second or third closings by any party if (other than as a result of such party’s breach) the applicable closing shall not have occurred by the relevant outside date (June 30, 2011 for the second closing; December 31, 2011 for the third closing (each, an “Outside Date”)) or any governmental authority shall have issued a final, nonappealable order prohibiting the transactions contemplated by the securities purchase agreement, or upon a material breach (and expiration of any cure period) of the securities purchase agreement by the other party. As of June 30, 2011, USEC entered into a standstill agreement with Toshiba and B&W whereby each of the parties agreed not to exercise its rights to terminate prior to August 15, 2011. As of August 15, 2011, USEC, Toshiba and B&W amended the standstill agreement to extend the date before which the parties would not terminate the securities purchase agreement to September 30, 2011. As a result of the standstill agreement, the earliest date that Toshiba or B&W may elect to sell pursuant hereto any shares of common stock underlying its shares of Series B-1 Preferred as a result of the failure of the second closing to occur, is October 1, 2011. For a discussion of the terms upon which shares of the Series B-1 Preferred may be converted into other securities of the Company, see “Description of Capital Stock -- Series B-1 Preferred – Conversion; Redemption Rights, -- Automatic Conversion; and – Conversion Price; Conversion Cap”. The Outside Date for the third closing may be extended by the Investors up to December 31, 2012 if the only condition to closing that has not been met is the closing of a DOE loan guarantee and that condition is reasonably capable of being satisfied.

Investor Rights Agreement

In connection with the first closing under the securities purchase agreement, on September 2, 2010, we entered into an investor rights agreement with Toshiba Corporation and B&W. Toshiba Corporation assigned its rights under the investor rights agreement to Toshiba America Nuclear Energy Corporation. The investor rights agreement provides Toshiba and B&W with certain rights and obligations, including as follows:

- Following the third closing under the securities purchase agreement, so long as either Investor maintains its minimum equity holdings, the holders of Preferred Stock have special approval rights for a dissolution or liquidation of the Company;
- The Investors are granted preemptive rights in connection with our issuance of any new preferred stock, subject to customary limitations and cutbacks, and excluding any third party financing that may be necessary for a DOE loan guarantee closing;
- We will file a “resale” registration statement covering all of the shares of Common Stock or any class of capital stock or other security issuable upon conversion of the Preferred Stock and exercise of the Warrants other than the Preferred Stock (“Registrable Securities”). If we file a registration statement relating to the sale of our equity securities other than in connection with any third party financing that may be necessary for a DOE loan guarantee closing, the holders of Registrable Securities may elect to include in the registration statement their Registrable Securities, subject to customary limitations and cutbacks;
- Each Investor will be subject to a standstill, subject to customary exceptions, until the later of such time as such Investor ceases to own any Company securities or nine months after the Investors are no longer entitled to appoint a director.

American Centrifuge Manufacturing

Effective May 1, 2011, American Centrifuge Holdings, LLC (“ACP Holdings”), a wholly-owned subsidiary of the Company, and Babcock & Wilcox Technical Services Group, Inc. (“B&W TSG”), a subsidiary of The Babcock & Wilcox Company, completed the effectiveness of American Centrifuge Manufacturing, LLC (“American Centrifuge Manufacturing”), a joint company, for the manufacture and assembly of AC100 centrifuge machines for our American Centrifuge project. American Centrifuge Manufacturing is owned 55% by ACP Holdings and 45% by B&W TSG. Effective May 1, 2011, American Centrifuge Manufacturing entered into an interim equipment supply agreement with the Company to continue to produce a limited number of machines to maintain the manufacturing infrastructure and support possible commercial plant volume manufacturing at the American Centrifuge Plant prior to closing on third-party funding. American Centrifuge Manufacturing also entered into a long-term equipment supply agreement with American Centrifuge Enrichment, LLC (“ACE”) (a wholly owned subsidiary of ACP Holdings), for the manufacture and assembly of approximately 11,500 centrifuge machines for the American Centrifuge Plant. The Babcock & Wilcox Company delivered to ACE a limited guarantee of performance of American Centrifuge Manufacturing under the long-term equipment supply agreement. The long-term equipment supply agreement is not effective until closing on third-party funding for the construction of the American Centrifuge Plant.

Other Agreements and Arrangements

USEC, Toshiba Corporation and B&W are also parties to a strategic relationship agreement that provides a process for the Company and the Investors to explore potential business opportunities throughout the nuclear fuel cycle. In addition, as described in the Company’s quarterly report on Form 10-Q for the quarter ended June 30, 2011, the DOE awarded a contract for the decontamination and decommissioning (D&D) of the Portsmouth gaseous diffusion plant to a joint venture between The Babcock & Wilcox Company and Fluor Corp. and USEC is transitioning services at the Portsmouth site to the new D&D contractor.

DESCRIPTION OF CAPITAL STOCK

The following description of our capital stock is only a summary and is qualified in its entirety by reference to the full text of such provisions in our certificate of incorporation and by applicable law.

Authorized Capital Stock

We are authorized to issue up to 275,000,000 shares of capital stock. Of these shares, 250,000,000 are common stock, par value \$0.10 per share, and 25,000,000 are preferred stock, par value \$1.00 per share. Our Board of Directors has designated 200,000 shares of our preferred stock as Series A Junior Participating Preferred Stock, 300,000 shares of our preferred stock as Series B-1 Preferred and 25,000 shares of our preferred stock as Series C Preferred. As of August 26, 2011, we had outstanding 121,990,482 shares of common stock and 83,249.2542 shares of Series B-1 Preferred. There are no outstanding shares of Series C Preferred or shares of Series A Junior Participating Preferred Stock.

Common Stock

Subject to the rights of the holders of any preferred stock then outstanding, holders of our common stock are entitled to receive such dividends out of assets legally available therefor as may from time to time be declared by our Board of Directors. Holders of our common stock are entitled to one vote per share in the election of directors and on all matters on which the stockholders are entitled to vote. Holders of our common stock do not have cumulative voting rights. In the event of liquidation, dissolution or winding up of the Company, holders of our common stock would be entitled to share ratably in assets of the Company available for distribution to holders of common stock. All outstanding shares of common stock are fully paid and nonassessable. Holders of common stock have no preemptive, subscription, redemption or conversion rights. The rights, preferences and privileges of holders of our common stock are subject to and may be adversely affected by, the rights of holders of any shares of any series of preferred stock which we may designate and issue in the future. Holders of our common stock are not liable to further calls or assessments by us or for any of our liabilities.

Preferred Stock

Our Board of Directors is authorized to provide for the issuance, from time to time, of classes or series of preferred stock, to establish the number of shares to be included in any such classes or series and to fix the designations, voting powers, preferences and rights of the shares of any such classes or series and any qualifications, limitations or restrictions thereof. Because our Board of Directors has the power to establish the preferences and rights of the shares of any such classes or series of preferred stock, it may afford holders of any preferred stock preferences, powers and rights (including voting rights), senior to the rights of holders of common stock, which could adversely affect the rights of holders of common stock.

Series B-1 Preferred

General. The Series B-1 Preferred is the Company's most senior equity security. The Series B-1 Preferred is convertible into shares of Series C Preferred or Class B Common at the rates described below.

Ranking. The Series B-1 Preferred has a liquidation preference of \$1,000 per share and ranks senior to the common stock and any other stock that ranks junior to the Series B-1 Preferred in the priority of the payment of dividends and/or in the distribution of assets upon liquidation, dissolution or winding up of the Company (“Junior Stock”).

Liquidation Rights. If the Company voluntarily or involuntarily liquidates, dissolves or winds up its affairs, each holder of Series B-1 Preferred will be entitled to receive out of the Company’s assets available for distribution to stockholders, after satisfaction of all liabilities to creditors, and before any distribution of assets to holders of common stock or any other Junior Stock, a liquidating distribution in an amount equal to the greater of (1) the liquidation preference per share of Series B-1 Preferred and (2) the amount such holder would receive as a holder of common stock assuming the prior conversion of its Series B-1 Preferred. The liquidation preference of any holder of Series B-1 Preferred means the initial liquidation preference of \$1,000 per share plus any accrued and unpaid dividends.

Dividends. The Series B-1 Preferred will have a 12.75% dividend, payable quarterly and, at the Company’s election, in cash or additional shares of such series, or a combination of both. The Company is currently restricted from paying cash dividends under its credit facility.

Conversion; Redemption Rights. Conversion is subject to the Share Issuance Limitation, the Conversion Cap (each as defined below), and compliance with the Company’s regulatory requirements. The shares of Series B-1 Preferred will be convertible at the election of the selling security holder(s), at any time after the third closing, into shares of Class B Common (or Series C Preferred if stockholder and regulatory approvals for the Class B Common have not been obtained), at the then applicable Conversion Price (as defined below). Upon the failure to close the second or third closing by the relevant Outside Date and subsequent termination of the securities purchase agreement (a “Closing Deadline Failure”), the holders of Series B-1 Preferred must elect either (a) to convert their shares into Class B Common (or Series C Preferred if stockholder and regulatory approvals for the Class B Common have not been obtained) (a “Conversion Election”) or (b) to sell the shares of common stock underlying their shares of Series B-1 Preferred pursuant to an Orderly Sale Arrangement (a “Sale Election”). If a selling security holder fails to make a timely election, then such selling security holder shall be deemed to have made a Sale Election. In the event of either a Conversion Election or a Sale Election, the number of shares received on conversion or sale shall be multiplied by: (1) in the case of no party’s breach, 100%; (2) in the case a material breach by the Company, 110%; and (3) in the case of a material breach by such Investor, 90% (each, a “Factor”). After a Sale Election, the Company from time to time may redeem any remaining outstanding shares of Series B-1 Preferred held by an Investor for cash or SWU at the then applicable liquidation preference multiplied by the applicable Factor. The August 15, 2011 amendment to the standstill agreement provides that, in the event that the second closing fails to occur by September 30, 2011 and Toshiba or B&W exercises its right to terminate the securities purchase agreement and such Investor makes a Sale Election, the Company agrees it will exercise its right to redeem any shares of Series B-1 Preferred held by Toshiba or B&W (as the case may be) that remain outstanding on August 31, 2012. Such redemption at the then applicable liquidation preference multiplied by the applicable Factor would be for cash or SWU at the Company’s election and would be in advance of the mandatory redemption of such shares on December 31, 2012 which is otherwise required by the terms of the Series B-1 Preferred in such circumstances. Upon the closing of funding of at least \$100 million from a third party (other than a government agency) that is necessary for the closing of a DOE Loan Guarantee, the Company will have the right, if required as a condition to funding, to cause the shares of Series B-1 Preferred to be converted into Class B Common (or Series C Preferred if stockholder and regulatory approvals for the Class B Common have not been obtained), at a conversion rate calculated using 120% of the then applicable liquidation preference. The Company will also have the right in certain change in control transactions to cause the shares of Series B-1 Preferred to be deemed converted and to receive the same consideration as received by the holders of Ordinary Common in such transaction or to redeem the Series B-1 Preferred for a cash price equal to 105% of the value of the consideration that would have been received.

Automatic Conversion. On December 31, 2016, all outstanding shares of Series B-1 Preferred will be automatically converted into Class B Common at the then applicable Conversion Price, subject to the Conversion Cap. If any shares of Series B-1 Preferred remain outstanding on February 28, 2017 due to the Conversion Cap, the Company shall redeem those shares for cash or, if not redeemed for cash by March 15, 2017, the Conversion Cap shall no longer apply and such shares shall automatically be converted into Class B Common.

Conversion Price; Conversion Cap. The number of shares of Class B Common or Series C Preferred into which a share of Series B-1 Preferred is convertible (the "Conversion Price") is calculated by dividing (1) the then applicable liquidation preference by (2) the daily volume weighted average price of the Company's stock on the twenty trading days immediately preceding the date of such conversion (the "Base Price," with the Base Price multiplied by 1,000 in the case of conversions into Series C Preferred). In the case of an Orderly Sale Arrangement, the Base Price is the price per share reported for the sale. There is a cap on the number of shares of Class B Common received upon conversion of the Preferred Stock so that the number of shares of Class B Common received upon such conversion, combined with the shares of Class B Common issued or issuable upon exercise of the Warrants or upon conversion of other securities issued pursuant to the transactions will not exceed 49.99% of the Company's common stock at the time of any conversion (the "Conversion Cap").

Voting Rights. The holders of the Series B-1 Preferred have customary protective provisions under the certificate of designation, including the right, subject to certain limited exceptions, to a separate class vote on (1) the payment of dividends or distributions of common stock or any other Junior Stock, (2) the redemption of any common stock or other Junior Stock or any parity stock, or (3) prior to the third closing, the issuance of any senior stock or parity stock.

The holders of the Series B Preferred, voting as a separate class, are entitled to elect, and have elected, two directors of the Company (the "Investor Directors"). The ability to elect two directors will generally cease upon the earliest of (the "Investor Director Expiration Date"): (1) a failure to achieve the second or third closing as a result of a material breach by the Investors, (2) a change in control of the Company, or (3) such time as the Investors fail to hold equity having a value equal to at least 75% (50% after December 31, 2016) of the value of the stock they purchased. If the Investors lose their Investor Directors due to a failure to maintain the minimum equity holdings in the aggregate, one Investor may retain the right to appoint one director if it individually maintains its minimum equity holding.

Series C Preferred

The Company authorized the Series C Preferred that has the same rights, powers, preferences and restrictions as the Class B Common and participates equally in any dividends paid on the common stock. Each share of Series C Preferred is convertible into 1,000 shares of Ordinary Common. The Series C Preferred shall be non-voting except as described below. On any matter where the holders of Series C Preferred shall be entitled to vote, each share shall entitle the holder thereof to 1,000 votes. The holders of the Series C Preferred shall be entitled to vote with the Ordinary Common as a single class on a merger of the Company or sale of substantially all of the Company's assets, but the votes of the Investors shall be capped at 20% of the total voting power. At such time as there is no longer any Series B Preferred outstanding, the Series C Preferred, voting together as a separate class, will be entitled to elect two members of the Board of Directors of the Company. The ability to elect any members to the Board of Directors by the holders of the Series C Preferred will cease upon the Investor Director Expiration Date. The Series C Preferred will be entitled to a separate class vote on any amendment to the certificate of incorporation that adversely affects the Series C Preferred. The Series C Preferred will automatically convert into Ordinary Common (subject to the Share Issuance Limitation) upon transfer to a third party. The Series C Preferred is subject to the orderly sale arrangement set forth in the securities purchase agreement and described under "Plan of Distribution."

Certain Provisions of our Certificate of Incorporation and Bylaws and Delaware Law

The following paragraphs summarize certain provisions of the Delaware General Corporate Law, or DGCL, and our certificate of incorporation and bylaws. The summary does not purport to be complete and is subject to and qualified in its entirety by reference to the DGCL and to our certificate of incorporation and bylaws, copies of which are available on our website and are on file with the SEC.

Our bylaws establish an advance notice procedure for the nomination, other than by or at the direction of the Board of Directors, of candidates for election as directors as well as for other stockholder proposals to be considered at annual meetings of stockholders. In general, we must receive notice not less than 90 calendar days nor more than 120 days in advance of the date of the annual meeting and the notice must contain certain specified information concerning the persons to be nominated or the matters to be brought before the meeting and concerning the stockholder submitting the proposal.

Section 203 of the DGCL generally restricts a corporation from entering into certain business combinations with an interested stockholder (defined as any person or entity that is the beneficial owner of at least 15% of a corporation's voting stock or is an affiliate or associate of the corporation and was the owner of 15% or more of the outstanding voting stock of the corporation at any time in the past three years) or its affiliates (as defined), unless:

- either the business combination or the transaction which resulted in the stockholder becoming an interested stockholder is approved by the board of directors of the corporation prior to the date such person became an interested stockholder;
- the interested stockholder acquires 85% of the corporation's voting stock in the same transaction in which it becomes an interested stockholder; or
- the business combination is approved by the board of directors and by a vote of two-thirds of the outstanding voting stock not owned by the interested stockholder.

Section 203 may render more difficult a change of control of the Company.

Foreign Ownership Restrictions

Our certificate of incorporation contains certain restrictions with respect to foreign ownership of our common stock. A summary of such provisions, which is qualified in its entirety by reference to the full text of such provisions in our certificate of incorporation, is set forth below.

General Restrictions. Article Eleventh gives our Board of Directors certain rights with respect to our common stock held by:

- “Foreign Persons,” which include (1) an individual who is not a citizen of the United States; (2) a partnership in which any general partner is a Foreign Person or the partner or partners having a majority interest in partnership profits are Foreign Persons; (3) a foreign government or representative thereof; (4) a corporation, partnership, trust, company, association or other entity organized or incorporated under the laws of a jurisdiction outside of the United States; and (5) a corporation, partnership, trust, company, association or other entity that is controlled directly or indirectly by any one or more of the foregoing; or
- a “Contravening Person,” which is (1) a person acting as an agent with respect to uranium or uranium products for any person incorporated, organized or having its principal place of business outside of the United States which is in the business of enriching uranium for use by nuclear reactors or any person incorporated, organized or having its principal place of business outside of the United States which is in the business of creating a fissile product capable of use as a fuel source for nuclear reactors in lieu of enriched uranium (a “Foreign Enrichment Provider”); or (2) any Foreign Enrichment Provider or a person affiliated with a Foreign Enrichment Provider in such a manner as to constitute a Foreign Ownership Review Event, as defined below.

The occurrence of any one or more of the following events is a “Foreign Ownership Review Event” and triggers the Board of Directors’ right to take various actions under Article Eleventh: (1) the beneficial ownership by a Foreign Person of (a) 5% or more of the issued and outstanding shares of any class of our equity securities, (b) 5% or more in voting power of the issued and outstanding shares of all classes of our equity securities, or (c) less than 5% of the issued and outstanding shares of any class of our equity securities or less than 5% of the voting power of the issued and outstanding shares of all classes of our equity securities, if such foreign person is entitled to control the appointment and tenure of any of our management positions or any director; (2) the beneficial ownership of any shares of any class of our equity securities by or for the account of a Contravening Person; or (3) any ownership of, or exercise of rights with respect to, shares of any class of our equity securities or other exercise or attempt to exercise control of us that is inconsistent with, or in violation of, any regulatory restrictions, or that could jeopardize the continued operations of our facilities (an “Adverse Regulatory Occurrence”).

Where the same shares of any class of our equity securities are held or beneficially owned by one or more persons, and any one of such persons is a Foreign Person or a Contravening Person, then those shares will be deemed to be held or beneficially owned by a Foreign Person or Contravening Person, as applicable.

The rights we have under Article Eleventh include the following:

- *Information Request.* If we have reason to believe that the ownership or proposed ownership of, acquisition of an interest in, or exercise of rights with respect to, our securities by any person, including record holders, beneficial owners and any person presenting our securities for transfer into its name (a “Proposed Transferee”) may constitute a Foreign Ownership Review Event, we may request of such person, and require such person to promptly furnish to us, such information as we request to determine whether the ownership of, the acquisition of any interest in, or the exercise of any rights with respect to our securities by such person constitutes a Foreign Ownership Review Event.
- *Suspension of Voting Rights; Refusal to Transfer.* If any person (including a Proposed Transferee) from whom information is requested should fail to respond to our request or if we conclude that the ownership of, acquisition of an interest in, or the exercise of any rights of ownership with respect to, our securities by any person (including a Proposed Transferee) could constitute or result in any Adverse Regulatory Occurrence, then we may determine that (1) the securities held by any record or beneficial owner of securities held by a person may not be transferred to a Proposed Transferee and/or (2) a person shall not be entitled to vote or direct the vote of securities held of record or beneficially owned by such person on any or specified matters.
- *Redemption/Exchange.* In addition, any shares held or beneficially owned by a Foreign Person or a Contravening Person are subject to redemption or exchange by us by action of the Board of Directors, pursuant to Section 151 of the DGCL or any other applicable provision of law, to the extent necessary in the judgment of the Board of Directors to prevent any Adverse Regulatory Occurrence. The terms and conditions of such redemption will be as follows:
 - the redemption price of the shares to be redeemed will be equal to the fair market value of the shares to be redeemed, as determined by the Board of Directors in good faith unless the Board of Directors determines in good faith that the holder of such shares knew or should have known its ownership or beneficial ownership would constitute a Foreign Ownership Review Event, in which case the redemption price for any such shares, other than shares for which the Board of Directors had determined at the time of the holder’s purchase that the ownership of, or exercise of rights with respect to, such shares did not, at such time, constitute an Adverse Regulatory Occurrence, will be equal to the lower of (1) the fair market value of the shares to be redeemed and (2) such Foreign Person’s or Contravening Person’s purchase price for such shares;
 - the redemption price of such shares may be paid in cash, securities or any combination thereof and the value of any securities constituting all, or any part of, the redemption price will be determined by the Board of Directors in good faith;

- if less than all the shares held or beneficially owned by Foreign Persons are to be redeemed, the shares to be redeemed will be selected in any manner determined by the Board of Directors to be fair and equitable;
 - at least 30 days' written notice of the redemption date will be given to the record holders of the shares selected to be redeemed (unless waived in writing by any such holder), provided that the redemption date may be the date on which written notice will be given to record holders if the cash or redemption securities necessary to effect the redemption has been deposited in trust for the benefit of such record holders and subject to immediate withdrawal by them upon surrender of the stock certificates for their shares to be redeemed, duly endorsed in blank or accompanied by duly executed proper instruments of transfer;
 - from and after the redemption date, the shares to be redeemed will cease to be regarded as outstanding and any and all rights attaching to such shares of whatever nature will cease and terminate, and the holders will be entitled only to receive the cash or securities payable upon redemption; and
 - the redemption will be subject to such other terms and conditions as the Board of Directors may determine.
- *Additional Provisions.* We may note on the certificates of our securities that the securities are subject to the restrictions of Article Eleventh. Our Board of Directors has the exclusive right to interpret all issues arising under Article Eleventh and the determination of the Board of Directors is final, binding and conclusive. The Board of Directors may, at any time and from time to time, adopt such other or additional reasonable procedures as the Board of Directors may deem desirable or necessary to comply with regulatory restrictions, to prevent or remedy any Adverse Regulatory Occurrence, to address any issues arising in connection with a Foreign Ownership Review Event or to otherwise carry out the provisions of Article Eleventh. Any amendment to the Foreign Ownership Restrictions requires the affirmative vote of the majority of the members of the Board of Directors then in office as well as the affirmative vote of two-thirds of the outstanding voting stock.

PLAN OF DISTRIBUTION

This prospectus may be used for resales from time to time by the selling security holders set forth under "Selling Security Holders."

Sales of common stock underlying the securities held by the selling security holders must comply with the Orderly Sale Arrangement provisions set forth in the certificate of designations for our preferred securities and the securities purchase agreement. Pursuant to those provisions, which are designed to prevent the selling security holders from obtaining record ownership or voting power over our common stock, sales may be accomplished by:

- An underwritten transaction;
- Transactions in an amount not to exceed 10% of our average daily trading volume over the preceding four weeks in compliance with Rule 144(f) under the Securities Act of 1933, as amended, as if such sales were effected pursuant to such rule;
- Block sales at a price per share not less than 90% of our volume weighted average price on the preceding trading day; and
- Any other method mutually agreed between us and the selling security holders.

Pursuant to the restrictions on sales to competitors and block transfers, the selling security holders are not permitted, directly or indirectly, to knowingly transfer common stock to our competitors or to any person(s) that have filed a Schedule 13D or 13G with respect to our common stock, unless any such person(s) have filed a Schedule 13G and would beneficially own less than 10% of our outstanding common stock after accounting for the sale. Pursuant to the restrictions on hedging, the selling security holders may not enter in any derivative transactions that hedges or transfers any of the economic consequences of owning preferred stock, warrants or underlying common stock.

Upon a Closing Deadline Failure, if a holder of Series B-1 Preferred makes a Sale Election, such selling security holder is required to either enter into an agreement with a broker dealer to cause the sale of the common stock underlying the securities held by such selling security holder (a "Sale Plan") or sell pursuant to such other method as is mutually agreed between us and the selling security holder. Any such Sale Plan must:

- be a written contract pursuant to which a selling security holder instructs a broker dealer to sell shares on its account;
- result in the sale of the common stock underlying the securities held by the selling security holder as promptly as possible in brokers transactions in accordance with the Orderly Sale Arrangement;
- permit the selling security holder no influence over when or whether to effect the sales of the common stock underlying the securities held by the selling security holder unless the selling security holder initiates a separate block trade in accordance with the Orderly Sale Arrangement; and
- require that the common stock underlying the securities held by the selling security holder be sold pursuant to the Sale Plan, except for separate block trades in accordance with the Orderly Sale Arrangement.

If a selling security holder believes it is in possession of material non-public information regarding the Company, a selling security holder may delay implementation of a Sale Plan until the next trading window during which our directors and executive officers are permitted to sell or buy our common stock. If at any time after 180 days from a Sale Election a selling security holder has not entered into a Sale Plan and does not use its commercially reasonable efforts to implement a Sale Plan, after notice we may convert such selling security holder's shares of Series B-1 Preferred into shares of Series C Preferred or, if stockholder approval has been obtained, into shares of Class B Common.

VALIDITY OF THE SECURITIES

The validity of the securities offered by this prospectus will be passed upon for us by Latham & Watkins LLP, Washington, D.C.

EXPERTS

The consolidated financial statements and management's assessment of the effectiveness of internal control over financial reporting (which is included in Management's Report on Internal Control over Financial Reporting) incorporated in this prospectus by reference to the Annual Report on Form 10-K for the year ended December 31, 2010 have been so incorporated in reliance on the report of PricewaterhouseCoopers LLP, an independent registered public accounting firm, given on the authority of said firm as experts in auditing and accounting.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We file annual, quarterly and special reports, as well as registration and proxy statements and other information, with the SEC. These documents may be read and copied at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. You can get further information about the SEC's Public Reference Room by calling 1-800-SEC-0330. The SEC also maintains a website at www.sec.gov that contains reports, proxy and information statements and other information regarding registrants like us that file electronically with the SEC.

You can also access electronic copies of our annual reports on Form 10-K and quarterly reports on Form 10-Q and all amendments to those reports, free of charge, on our website at www.usec.com. We make our website content available for information purposes only. It should not be relied upon for investment purposes, nor is it incorporated by reference in this prospectus.

INCORPORATION BY REFERENCE

The SEC allows us to "incorporate by reference" into this prospectus the information we file with it. This means that we can disclose important information to you by referring you to those documents. The information we incorporate by reference is considered a part of this prospectus, and later information we file with the SEC will automatically update and supersede this information. We incorporate by reference the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934 (the "Exchange Act") until this offering is completed:

- our Annual Report on Form 10-K for the year ended December 31, 2010;
- our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2011 and June 30, 2011;
- our Current Reports, including current reports on Form 8-K filed on January 10, 2011, February 16, 2011, February 18, 2011, February 23, 2011 (Item 5.02 only), March 24, 2011, May 3, 2011 (Items 5.02, 5.07 and 9.01 (Exhibit 10.1 only), May 5, 2011, June 21, 2011, June 30, 2011, and August 15, 2011;

- our Definitive Proxy Statement on Schedule 14A filed on March 17, 2011;
- the description of our common stock contained in our registration statement on Form 8-A, as filed on July 8, 1998, including any amendments or reports filed for the purpose of updating such descriptions; and
- all documents filed pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this prospectus and prior to the termination of this offering; provided, however, that we are not incorporating any information furnished under Item 2.02 or Item 7.01 of any Current Report on Form 8-K (including any financial statements or exhibits relating thereto furnished pursuant to Item 9.01).

You may obtain any of the documents incorporated by reference through the SEC or the SEC's website as described above. You may also obtain copies of these documents by written or oral request free of charge by contacting our Secretary at our executive offices, which are located at 2 Democracy Center, 6903 Rockledge Drive, Bethesda, Maryland 20817. Our telephone number is (301) 564-3200.

PART II

INFORMATION NOT REQUIRED IN THE PROSPECTUS

Item 14. Other Expenses of Issuance and Distribution.

The following table sets forth the fees and expenses in connection with the distribution of the securities being registered hereby, other than underwriting discounts and commissions. The selling security holders will not bear any of the expenses set forth below. All amounts shown are estimates.

Securities and Exchange Commission registration fee	\$ 6,068.83
Accounting fees and expenses	(1)
Legal fees and expenses	(1)
Printing expenses	(1)
Miscellaneous	(1)
Total	(1)

(1) The number of offerings is indeterminable and the expenses cannot be estimated at this time.

Item 15. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law, or the DGCL, allows for the indemnification of officers, directors, and other corporate agents in terms sufficiently broad to indemnify these persons for liabilities (including reimbursement for expenses incurred) arising under the Securities Act of 1933, as amended. The registrant's certificate of incorporation and bylaws provide for indemnification of the registrant's directors, officers, employees and other agents to the extent and under the circumstances permitted by the DGCL. The registrant has also entered into agreements with its directors and officers that will require the registrant, among other things, to indemnify them against liabilities that may arise by reason of their status or service as directors or officers to the fullest extent not prohibited by law. In addition, the registrant carries director and officer liability insurance.

Item 16. Exhibits

The Exhibits to this registration statement are listed in the Exhibit Index on page II-6.

Item 17. Undertakings

(a) The undersigned registrant hereby undertakes:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this registration statement:

(i) To include any prospectus required by section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of the registration statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in the registration statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than a 20% change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective registration statement.

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement;

Provided, however, that paragraphs (1)(i), (1)(ii) and (1)(iii) of this section do not apply if the registration statement is on Form S-3 or Form F-3 and the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the Commission by the registrant pursuant to section 13 or section 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in the registration statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the registration statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the registration statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

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 of the requirements for filing on Form S-3 and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Bethesda, State of Maryland, on August 30, 2011.

USEC Inc.

By: /s/ John K. Welch

Name: John K. Welch

Title: President and Chief Executive Officer

POWER OF ATTORNEY

NOW, THEREFORE, the undersigned hereby appoints John K. Welch, John C. Barpoulis and James R. Mellor, and each of them, his or her true and lawful attorneys-in-fact and agents with full power of substitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign the Registration Statement and any and all amendments, including post-effective amendments, to the Registration Statement, and to sign any registration statement for the same offering covered by the Registration Statement that is to be effective upon filing pursuant to Rule 462(b) promulgated under the Securities Act of 1933, as amended, and all post-effective amendments thereto, and to file the same, with all exhibits thereto and all documents in connection therewith, making such changes in the Registration Statement as such person or persons so acting deems appropriate, with the Securities and Exchange Commission, granting unto said attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or his, or their substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

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.

Signature	Title	Date
<u>/s/ John K. Welch</u> John K. Welch	President and Chief Executive Officer (Principal Executive Officer) and Director	August 30, 2011
<u>/s/ John C. Barpoulis</u> John C. Barpoulis	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	August 30, 2011
<u>/s/ J. Tracy Mey</u> J. Tracy Mey	Vice President and Chief Accounting Officer (Principal Accounting Officer)	August 30, 2011
<u>/s/ James R. Mellor</u> James R. Mellor	Chairman of the Board	August 30, 2011
<u>/s/ Michael H. Armacost</u> Michael H. Armacost	Director	August 30, 2011
<u>/s/ Joyce F. Brown</u> Joyce F. Brown	Director	August 30, 2011
<u>/s/ Sigmund L. Cornelius</u> Sigmund L. Cornelius	Director	August 30, 2011
<u>/s/ Joseph T. Doyle</u> Joseph T. Doyle	Director	August 30, 2011
<u>/s/ H. William Habermeyer</u> H. William Habermeyer	Director	August 30, 2011
<u>/s/ William J. Madia</u> William J. Madia	Director	August 30, 2011
<u>/s/ W. Henson Moore</u> W. Henson Moore	Director	August 30, 2011
<u>/s/ Hiroshi Sakamoto</u> Hiroshi Sakamoto	Director	August 30, 2011
<u>/s/ Walter E. Skowronski</u> Walter E. Skowronski	Director	August 30, 2011

/s/ M. Richard Smith
M. Richard Smith

Director

August 30, 2011

/s/ Michael S. Taff
Michael S. Taff

Director

August 30, 2011

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
3.1	Certificate of Incorporation of USEC Inc., as amended, incorporated by reference to Exhibit 3.1 of the Quarterly Report on Form 10-Q for the quarter ended September 30, 2010 (Commission file number 1-14287).
3.2	Amended and Restated Bylaws of USEC Inc., dated May 25, 2010, incorporated by reference to Exhibit 3.1 of the Current Report on Form 8-K filed on May 25, 2010 (Commission file number 1-14287).
4.1	Warrant to purchase 3,125,000 shares of Class B Common Stock or 3,125 shares of Series C Convertible Participating Preferred Stock issued to Toshiba America Nuclear Energy Corporation, incorporated by reference to Exhibit 4.1 of the Current Report on Form 8-K filed on September 2, 2010 (Commission file number 1-14287).
4.2	Warrant to purchase 3,125,000 shares of Class B Common Stock or 3,125 shares of Series C Convertible Participating Preferred Stock issued to Babcock & Wilcox Investment Company, incorporated by reference to Exhibit 4.2 of the Current Report on Form 8-K filed on September 2, 2010 (Commission file number 1-14287).
5.1	Opinion of Latham & Watkins LLP.
23.1	Consent of Latham & Watkins LLP (included in Exhibit 5.1).
23.2	Consent of PricewaterhouseCoopers LLP, independent registered public accounting firm.
24.1	Power of Attorney (included on the signature page hereto).

August 30, 2011

USEC Inc.
2 Democracy Center
6903 Rockledge Drive
Bethesda, Maryland 20817

Re: Registration Statement No. 333-_____ : 22,826,407 shares of Common Stock, par value \$0.10 per share

Ladies and Gentlemen:

We have acted as special counsel to USEC Inc., a Delaware corporation (the "**Company**"), in connection with the proposed issuance of up to 22,826,407 shares of common stock, \$0.10 par value per share (the "**Shares**") issuable (i) upon conversion of shares of Series B-1 12.75% Convertible Preferred Stock, \$1.00 par value per share (the "**Series B-1 Preferred Shares**") and, when applicable, shares of Series C Convertible Participating Preferred Stock, \$1.00 par value per share (the "**Series C Preferred Shares**") and (ii) upon conversion of 6,250 shares of Series C Convertible Participating Preferred Stock (the "**Series C Preferred Warrant Shares**") issuable upon exercise of a warrant dated September 2, 2010 (the "**Warrant**"). The Shares are included in a registration statement on Form S-3 under the Securities Act of 1933, as amended (the "**Act**"), filed with the Securities and Exchange Commission (the "**Commission**") on August 30, 2011 (Registration No. 333-_____) (the "**Registration Statement**"). This opinion is being furnished in connection with the requirements of Item 601(b)(5) of Regulation S-K under the Act, and no opinion is expressed herein as to any matter pertaining to the contents of the Registration Statement or related Prospectus, other than as expressly stated herein with respect to the issue of the Shares.

As such counsel, we have examined such matters of fact and questions of law as we have considered appropriate for purposes of this letter. We have examined, among other things, the following:

- (a) The Securities Purchase Agreement dated as of May 25, 2010 (the "**Securities Purchase Agreement**");
- (b) The Warrant;
- (c) The Certificate of Incorporation of the Company, in the form filed with the Secretary of State of the State of Delaware on June 29, 1998, the Certificate of Amendment to the Certificate of Incorporation of the Company, in the form filed with the Secretary of State of the State of Delaware on April 25, 2008, the Certificate of Designation, Preferences and Rights of Series A Junior Participating Preferred Stock of the Company, in the form filed with the Secretary of State of the State of Delaware on April 25, 2001, the Certificate of Increase of Certificate of Designation, Preferences and Rights of Series A Junior Participating Preferred Stock of the Company, in the form filed with the Secretary of State of the State of Delaware on September 21, 2007, the Certificate of Designation of Series B-1 12.75% Convertible Preferred Stock of the Company, in the form filed with the Secretary of State of the State of Delaware on September 2, 2010 and the Certificate of Designation of Series C Convertible Participating Preferred Stock of the Company, in the form filed with the Secretary of State of the State of Delaware on September 2, 2010 (collectively, the "**Certificate of Incorporation**");
- (d) The Amended and Restated Bylaws of the Company in effect as of the date hereof; and
- (e) Certain resolutions of the Board of Directors of the Company and certain committees thereof.

With your consent, we have relied upon certificates and other assurances of officers of the Company and others as to factual matters without having independently verified such factual matters. We are opining herein as to the General Corporation Law of the State of Delaware, and we express no opinion with respect to any other laws.

Subject to the foregoing and the other matters set forth herein, it is our opinion that, as of the date hereof:

1. The Shares issuable upon conversion of the Series B-1 Preferred Shares and, when applicable, the Series C Preferred Shares, have been duly authorized by all necessary corporate action of the Company, and, where applicable, upon issuance of the Series C Preferred Shares in accordance with the Securities Purchase Agreement and the Certificate of Incorporation, when such Shares shall have been (i) duly registered on the books of the transfer agent and registrar therefor in the name or on behalf of the converting holders of the Series B-1 Preferred Shares and, when applicable the Series C Preferred Shares, and (ii) issued in accordance with the terms of the Securities Purchase Agreement and the Certificate of Incorporation, such Shares will be validly issued, fully paid and non-assessable.

2. The Shares issuable upon conversion of the Series C Preferred Warrant Shares issuable upon exercise of the Warrant have been duly authorized by all necessary corporate action of the Company, and, upon issuance of the Series C Preferred Shares in accordance with the Securities Purchase Agreement and the Certificate of Incorporation, when such Shares shall have been (i) duly registered on the books of the transfer agent and registrar therefor in the name or on behalf of the converting holders of the Series C Preferred Warrant Shares, and (ii) issued in accordance with the terms of the Securities Purchase Agreement and the Certificate of Incorporation, such Shares will be validly issued, fully paid and non-assessable.

In rendering the foregoing opinion, we have assumed that the Company will comply with all applicable notice requirements regarding uncertificated shares provided in the General Corporation Law of the State of Delaware.

This opinion is for your benefit in connection with the Registration Statement and may be relied upon by you and by persons entitled to rely upon it pursuant to the applicable provisions of the Act. We consent to your filing this opinion as an exhibit to the Registration Statement and to the reference to our firm in the Prospectus under the heading "Validity of the Securities." In giving such consent, we do not thereby admit that we are in the category of persons whose consent is required under Section 7 of the Act or the rules and regulations of the Commission thereunder.

Very truly yours,

/s/ Latham & Watkins LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in this Registration Statement on Form S-3 of our report dated February 24, 2011 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in USEC Inc.'s Annual Report on Form 10-K for the year ended December 31, 2010.

PricewaterhouseCoopers LLP
McLean, Virginia
August 30, 2011