NRC FORM 374 U.S. NUCLEAR REGULATORY COMMISSION

MATERIALS LICENSE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, Code of Federal Regulations, Chapter I, Parts 30, 31, 32, 33, 34, 35, 36, 39, 40, and 70, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, possess, and transfer byproduct, source, and special nuclear material designated below; to use such material for the purpose(s) and at the place(s) designated below; to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified below.

Licensee	
1. Babcock & Wilcox Nuclear Operations Group, Inc.	3. License Number SNM-42, Amendment 14
2. P.O. Box 785 Lynchburg, Virginia 24505-0785	4. Expiration Date: March 29, 2027
	5. Docket No. 70-27 Reference No.

6. Byproduct Source, and/or Special Nuclear Material	7. Chemical and/or Physical Form ++-	8.
A. Uranium enriched in U-235	A. Any enrichment or form, except UF_6	A.
B. Uranium enriched in U-235	B. Any enrichment in UF_6	B.
C. U-233	C. Any	C.
D. Plutonium	D. Unencapsulated and unirradiated	D.
E. Plutonium	E. Encapsulated foils in nuclear accident dosimeters	E.

Enclosure 1

MATERIALS LICENSE SUPPLEMENTARY SHEET

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F.	Fission products and transuranium elements	F. Irradiated fuel	F.
G.	Fission products and transuranium elements	G. Irradiated fuel	G.
H.	Fission products and transuranium elements	H. Irradiated fuel	H.
I.	Pu-239 in greater than Class C waste from Parks Township	I. Sealed Sources	I.
J.	Transuranium elements in greater than Class C waste from Parks Township	J. Any	J.

9. Authorized place of use: The licensee's existing facilities along the James River, approximately 8 miles east of Lynchburg, Virginia, as described in the referenced application.

10. This license shall be deemed to contain two sections: Safety Conditions and Safeguards Conditions. Each section is a part of the license and the licensee is subject to compliance with all listed conditions in each section.

FOR THE NUCLEAR REGULATORY COMMISSION

Date: 10/5/2012

By: **/RA/**
Marissa G. Bailey, Deputy Director
Division of Fuel Cycle Safety
and Safeguards
Office of Nuclear Material Safety
and Safeguards

SAFETY CONDITIONS

S-1 Authorized use: For use in accordance with the statements, representations, and conditions in Chapters 1 through 11 of the application submitted on the following dates, or as revised, pursuant to 10 CFR 70.32 or 10 CFR 70.72: September 27, October 24, and November 28, 2006; February 5, February 20, April 6, May 2, May 4, May 14, June 21, June 22, July 31, November 6, November 14, December 10, 2007; January 7 (2 letters), January 11, February 15, February 29, March 31, May 23, May 28, June 27, 2008; emails dated December 12, (3 emails), December 13, 2007 (2 emails); January 9, January 14, March 13, August 19, September 5, 2008; December 17, 2008, March 23, 2009, March 29, 2009, April 23, 2009, April 1, 2010, May 4, 2010, May 14, 2010, May 27, 2010, July 12, 2010, July 28, 2010, August 1, 2010, August 5, 2010, September 14, 2010, September 17, 2010, October 28, 2010, May 27, 2011, June 5, 2012, and July 25, 2012.

S-2 The licensee shall maintain and execute the response measures in the Emergency Plan, Revision 19, dated April 15, 2007, or as further revised in accordance with 10 CFR 70.32(i).

S-3 The volume of in the Vault shall be no larger than shall be specifically shown to be critically safe by the licensee.

S-4 In , no more than may be in transit within each cubicle at any one time.

S-5 The former 10 CFR 20.304, “Old Recovery” disposal area is released for unrestricted use in accordance with letter, dated January 31, 1997, A.F. Olsen to M.F. Weber of the U.S. Nuclear Regulatory Commission (NRC).

S-6 The “Cold” Surface Impoundment Pond was surveyed and evaluated in accordance with letters, dated April 29 and May 24, 1999, from A.F. Olsen to the Director, Office of Nuclear Material Safety and Safeguards, NRC and documented in Amendment 42, dated June 24, 1999.

The “Hot” Surface Impoundment Pond was remediated in accordance with the letter, dated April 28, 2000, from A.F. Olsen to the Director, Office of Nuclear Material Safety and Safeguards, U.S. NRC and documented in Amendment 58, dated October 11, 2000.

The results from the above actions may be reassessed at the time of license termination in order to include any possible dose from these areas in the dose assessment for the entire site. BWX Technologies shall control licensed material, which could migrate and re-impact the area, and shall keep records of all work done in these areas.

S-7 The Final Status Survey Report (FSSR) for the Industrial Waste Landfill 1, submitted by application, dated August 10, 2005, has been determined by the NRC staff to meet the requirements of 10 CFR 70.38 in that the landfill has been remediated in accordance with the decommissioning plan approved on November 21, 2003. At the time of license termination, however, the results of the FSSR may be re-assessed in order to include any dose from this

landfill in the site dose assessment. BWX Technologies shall also control licensed material which could migrate and impact the area, and keep records of all work done in the area.

S-8 The FSSR for Industrial Waste Landfills 2A and 2B, submitted in application, dated December 22, 2000, has been reviewed by the NRC staff and determined to meet the requirements of 10 CFR 70.38 in that the landfills have been remediated in accordance with a decommissioning plan approved by NRC letter, dated February 25, 1998. However, at the time of license termination, the results from the FSSR may be reassessed in order to include any possible dose from these landfills in the dose assessment for the entire site. BWX Technologies shall also control licensed material, which could migrate and re-impact the area, and keep records of all work done in these areas.

S-9 The licensee is granted an exemption to 10 CFR 20.1201(d) and is authorized to use Annual Limit on Intake and Derived Air Concentration values based on dose coefficients adopted by the International Commission on Radiological Protection (ICRP), published in ICRP Publication No. 68 for determining occupational dose, and for determining dose to individual members of the public, pursuant to 10 CFR 20.1302.

S-10 BWX Technologies is exempt from fissile material classification and from the fissile material package standards of 10 CFR 71.55 and 10 CFR 71.59 for the transport of certain bulk materials. The materials are listed in Table 1 of the attachment to BWX Technologies's application, dated May 23, 2003, as modified by letter, dated October 30, 2003; and are subject to the additional limits and controls listed in Notes 1 through 11 in Table 1. Shipment of the materials is subject to all other requirements of 10 CFR Part 71.

S-11 "Systems involving clusters" shall be deemed to include only workstations containing one or more machined and assembled clusters by themselves or in conjunction with other components that are not clusters. This shall apply to clad operations only.

S-12 Not withstanding the requirements of 10 CFR 70.24 (a)(1), criticality monitoring of the spent fuel storage is not required during periods when the material is in the stored configuration with in place and inaccessible. When the are accessible (i.e., without the modifications due to implementation of NRC Order EA-07-011), the requirements of 10 CFR 70.24 (a)(1) shall be met. The licensee shall have permanent-fixed criticality monitoring systems in-place and operational in the spent nuclear fuel storage areas at all times when the spent nuclear fuel is present. In addition, when access to the spent fuel is required, the licensee shall supplement the permanent-fixed criticality monitoring systems with hand-held radiation monitoring as described in its May 2, 2007, application to the NRC.

S-13 B&W NOG may make changes to the License Application that do not reduce the effectiveness of the License Application, without prior NRC approval, if the change meets the following provisions:

- The change does not decrease the level of effectiveness of the design basis as described in the License Application
- The change does not result in a departure from the methods of evaluation described in the License Application used in establishing the design basis
- The change does not result in a degradation of safety
- The change does not affect compliance with applicable regulatory requirements
- The change does not conflict with an existing license condition
- Within 6 months after each change is made, the licensee would submit the revised chapters of the License Application to the Director, NMSS, using an appropriate method listed in 10 CFR 70.5(a), and a copy to the appropriate NRC Regional Office

S-14 Notwithstanding the requirements of 10 CFR 20.1703(c)(5), the licensee may use nurse practitioners to conduct the required medical examinations.

SAFEGUARDS CONDITIONS

Section 1.0 - ABRUPT LOSS DETECTION

There are no license conditions in this section. The necessary information and commitments are contained in the Plan identified in Safeguards Condition SG-5.1.

Section 2.0 - ITEM MONITORING

There are no license conditions in this section. The necessary information and commitments are contained in the Plan identified in Safeguards Condition SG-5.1.

Section 3.0 - ALARM RESOLUTION

There are no license conditions in this section. The necessary information and commitments are contained in the Plan identified in Safeguards Condition SG-5.1.

Section 4.0 - QUALITY ASSURANCE

SG-4.1 Notwithstanding the requirements of 10 CFR 74.59(d)(1) to establish and maintain a system of measurements sufficient to substantiate the uranium and plutonium element and the uranium fissile isotope content of all strategic special nuclear material received, inventoried, shipped, or discarded, the licensee:

(a) shall follow Section 4.7.1.3 of the Plan identified in Safeguards Condition SG-5.1 with respect to mechanical treatment of receipts of certified reactor fuel for the purpose of storage consolidation, without measurement for physical inventory purposes. That is,

following mechanical treatment, the original receipt value shall be retained for accounting purposes until the material undergoes chemical processing;

(b) need not measure the total element content of those materials measured by nondestructive assay for, if the calculated element content is based on the measured isotope content divided by a previously established and traceable isotopic abundance (as a weight fraction) measurement at the area of generation;

(c) shall, without measurement, process and/or store which are received with intact provided: (i) they were manufactured by a DOE contractor, (ii) the remains intact prior to processing, and (iii) the previous values determined by the manufacturer are assigned to these items;

(d) shall follow Section 4.7.1.3 of the Plan identified in Safeguards Condition SG-5.1 for the measurement of content of government-required retainer samples received, provided

an unresolved statistically significant shipper-receiver difference does not exist on the parent fuel lot; and

(e) shall follow Section 4.3.1.7 of the Plan identified in Safeguards Condition SG-5.1 for the measurement of content of element sections in the form of .

SG-4.2 To satisfy the requirements of 10 CFR 74.59(h)(1)(ii) that limits of error be calculated for each shipment, for finished , the licensee shall follow Section 4.7.2 of the Plan identified in Safeguards Condition SG-5.1.

SG-4.3 Notwithstanding the requirements of 10 CFR 74.59(e)(3) to generate current data on the performance of measurement processes, to measure standards and replicates for bulk volume systems, to perform replicate sampling and replicate analysis for environmental releases, to perform replicate isotopic analysis, to generate bulk and random errors for process materials, and to generate separate random errors for sampling and analysis on all sampling systems, the licensee shall follow Section 4.4 of the Plan identified in Safeguards Condition SG-5.1.

SG-4.4 Notwithstanding the requirements of 10 CFR 74.59(e)(6) concerning bias corrections, the licensee shall follow Section 4.4.2.4 of the Plan identified in Safeguards Condition SG-5.1.

SG-4.5 The use of disposable pipettes is limited to those applications listed in Section 4.4.2.2.3 of the Plan identified in Safeguards Condition SG-5.1.

SG-4.6 Any in-process measurements performed for the sole purpose of process monitoring and not for accountability shall not be required to meet 10 CFR 74.59(e) requirements.

SG-4.7 Notwithstanding the requirements of 10 CFR 74.59(e)(5) to statistically evaluate all program data and information, the licensee shall exclude secondary weights from the standard error of inventory difference (SEID) calculation and bias corrections.

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SG-4.8 Notwithstanding the requirements of 10 CFR 74.59(e)(8) to establish and maintain a statistical control system designed to monitor the quality of each type of program measurement, the licensee shall:

(a) follow Section 4.4.2.3 of the Plan identified in Safeguards Condition SG-5.1 in lieu of maintaining control charts for control standard measurements associated with scales and balances and nondestructive assay measurement systems, and

(b) follow Section 4.4.2.11 of the Plan identified in Safeguards Condition SG-5.1 in lieu of controlling within-lot sampling errors of at the 0.05 and 0.001 levels of significance.

SG-4.9 Notwithstanding the requirements of 10 CFR 74.59(e)(3) and (8) to determine and control random and systematic errors, the licensee shall exclude the measured discard path for airborne environmental releases from the measurement control program and the standard error of inventory difference (SEID) calculation.

SG-4.10 Notwithstanding the requirement of 10 CFR 74.59(e)(3)(i) to measure control standards for all measurement systems for the purpose of determining bias, and notwithstanding the requirement of 10 CFR 74.59(e)(8) to maintain a statistical control system to monitor such control standard measurements, the licensee need not measure nor monitor control standards for point calibrated, bias-free systems. To be regarded as bias-free, a measurement system shall be calibrated by one or more measurements of a representative standard each time process unknowns are measured, and the measurement value assigned to a given unknown shall be based on that calibration.

SG-4.11 Notwithstanding the commitment, in Section 4.7.1.2 of the Plan identified in Safeguards Condition SG-5.1, to perform receipt verification measurements and distribute DOE/NRC Form 741 within 30 days of receiving shipments of strategic special nuclear material (SNM), the licensee shall have 30 additional days from the date of the material receipt to fulfill the above-stated commitment relative to the shipment of identified in the September 6, 2002, request letter. This condition shall automatically expire on completion of the last shipment of the subject uranium metal.

SG-4.12 Notwithstanding the commitment in Section 4.7.1.2 of the Plan identified in Safeguards Condition SG-5.1 to follow NUREG/BR-0006, “Instructions for Completing Nuclear Material Transaction Reports,” for performing and reporting receipt measurements, the licensee shall: (a) within 10 days acknowledge receipt of the shipment in accordance with NUREG/BR-0006 using the shipper’s values, and (b) within 75 days after receipt of each shipment report receiver’s values, if necessary, in accordance with NUREG/BR-0006. The condition only applies to the identified in the licensee’s letters dated September 28 and November 10, 2004, and shall automatically expire on the final shipment of the subject impure oxide. Upon completion of the final shipment, BWXT shall notify NRC with a written request to amend SNM-42 to delete this Safeguards Condition.

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Section 5.0 - FNMC PLANS AND SPECIAL REGULATORY ISSUES

SG-5.1 To achieve the performance objectives of 10 CFR 74.51(a) and maintain the system capabilities of 10 CFR 74.51(b), with respect to all activities involving SNM, the licensee shall follow the General Discussion and Chapters 1.0 through 4.0 (all pages dated March 4, 2010) of its "Fundamental Nuclear Materials Control Plan - Special Nuclear Materials License 42." Any revisions to this Plan shall be made in accordance with, and pursuant to, either 10 CFR 70.32(c) or 70.34.

SG-5.2 In lieu of the requirements of 10 CFR 74.59(h)(1)(ii) to review and evaluate shipper-receiver differences on a basis for receipts of offsite generated scrap, the licensee shall follow Sections 4.7.1.12, 4.7.2.10, 4.7.2.11, and 4.7.2.12 of the Plan identified in Safeguards Condition SG-5.1. For this material, the recovered quantities and associated uncertainties for a campaign shall be evaluated in accordance with the requirements of 10 CFR 74.59(h)(1)(ii) relative to all shipments in a and a cumulative basis for like material.

SG-5.3 Notwithstanding, the requirements of 10 CFR 74.59(h)(2)(ii) to recover any scrap measured with a standard deviation greater than 5 percent within 6 months from the end of the inventory period in which it was generated, the licensee shall retain no more than in oil, organic, or other mixed scrap with a standard deviation greater than 5 percent until processes can be developed to eliminate the generation of this scrap or an approved process for the conversion of this scrap to a better measured form is in place.

SG-5.4 Operations involving SNM which are not described in the Plan identified in Safeguards Condition SG-5.1 shall not be initiated until an appropriate safeguards plan has been approved by the NRC.

SG-5.5 The restriction of 10 CFR 74.51(d)(2) is hereby lifted, and based on performance acceptable to the NRC, the licensee is authorized to conduct physical inventories in accordance with the requirements of 10 CFR 74.59(f)(1). The licensee need not calculate the SEID for a given plant if the inventory difference for that plant is less than 300 grams U-235 contained in high-enriched uranium or less than 9,000 grams U-235 contained in low-enriched uranium.

SG-5.6 Notwithstanding, the SNM possession limits allowed by Conditions 6, 7 and 8 of this license, and notwithstanding the material control and accounting (MC&A) requirements that would normally apply to the authorized possession and use of such SNM quantities, is exempted from the MC&A requirements of 10 CFR Parts 70 and 74, except for those identified below. This exemption is conditional upon compliance with the licensee's commitments, as given in the General Discussion Section of the Plan identified in Safeguards Condition SG-5.1, to: (1) maintain the total possessed un-irradiated and un-encapsulated SNM quantity at the below 1 effective kilogram, and (2) maintain the as a separate plant located outside of the

security protected area fence that encloses the BWXT Nuclear Products Division facility. Those MC&A regulatory requirements of 10 CFR Parts 70 and 74 that apply to the are as follows:

10 CFR 70.51(b)(1) through (3);10 CFR 74.6; 10 CFR 74.11; 10 CFR 74.13(a); 10 CFR 74.15; 10 CFR 74.17(c); 10 CFR 74.19; 10 CFR 74.59(b)(1) and (2); 10 CFR 74.59(c); 10 CFR 74.59(d)(2); 10 CFR 74.59(e)(3), (4) and (8); 10 CFR 74.59(f); and 10 CFR 74.59(h)(1)(i), and 10 CFR 74.59(h)(3) and (5).

Section 6.0 - PHYSICAL PROTECTION FOR STRATEGIC SPECIAL NUCLEAR MATERIAL

SG-6.1 The licensee shall follow the measures described in, "Babcock & Wilcox Nuclear Operations Group Physical Protection Plan (Plan)," dated August 5, 2010, submitted as Revision 12.1, and security procedures that are used to comply with the Plan as it may be revised, in accordance with the provisions of 10 CFR 70.32(e).

SG-6.2 The licensee shall follow the measures described in the, "BWX Technologies Nuclear Products Division Security Training, Qualification, and Equipment Plan, dated April 29, 2004, submitted as Revision 11 on October 13, 2004, and as revised in accordance with the provisions of 10 CFR 70.32(e).

SG-6.3 The licensee shall follow the plan titled, "BWX Technologies Nuclear Products Division Safeguards Contingency Plan," dated March 3, 2006, submitted as Revision 3, and as revised in accordance with the provisions of 10 CFR 70.32(g).

SG-6.4 The licensee shall implement and maintain a procedure for areas where a security plan submittal to the NRC is not required in accordance with 10 CFR 73.67, and shall limit the possession of SNM for those areas below that of a Moderate Strategic Significance, .In addition, quantities of un-irradiated and un-encapsulated SNM shall be limited to the amount specified in Safeguards Condition SG-5.6. In the event the licensee plans to exceed these quantities, an appropriate security plan shall be submitted to the NRC in accordance with 10 CFR 73.67(c).

SG-6.5 Notwithstanding, the requirements of 10 CFR 73.40 and 10 CFR 73.50, for the protection of formula quantities of SNM, with radiation dose rates greater than specified in 10 CFR 73.6(b), the licensee shall implement an NRC-approved security plan for the protection of prior to receipt of those assemblies. The SNM protected by this security plan shall be limited to the equivalent of . The SNM protected by this security plan shall have at least .

SG-6.6 The licensee shall follow the measures described in the Physical Security Plan titled, "Physical Protection Plan for Special Nuclear Material of Moderate and Low Strategic Significance," dated December 16, 2004, for the BWXT Building FF, Revision 2, and security procedures used to comply with the plan as revised in accordance with the provisions of 10 CFR 70.32(e).

SG-6.7 Notwithstanding the requirements of 10 CFR 73.46(b)(10)(iii) and (iv); 10 CFR 73.46(b)(11)(iii) and (v); 10 CFR 73.46(b)(12)(ii); and Part 73, Appendix B, paragraphs I.B.1.b, I.B.2.b, and I.C., the licensee shall use physicians or nurse practitioners, licensed under the Commonwealth of Virginia Regulation 18 VAC 90-30-10, et seq., to conduct the required medical examinations.

SG-6.8 The licensee shall follow the additional security measures as described in its April 6, 2007, response to NRC's request for additional information regarding the NRC Order EA-07-011 when spent nuclear fuel is accessible in the spent nuclear fuel storage areas.

Section 7.0 - INTERNATIONAL SAFEGUARDS

SG-7.1 The Licensee shall comply with the current version of Facility Attachment No. 17 of the Subsidiary Arrangements to the US-IAEA Safeguards Agreement. Facility Attachment 17 applies to the areas of the identified in the current version of the International Atomic Energy Agency's Design Information Questionnaire for the facility.