

# EXPORT AND IMPORT LICENSE

NRC FORM 250P



**United States of America**  
Nuclear Regulatory Commission  
Washington, D.C. 20555

**NRC LICENSE NO.: PCB114.00**

**LICENSE EXPIRES: March 31, 2011**

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Pursuant to the Atomic Energy Act of 1954, as amended, and the regulations issued by the Nuclear Regulatory Commission (NRC) pursuant thereto, and in reliance on statements and representations heretofore made by the applicant/licensee, this license is hereby issued authorizing the licensee to import and/or export the byproduct materials listed below, subject to the terms and conditions herein. This license is only valid if the licensee maintains the requisite NRC or Agreement State domestic licenses.

<p align="center"><b>LICENSEE</b></p> <p>Baker Hughes Oilfield Operations, Inc. Attn: James Elrod 2001 Rankin Road Houston, Texas 77073</p> <p><b>APPLICANT'S REFERENCE:</b> Application dated 10/27/09</p>	<p align="center"><b>ULTIMATE FOREIGN CONSIGNEE(S)</b></p> <p>Baker Hughes Asia Pacific Ltd. (BHAPL) Al Jazae'er Main Street Building No. 31/1, Flat No. 2 Basra Iraq</p>
<p align="center"><b>INTERMEDIATE FOREIGN AND/OR DOMESTIC CONSIGNEE(S)</b></p> <p>South Oil Company Fields Commission Burjesseya Zubait Field Basra, Iraq</p> <p align="right">(Sponsor)</p>	<p align="center"><b>OTHER PARTY(IES) TO EXPORT/IMPORT</b></p> <p align="center">NONE</p>

**COUNTRY(IES) OF ULTIMATE DESTINATION:** Iraq and the United States

**CONDITIONS, NOTES, AND DESCRIPTIONS OF 10 CFR PART 110, APPENDIX P,  
BYPRODUCT AND SOURCE MATERIALS TO BE EXPORTED AND/OR IMPORTED**  
(NOTE: SEE PAGE 2 FOR DEFINITIONS OF CATEGORY 1 AND CATEGORY 2)

Export and import, to and from Iraq, of quantities of Am-241/Be, Am-241, Cs-137, Ra-226, and Co-60 for use in wire line operations, and export and import, to and from Iraq, of quantities of Am-241/Be, Am-241 and Cs-137 for use in well drilling operations and surface monitoring, are authorized. When combined for shipping, these sources may aggregate to a Category 2 quantity. **See Page 3 for total number of sources and maximum activity levels for each source.**

Licensee is responsible for compliance with all applicable import, export, and other domestic regulatory requirements, including all terms and conditions of domestic material possession licenses. Licensee, if not already submitted with your application, must submit information required by 10 CFR §110.32(d) and pertinent documentation required by 10 CFR §110.32(h) at least **24 hours prior to shipment**. See Page 2 for Mandatory Pre-shipment Notifications.

Licensee shall submit by February 1<sup>st</sup> of each year one copy of a report of all americium shipments during the previous calendar year. The report must include: (1) a description of the material, including quantity; (2) approximate shipment dates; and (3) a list of recipient countries; end users; and intended use keyed to the items shipped.

License expiration date is based on established limits.

Neither this license nor any right under this license shall be assigned or otherwise transferred in violation of the provisions of the Atomic Energy Act of 1954, as amended.

This license is subject to the right of recapture or control by Section 108 of the Atomic Energy Act of 1954, as amended, and to all of the other provisions of said Acts, now or hereafter in effect and to all valid rules and regulations of the NRC.

THIS LICENSE IS INVALID UNLESS SIGNED BELOW  
BY AUTHORIZED NRC REPRESENTATIVE

NAME AND TITLE:

*Scott W. Moore*  
Scott W. Moore, Deputy Director  
Office of International Programs

DATE OF ISSUANCE:

March 11, 2010

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**MANDATORY NOTIFICATIONS:** Notifications required by 10 CFR 110.50(b)(4) are to be emailed to [hoo.hoc@nrc.gov](mailto:hoo.hoc@nrc.gov) (preferred method) or faxed to 301-816-5151. In the subject line of the email or on the fax cover page include: "10 CFR 110.50(b)(4) Notification." To contact someone in the Operations Center, use the same e-mail address or call 301-816-5100. Difficulties notifying the U.S. Nuclear Regulatory Commission must be promptly reported to the Office of International Programs' import/export licensing staff at 301-415-2344.

For international notifications see <http://www-ns.iaea.org/downloads/rw/imp-export/import-export-contact-points.pdf>.

**Table 1: Appendix P to Part 110—Category 1 and Category 2 Radioactive Material Threshold Limits**

Radioactive Material	Category 1		Category 2	
	Terabequerels (TBq)	Curies (Ci) <sup>1</sup>	Terabequerels (TBq)	Curies (Ci) <sup>1</sup>
Americium-241 (Am-241)	60	1,600	0.6	16
Americium-241/Beryllium (Am-241/Be)	60	1,600	0.6	16
Californium-252 (Cf-252)	20	540	0.2	5.4
Curium-244 (Cm-244)	50	1,400	0.5	14
Cobalt-60 (Co-60)	30	810	0.3	8.1
Cesium-137 (Cs-137)	100	2,700	1.0	27
Gadolinium-153 (Gd-153)	1,000	27,000	10.0	270
Iridium-192 (Ir-192)	80	2,200	0.8	22
Plutonium-238 <sup>2</sup> (Pu-238)	60	1,600	0.6	16
Plutonium-239/Beryllium <sup>2</sup> (Pu-239/Be)	60	1,600	0.6	16
Promethium-147 (Pm-147)	40,000	1,100,000	400	11,000
Radium-226 <sup>3</sup> (Ra-226)	40	1,100	0.4	11
Selenium-75 (Se-75)	200	5,400	2.0	54
Strontium-90 (Y-90)	1,000	27,000	10.0	270
Thulium-170 (Tm-69)	20,000	540,000	200	5,400
Ytterbium-169 (Yb-169)	300	8,100	3.0	81

**Calculation of Shipments Containing Multiple Sources or Radionuclides:**

The "sum of fractions" methodology for evaluating combinations of radionuclides being transported is to be used when import or export shipments contain multiple sources or multiple radionuclides. The threshold limit values used in a sum of the fractions calculation must be the metric values (i.e., TBq).

I. If multiple sources and/or multiple radionuclides are present in an import or export shipment, the sum of the fractions of the activity of each radionuclides must be determined to verify the shipment is less than the Category 1 or 2 limits of Table 1, as appropriate. If the calculated sum of the fractions ratio, using the following equation, is greater than or equal to 1.0, then the import or export shipment exceeds the threshold limits of Table 1 and the applicable security provisions of this part apply.

II. Use the equation below to calculate the sum of the fractions ratio by inserting the actual activity of the applicable radionuclides or of the individual sources (of the same radionuclides) in the numerator of the equation and the corresponding threshold activity limit from the Table 1 in the denominator of the equation. Ensure the numerator and denominator values are in the same units and all calculations must be performed using the TBq (i.e., metric) values of Table 1.

R1 = activity for radionuclides or source number 1  
 R2 = activity for radionuclides or source number 2  
 RN = activity for radionuclides or source number n

AR1 = activity limit for radionuclides or source number 1  
 AR2 = activity limit for radionuclides or source number 2  
 ARN = activity limit for radionuclides or source number n

$$\sum_{i=1}^n \left[ \frac{R_1}{AR_1} + \frac{R_2}{AR_2} + \frac{R_n}{AR_n} \right] \geq 1$$

<sup>1</sup> The values to be used to determine whether a license is required are given in TBq. Curie (Ci) values are provided for practical usefulness only and are rounded after conversion.

<sup>2</sup> The limits for Pu-238 and Pu-239/Be in this table apply for imports to the U.S. The limits for exports of Pu-238 and Pu-239/Be can be found in § 110.21.

<sup>3</sup> Discrete sources of Radium-226.



# LICENSE CONDITIONS (CONT'D)

## SOURCES AUTHORIZED FOR WIRELINE OPERATIONS:

TOTAL NUMBER OF SOURCES	SEALED SOURCE OR DEVICE TYPE	ISOTOPE	END USE	TOTAL MAXIMUM ACTIVITY OF ALL SOURCES FOR EACH ISOTOPE
	Density Logging	Cs-137	Wireline Density Logging	
	Neutron Logging	Am-241/Be	Wireline Density Logging	
	Well-site Verifier	Cs-137	Wireline Density verifier	
	Well-site Verifier	Am-241/Be	Wireline Density verifier	
	Lab source	Am-241/Be	Wireline Density Lab Calibration	
	Well-site Verifier	Ra-226	Wireline Gamma Ray Calibration	
	Lab source	Am-241/Be	Wireline Density Lab Calibration	
	Lab source	Cs-137	Wireline Density Lab Calibration	
	Lab source	Cs-137	Wireline Density Lab Calibration	
	Production Logging	Am-241	Production Logging	
	Production Logging	Cs-137	Production Logging	
	Crystal Detectors	Cs-137	Density tool verification	
	Crystal Detectors	Cs-137	Density tool verification	
	Crystal Detectors	Cs-137	Density tool verification	
	Collar Markers	Co-60	Marking Drill Collar Location	

## SOURCES AUTHORIZED FOR LOGGING WELL DRILLING OPERATIONS AND SURFACE MONITORING:

TOTAL NUMBER OF SOURCES	SEALED SOURCE OR DEVICE TYPE	ISOTOPE	END USE	TOTAL MAXIMUM ACTIVITY OF ALL SOURCES FOR EACH ISOTOPE
	Density Logging	Cs-137	LWD Density Logging	
	Neutron Logging	Am-241/Be	LWD Density Logging	
	Neutron Verifier	Am-241/Be	Jobsite Verification	
	Neutron Lab Test	Am-241/Be	Lab Tests	
	Density Lab Test	Am-241	Lab Tests	
	Gamma Calibration	Cs-137	Lab Tests	
	Alpha Calibration	Am-241/Be	Lab Tests	
	Gamma Detectors	Cs-137	Density Tool Verification	
	Gamma Detectors	Cs-137	Density Tool Verification	
	Gamma Detectors	Cs-137	Density Tool Verification	
	Gamma Detectors	Cs-137	Density Tool Verification	
	Gamma Detectors	Cs-137	Density Tool Verification	
	Densitometers	Cs-137	Surface monitor	
	Densitometers	Cs-137	Surface monitor	

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