

IMPORT/EXPORT LICENSE

NRC FORM 250P (12/05)

United States of America  
U.S. Nuclear Regulatory Commission

NRC LICENSE NO.: XBP0043

LICENSE EXPIRES: July 31, 2007

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Pursuant to the Atomic Energy Act of 1954, as amended, and the Energy Reorganization Act of 1974 and the regulations of the Nuclear Regulatory Commission issued pursuant thereto, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued to the licensee authorizing the import/export of the materials and/or production or utilization facilities 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.

LICENSEE

Halliburton Energy Services  
2101 City West Blvd., Bldg 2  
Houston, TX 77242

ATTN: Pam Loprete

APPLICANT'S REF. NO.: Application dtd 03/07/06

ULTIMATE FOREIGN CONSIGNEE(S)

China National Logging Company  
No. 3 Jingyuan Rd., Shijingshan District  
Beijing 100043  
China

INTERMEDIATE CONSIGNEE(S) IN FOREIGN  
COUNTRY(IES) AND/OR IN THE U.S.

NONE

OTHER PARTY(IES) TO IMPORT/EXPORT

NONE

COUNTRY(IES) OF ULTIMATE DESTINATION: China.

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

quantities of Am-241/Be and Cs-137, contained in sealed sources for use in oil and gas well logging operations, are authorized for export to China National Logging Company (China).

Licensee is responsible for compliance with all applicable import, export, and other domestic regulatory requirements, including all terms and conditions of domestic materials license(s).

License expiration date is based on expiration date of NRC Materials License 42-01068-07.

//////////////////////////////////////END//////////////////////////////////////

Neither this license or 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, and the Energy Reorganization Act of 1974.

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 U.S. Nuclear Regulatory Commission.

THIS LICENSE IS INVALID UNLESS SIGNED BELOW  
BY AUTHORIZED NRC REPRESENTATIVE

*Margaret M. Doane*

NAME AND TITLE: Margaret M. Doane, Deputy Director  
Office of International Programs

DATE OF ISSUANCE: May 22, 2006

**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	60	1,600	0.6	16
Americium-241/Be	60	1,600	0.6	16
Californium-252	20	540	0.2	5.4
Curium-244	50	1,400	0.5	14
Cobalt-60	30	810	0.3	8.1
Cesium-137	100	2,700	1.0	27
Gadolinium-153	1,000	27,000	10.0	270
Iridium-192	80	2,200	0.8	22
Plutonium-238 <sup>2</sup>	60	1,600	0.6	16
Plutonium-239/Be <sup>2</sup>	60	1,600	0.6	16
Promethium-147	40,000	1,100,000	400	11,000
Selenium-75	200	5,400	2.0	54
Strontium-90 (Y-90)	1,000	27,000	10.0	270
Thulium-170	20,000	540,000	200	5,400
Ytterbium-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

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

**NOTIFICATIONS:** The notifications required by 10 CFR 110.50(b)(4) are to be emailed to hoo1@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. The contact information is current at the time of license issuance. Difficulties notifying the U.S. Nuclear Regulatory Commission must be promptly reported to the Office of International Programs' Import/Export licensing staff.

<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.