

NRC FORM 7
(02-2016)
10 CFR 110



U. S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0027

EXPIRES: 11/30/2018

**APPLICATION FOR NRC EXPORT OR IMPORT
LICENSE, AMENDMENT, RENEWAL,
OR CONSENT REQUEST(S)**
(See Instructions on Pages 4 and 5)

Estimated burden per response to comply with this mandatory collection request: 2.4 hours. This submittal is reviewed to ensure that the applicable statutory, regulatory, and policy considerations are satisfied. Send comments regarding burden estimate to the FOIA, Privacy, and Information Collections Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollections.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0027), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

PART A. FOR NRC USE ONLY

☒ PUBLIC OR ☐ NON-PUBLIC

DATE RECEIVED

4/3/18

LICENSE NUMBER

PXB 220.00

DOCKET NUMBER

11006304

ADAMS ACCESSION NUMBER

PART B. TO BE COMPLETED FOR ALL LICENSES, AMENDMENTS, RENEWALS, OR CONSENT REQUESTS

(If more space is needed to complete any of the items, use Pages 3-4 first, and then attach additional sheets, if necessary.)

| | | |
|---|--|---|
| 1. NAME AND ADDRESS OF APPLICANT/LICENSEE Baker Hughes Oilfield Operations, LLC Attn: James Elrod 2001 Rankin Road Houston, Texas 77073 | 1a. NAME OF APPLICANT'S CONTACT James Elrod | 1b. APPLICANT'S REFERENCE NUMBER BHI-North Sudan |
| | 1c. PHONE NUMBER (713) 879-3627 | 1d. FAX NUMBER (713) 879-0176 |
| | 1e. E-MAIL ADDRESS jim.elrod@bakerhughes.com | |

2. TYPE OF ACTION REQUESTED (Check One)

☒ EXPORT (Parts B, C, E) ☐ IMPORT (Parts B, D, E) ☐ AMENDMENT/RENEWAL (Current License Number: _____) ☐ CONSENT REQUEST (Parts B, C) (Current License Number: _____)

| | | | |
|------------------------------|--|---|---|
| 3. CONTRACT NUMBER(S) N/A | 4. FIRST SHIPMENT DATE See Attachment A | 5. LAST SHIPMENT DATE See Attachment A | 6. PROPOSED EXPIRATION DATE See Attachment A |
|------------------------------|--|---|---|

PART C. TO BE COMPLETED FOR EXPORT LICENSES, AMENDMENTS, OR RENEWALS

(If more space is needed to complete any of the items, use Pages 3-4 first, and then attach additional sheets, if necessary.)

| | | | |
|--|---|--|---|
| 7. NAME(S) / ADDRESS(ES) OF SUPPLIERS AND/OR OTHER PARTIES TO THE EXPORT None | 8. NAME(S) / ADDRESS(ES) OF INTERMEDIATE FOREIGN CONSIGNEE(S) None | 9. NAME(S) / ADDRESS(ES) OF ULTIMATE FOREIGN CONSIGNEE(S) See Attachment A - Page 1 | |
| 7a. FUNCTION(S) PERFORMED/SERVICE(S) PROVIDED Not Applicable | 8a. INTERMEDIATE USE(S) Not Applicable | 9a. ULTIMATE END USE(S) See Attachment A - Page 1 | |
| 10. DESCRIPTION OF RADIOACTIVE MATERIALS, SEALED SOURCES, NUCLEAR FACILITIES, EQUIPMENT, OR COMPONENTS; FOR NUCLEAR EQUIPMENT INCLUDE TOTAL DOLLAR VALUE OF EQUIPMENT FOR EXPORT See Attachment A - Pages 2 and 3 | 10a. MAX TOTAL VOLUME / ELEMENT WGT (KG), OR TOTAL ACTIVITY (TBq) See Attachment A - Pages 2 and 3 | 10b. MAX ENRICHMENT OR WGT % See Attachment A - Pages 2 and 3 | 10c. MAX ISOTOPE WGT (KG) See Attachment A - Pages 2 and 3 |
| 11. FOREIGN OBLIGATIONS (BY COUNTRY AND BY PERCENTAGE OF MAXIMUM TOTAL VOLUME) Not Applicable | | | |

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U. S. NUCLEAR REGULATORY COMMISSION

**APPLICATION FOR NRC EXPORT OR IMPORT
LICENSE, AMENDMENT, RENEWAL, OR CONSENT REQUEST(S) (Continued)**

| | | | |
|------------------------------------|-----------------------------------|------------------------|---|
| LICENSE NUMBER 8XB220-00 | DOCKET NUMBER 110010304 | ADAMS ACCESSION NUMBER | <input checked="" type="checkbox"/> PUBLIC OR <input type="checkbox"/> NON-PUBLIC |
|------------------------------------|-----------------------------------|------------------------|---|

PART D. TO BE COMPLETED FOR IMPORT LICENSES, AMENDMENTS, OR RENEWALS
(If more space is needed to complete any of the items, use Pages 3-4 first, and then attach additional sheets, if necessary.)

| | | | |
|--|---|--|---|
| 12. NAME(S) / ADDRESS(ES) OF FOREIGN SUPPLIERS AND/OR OTHER PARTIES TO IMPORT N/A | 13. NAME(S) / ADDRESS(ES) OF INTERMEDIATE CONSIGNEE(S) N/A | 14. NAME(S) / ADDRESS(ES) OF ULTIMATE U. S. CONSIGNEE(S) Baker Hughes Oilfield Operations, LLC Houston Technology Center 2001 Rankin Road Houston, Texas 77073 | |
| 12a. NRC EXPORT LICENSE NUMBER(S) (if applicable) N/A | 13a. LICENSE NUMBER(S) / EXPIRATION DATE(S) N/A | 14a. LICENSE NUMBER(S) / EXPIRATION DATE(S) Texas License L04452 Expiration: November 30, 2022 | |
| | 13b. INTERMEDIATE USE(S) N/A | 14b. ULTIMATE END USE(S) Evaluation and re-distribution for Oil and Gas Well Logging Operations | |
| 15. DESCRIPTION OF RADIOACTIVE MATERIALS, SEALED SOURCES, NUCLEAR FACILITIES See Attachment A - Pages 2 and 3 | 15a. MAX TOTAL VOLUME / ELEMENT WGT (KG), OR TOTAL ACTIVITY (TBq) See Attachment A - Pages 2 and 3 | 15b. MAX ENRICHMENT OR WGT % See Attachment A - Pages 2 and 3 | 15c. MAX ISOTOPE WGT (KG) See Attachment A - Pages 2 and 3 |


16. FOREIGN OBLIGATIONS (BY COUNTRY AND BY PERCENTAGE OF MAXIMUM TOTAL VOLUME)

N/A

PART E. TO BE COMPLETED FOR ALL LICENSES, AMENDMENTS, RENEWALS OR CONSENT REQUEST(S)

| | |
|--|--|
| 17. ADDITIONAL INFORMATION PROVIDED ON PAGES 3, 4, AND/OR ON SEPARATE SHEETS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO | 17a. COPIES OF RECIPIENTS' AUTHORIZATIONS PROVIDED? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO |
|--|--|

18. CERTIFICATION: I, the applicant's authorized official, hereby certify that this application is prepared in conformity with Title 10, Code of Federal Regulations, and that all information provided is correct to the best of my knowledge.

| | | |
|---|---|---------------------------------|
| 18a. PRINT NAME AND TITLE OF AUTHORIZED OFFICIAL RALF STEPHAN WIRELINE SERVICES SUPPLY CHAIN DIRECTOR | 18b. SIGNATURE -- AUTHORIZED OFFICIAL  | 18c. DATE 3/14/18 |
|---|---|---------------------------------|



James K Elrod
Radiation Safety Officer
Baker Hughes Oilfield Operations, LLC
Houston Technology Center
Houston, Texas 77073
United States of America

March 16, 2018

Subject: North Sudan Export Application

To: Joanne Savoy
Stephen C. Baker

Dear Joanne and Stephen,

The purpose of this letter is to request the approval of an export license of radioactive material for future oil well logging operations in the country of North Sudan. The attached application and supporting documentation outlines our request and adheres to all government regulations set forth by the US Nuclear Regulatory Commission.

This application is in support of all Baker Hughes oilfield operations and includes detailed information about the type and quantities of radioactive material we will need to export into North Sudan to support our Wire-line, Logging While Drilling (LWD) operations. The application also includes a security plan, which covers the location storage, job-site and transportation security.

Please note that the total quantity of radioactive material requested will not be exported in a single shipment and this quantity is being requested in anticipation of covering both initial and future operational requirements. With the startup of our operations, we will only export a fraction of the total quantity requested as stated in our supporting documentation.

Any information you have questions or concerns with feel free to contact me at any time. Baker Hughes will be more than willing to work with any issues you may have. My contact information is provided in the supporting documentation and on this letter.

Regards,

A handwritten signature in blue ink, appearing to read 'James Elrod'.

James Elrod
Radiation Safety Officer
Baker Hughes Houston Technology Center

ATTACHMENT A

6/20/2017

Additional Supporting Information to NRC Form 7

(Boxes 4, 5, & 6) Explanation of quantities and dates – Not more than four sets of the quantities requested are required for the initial mobilization which is planned within 2 months of the granting of this license or as soon as possible thereafter. A set consists of 1 of each item listed in the response for Box 10. The remaining quantities are for potential growth and will be exported only as and when required. The proposed expiration of 3 years allows operational time in country for business review and renewal of license. The last shipment date will correspond with the expiration date of this license.

(Box 9) Name(s) / Address(es) of Ultimate Foreign Consignee

Principal Business name and main office:

National Upstream Solution Co Ltd.
22/1 Block 9/10
Africa Street
Khartoum, Sudan

Locations of 2 primary Bunkers for storage of radioactive material:

NUS Rabak Base
White Nile State
Rabak, Ministry of Petroleum
Near Kosti Bridge
13°9'8"N 32°44'4"E

NUS Heglig Base
West Kordofan State,
Heglig, Contractors Street
South of Heglig Airport
9°59'54"N 29°24'13"E

(Boxes 9a) Information on end use/user – The sealed sources are intended to be used in oil and gas well logging operations and the maintenance of oil well logging instruments.

The end user will be National Upstream Solutions Co. LTD. The sources and equipment will remain solely under the control of Baker Hughes employees for the entire length of the agreement contract. During this time Baker Hughes employees will be training NUS employees on proper use and security of the radioactive material, but solely remain in control of the radioactive material.

(Boxes 10, 10a, 10b, 10c and 15, 15a, 15b, 15c) List/description of sources

In addition to the double-encapsulated sources (refer to Attachment A, Box 17, Additional Information) that are placed in the logging instruments when they are used in a well; we also use a variety of smaller sources for testing and calibration both in the laboratory and at the well-site.

BHOO requests an NRC license to export the quantity of sources as listed in the following table for our wire-line operations agreement with NUS in North Sudan. This quantity will not be exported in one shipment. The quantities exported will be in small increments dependent upon the quantity needed for startup operations and then future needs to support expanding operations.

This Chart indicates sources requested for Wire Line Operations in North Sudan.

| Type | Isotope | Individual Source Strength | Qty | Total Curie | Use | Type of material | Physical Form |
|--------------------|---------|----------------------------|-----|----------------|-------------------------------|--------------------|--------------------|
| Density Logging | Cs137 | 2.5 Ci | 8 | 20 | Density logging | Byproduct material | Special form (OWL) |
| Neutron Logging | Am241Be | 15 to 15.5 Ci | 8 | 120 to 124 | Neutron logging | Byproduct material | Special form (OWL) |
| Well-site Verifier | Am241Be | 400 mCi | 8 | 3.2 | Neutron verifier | Byproduct material | Special form |
| Lab Source | Am241Be | 75 to 100 mCi | 2 | 0.150 to 0.200 | Lab Calibration | Byproduct material | Special form |
| Well-site Verifier | Ra226 | 2.5 µCi | 8 | 0.00002 | Gamma Ray calibrator | Natural material | Sealed source |
| Lab Source | Am241Be | 1 mCi | 4 | 0.004 | Lab Calibration | Byproduct material | Special form |
| Lab Source | Cs137 | 10 µCi | 4 | 0.00004 | Lab Calibration | Byproduct material | Special form |
| Lab Source | Cs137 | 100 µCi | 4 | 0.0004 | Lab Calibration | Byproduct material | Special form |
| Production Logging | Am 241 | 150 mCi | 5 | 0.75 | Production Logging | Byproduct material | Special form |
| Production Logging | Cs 137 | 100 mCi | 5 | 0.50 | Production Logging | Byproduct material | Special form |
| Crystal Detectors | Cs 137 | 500 nCi | 20 | 0.00001 | Density tool Verification | Byproduct material | Solid |
| Crystal Detectors | Cs 137 | 325 nCi | 20 | 0.000006 | Density tool Verification | Byproduct material | Solid |
| Crystal Detectors | Cs 137 | 295 nCi | 20 | 0.000006 | Density tool Verification | Byproduct material | Solid |
| Collar Markers | Co 60 | 5 µCi | 200 | 0.001 | Marking Drill Collar Location | Byproduct material | Solid |

This Chart indicates sources requested for Drilling Services Operations in North Sudan.

| Type | Isotope | Individual Source Strength | Qty | Total Curie | Use | Type of material | Physical Form |
|--------------------|---------|----------------------------|-----|-------------|----------------------|--------------------|--------------------|
| Density Logging | Cs137 | 2.5 Ci | 4 | 10 | Density logging | Byproduct material | Special form (OWL) |
| Neutron Logging | Am241Be | 5 Ci | 4 | 20 | Neutron logging | Byproduct material | Special form (OWL) |
| Well-site Verifier | Am241Be | 60 mCi | 10 | 0.6 | Neutron verifier | Byproduct material | Special form |
| Lab Source | Am241Be | 200 mCi | 2 | 0.4 | Lab Calibration | Byproduct material | Special form |
| Lab Source | Am 241 | 2 mCi | 2 | 0.004 | Gamma Ray calibrator | Natural material | Sealed source |
| Density Detectors | Cs 137 | 198 nCi | 12 | 0.000003 | Lab Calibration | Byproduct material | Special form |
| Density Detectors | Cs 137 | 42 nCi | 12 | 0.0000005 | Lab Calibration | Byproduct material | Special form |

Box 17 Additional Information

Baker Hughes Oilfield Operations Inc ("BHOO") intends to lease equipment which will include radioactive material that will be used by NUS in North Sudan in operations providing oil field services, including oil well logging. Oil well logging involves conveying specially designed "logging" instruments into the wells to measure properties of the rocks and fluids such as resistivity and porosity.

The sources and equipment will remain solely under the control of Baker Hughes employees for the entire length of the agreement contract.

BHOO offers a full range of well logging services including those requiring density and neutron porosity devices which provide fundamental measurements used in almost every oil or gas well globally. These devices utilize special form sealed sources containing either Cs137 or Am241. The sources used during down-hole operations also meet Oil Well Logging (OWL) specifications and are at a minimum double encapsulated to protect against the high pressures and corrosive fluids encountered in oil wells. Encapsulated radioactive sources can be acquired in many countries as they are widely used in other industries such as medical and food processing, however double encapsulated OWL sources are unique to the well logging industry. Vendors in the US supply all the OWL encapsulated sealed sources used by well logging service companies. For this reason BHOO wishes to export to NUS in North Sudan a defined quantity of sealed sources produced to our specifications by our suppliers QSA Global, Gammatron, and Eckert & Ziegler.

The only criterion in "10CFR 110.42 Export Licensing Criteria" that applies to the sealed sources which are the subject of this application is paragraph (c) which requires that "the proposed export is not inimical to the common defense and security". We believe, and hope that the Commission will agree, that the Category 3 quantity of byproduct material contained in the individual sealed sources that we wish to export, would not constitute a threat to the defense and security of the US. The information supplied in this application supports this position.

In the event of down-hole abandonment of sources, BHOO requests that the export limits imposed under this license be applicable only to operational sources in-country. BHOO requests approval to be able to replace any abandoned sources without amendment or change to the license, upon appropriate notifications to the NRC.

Security and Safety Plan (see NUS Radiation Safety & Security Procedures)

The Safety and Security plan are provided by NUS and includes the construction of the radiation storage bunker, (see Radiation Storage Layout)

For the security measures for storage and jobsite, (see Section 4 pages 7 thru 11).

For security measures during transportation of the radioactive material, (see Section 9 pages 35 thru 37).

Contact Information

Contact people in regards to receiving confidential information from the NRC, Homeland Security, or any other related government agency shall be the following:

Jim Elrod
Radiation Safety Officer
Houston Technology Center
Office: 713-879-3627
Cell: 713-205-3031
Fax: 713-879-0176

Dylan Dailey
Radiation Safety Officer
Global HSE Operations
Office: 713-879-1052
Cell: 903-407-1542
Fax: 713-879-2667

Brian Caldwell
Global Director HSE Radiation Team
Office: 713-879-2028
Cell: 832-451-0754
Fax: 713-879-2667