



UNITED STATES  
**NUCLEAR REGULATORY COMMISSION**  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

December 6, 2011

Docket No. 03031174  
Control No. 575970

License No. 07-28386-01

Norman P. Lanier  
Corporate Radiation Safety Officer  
Tracerco  
a business unit of Johnson Matthey, Inc.  
31 Albe Drive, Suite 5  
Newark, DE 19702-1360

SUBJECT: TRACERCO, VOIDANCE OF APPLICATION FOR LICENSE AMENDMENT,  
CONTROL NO. 575970

Dear Mr. Lanier:

This concerns the subject application for an Amendment to your material license to perform underwater activities. You requested a license amendment (ML112550466), dated September 9, 2011, to fabricate a family of underwater detection service (UDS) devices containing a variety of sealed sources to be installed on a remote operated vehicle (ROV). You cited NUREG-1556, Volume 3, Rev. 1, and Section 5.1.3 as justification for not requiring a sealed source and device (SSD) review because each sealed source would have an activity of less than 200 millicuries. The requirements for an exemption from a custom SSD review are outlined in NUREG-1556, Volume 3, Rev 1, Section 5.1.3 and states that SSD reviews are not required when the device contains less than 200 millicuries of radioactive material, but this Section also lists a number of additional criteria for the exemption such as:

- the licensing reviewer has made a determination that the applicant is qualified by training and experience and has adequate facilities and equipment to safely use and handle the requested material in unsealed form; thus, the applicant would not have to rely on the intrinsic safety of the sealed source or device; and
- new custom evaluations must be performed when the custom devices are transferred to new locations because the environment of use may be different at each location.

Based on our evaluation of the materials submitted and consultation with the Office of Federal and State Materials and Environmental Management Programs, the NRC has determined that Tracerco has not demonstrated the adequacy of facilities and equipment to safely handle the source in an unsealed form either at their home facility, or at user sites. Such a demonstration is essential because the use of these devices are intended to be underwater at different customer locations, in flood areas and offshore, and under partial control of third parties. Furthermore, the registered sealed sources Tracerco is proposing to use have not been reviewed for use in the conditions described in the application. The proposed use of these devices should undergo a full SSD engineering evaluation as described in 10 CFR 32.210 and NUREG 1556, Volume 2, Revision 1 to be used as a custom device series.

N. Lanier

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Additionally, the proposed use of this device is unique to previously requested gauging devices for use on land. Tracerco should document that their requested activities will not significantly affect the quality of the environment. In order to perform a review in the future, we need additional information as detailed in Enclosure 1.

The NRC requires the above additional information before we can proceed with your request. We have voided your amendment application because of the need to acquire a sealed source and device evaluation for this activity. This action is taken without prejudice to the resubmission of your request.

Sincerely,

***Original signed by Kathy Modes***

Kathy Modes  
Senior Health Physicist  
Decommissioning Branch  
Division of Nuclear Materials Safety

Enclosure:  
Additional Information Needed For Re-Submittal

cc:  
William Mixon, Radiation Safety Officer/Eastern Region Operations Manager

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**SUNSI Review Complete: KModes**

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| DATE   | 12/7/2011 |   |         |         |  |  |

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ENCLOSURE 1  
Additional Information Needed For Re-Submittal

1. Tracerco needs to demonstrate the adequacy of facilities and equipment to safely handle the source in an unsealed form either at their home facility, or at user sites. Such a demonstration is essential because the use of these devices are intended to be underwater at different customer locations, in flood areas and offshore, and under partial control of third parties. Furthermore, the registered sealed sources Tracerco is proposing to use have not been reviewed for use in the conditions described in the application. The proposed use of these devices should undergo a full SSD engineering evaluation as described in 10 CFR 32.210 and NUREG-1556, Volume 3, Revision 1 to be used as a custom device series.
2. You have requested to utilize a device that will not be operated in a normal industrial land-based environment. As a result, we need to ensure that an Environmental Assessment pursuant to 10 CFR Part 51 will not be necessary. The proposed use of this device is unique to previously requested gauging devices for use on land. Tracerco should document that their requested activities will not significantly affect the quality of the environment. Please submit further documentation that this requested activity will not significantly affect the quality of the human environment in which the device will be utilized (i.e. water quality, cesium chloride solubility, length of time underwater, etc.).
3. Your amendment request indicates that you will utilize cesium-137 sealed sources in a water-proof housing for underwater applications. However, your request does not indicate whether the cesium-137 is in a soluble or insoluble form. Please indicate the form of the cesium-137 sealed sources to be utilized. If the cesium-137 is soluble, such as cesium-137 chloride, please indicate how you will assure source integrity during use and ensure the cesium-137 will not be dispersed into the environment.
4. In your request you indicate stainless steel housings will be utilized to contain the sealed sources underwater. Please note that fresh water and sea water have different properties that must be taken into consideration. For example, sea water has a high salt content and fresh water may contain manganese oxidizing microorganisms, both, of which, may lead to corrosion of the stainless steel. Please describe your preventative maintenance procedures, specifically any QA/QC procedures for assessing degradation of components, for example; cracking, corroding, effect of salinity, or microbial issues, that are necessary for maintaining the integrity of your sealed sources and associated components. In addition, please describe how you will assure a water tight seal for the stainless steel housings?
5. Your request did not contain a source recovery procedure in the unlikely event a source is lost during Remote Operating Vehicle (ROV) operations. Please provide your emergency procedures for recovering a sealed source that may become detached or lost during operations involving licensed material.

6. Section 18.4.4 of your operating and emergency procedures states that you will utilize a source handling tool to transfer the sealed source holder from the shipping container to the underwater diagnostic services (UDS) source housing. However, in the retrieval of the sealed source from the UDS housing, in section 18.5 of your operating and emergency procedures, there is no mention of utilizing a source handling tool to transfer the sealed source holder from the source housing to the shipping container. Please confirm whether a source handling tool will be utilized or not during the sealed source retrieval process once the job is completed. Additionally, please confirm where the source retrieval process will occur, i.e. under water, on the vessel deck, or on the dock.
7. Your request does not specify if personnel dosimetry will be utilized. Please confirm that you will either perform a prospective evaluation demonstrating that unmonitored individuals are not likely to receive, in one year, a radiation dose in excess of 10% of the allowable limits in 10 CFR Part 20 or that you will provide dosimetry that meets the requirements listed under "Criteria" in NUREG-1556, Vol. 18, "Consolidated Guidance About Materials Licenses: Program Specific Guidance About Service Provider Licensees," dated November 2000. Otherwise, please describe an alternative method for demonstrating compliance with the referenced regulations. Please refer to Appendix M of the NUREG for guidance in preparing your resubmission. If dosimetry will be provided, please specify the type of personnel dosimetry you provide, and the frequency for changing the dosimeters. In addition, please confirm that dosimetry will be processed and evaluated by a NVLAP-accredited processor as required by 10 CFR 20.1501(c).
8. Your request states that the mounting of the UDS frame will be attached to the remote operating vehicle (ROV) by the ROV third party owner. Although it appears from your procedures that ROV personnel will not be directly handling licensed material, your request does not address if the ROV personnel will be required to have basic radiation safety training before operating the ROV with the sealed source attached to the UDS frame/ROV. Please describe your program for training and refresher training all persons who handle licensed material or who frequent areas where licensed material is used. This training program must include a review of emergency procedures and response criteria and include sections that are tailored to various types of radiation and ancillary workers, such as, authorized users, ROV operators, security, and other ancillary personnel. Please confirm that you will maintain records of initial and refresher training, that include a list of topic(s) covered, the date, the instructor(s) and student(s) names, and the time spent. The model training program in Appendix H of NUREG-1556, Volume 18 may be helpful in preparing your resubmittal.
9. Your request does not state whether survey and monitoring instruments will be available to the radiation safety staff when handling sealed sources and devices. Please describe the types and numbers of survey and monitoring instruments available to the radiation safety staff. Please note, the instruments should be appropriate for the types and quantities of materials requested on your license application, and you should have instruments for both quantitative as well as qualitative measurements. The model instrument program in Appendix J of NUREG-1556, Volume 18 may be helpful in preparing you resubmittal.

10. Section 18.4.5 of your operating and emergency procedures states that a Tracerco worker will tighten the housing seal to ensure a water-tight fit. However, your diagram depicts a padlock through a hasp that can't be tightened. Please describe how the source housing will be sealed and tightened. Furthermore, please indicate whether the seal will be tightened using a hand, wrench or alternate means. In addition, please specify the type of Tracerco worker, e.g. radworker, authorized user, etc., that will be working with the sealed sources and housings, and include details of their required training.
11. Section 18.6.5 of your operating and emergency procedures states that any leaking sealed source will be "repaired." You are not currently authorized to perform this task. Please confirm if you intend to be authorized for this task. If so, please describe your procedures for repairing leaking sealed sources. Please ensure these procedures include, but not limited to, ALARA, dosimetry, training, a review of emergency procedures, waste, surveys, and any non-routine operations (refer to Appendix N in NUREG-1556, Volume 4, for guidance).
12. 10 CFR 20.1802 requires that the licensee control and maintain constant surveillance over materials in unrestricted areas that are not in storage. Your operating and emergency procedures indicate that this custom device could be considered a portable gauge. However, your request did not indicate how you will control and maintain constant surveillance over licensed material. Please describe how you will preclude the unauthorized removal of licensed material from the place of storage and in unrestricted areas. Please describe how long the device will be underwater and how you will maintain constant surveillance over the device when being utilized underwater.
13. A review of the diagram submitted with your request does not clearly depict how the source housing is attached and will remain attached during operations. Please submit a description of how the source housing will be secured to the UDS yolk frame and how you intend to keep the housing from becoming accidentally detached during routine and non-routine operations. Furthermore, please describe how you will ensure the source housing can withstand the depths and pressures encountered while underwater.
14. Your request does not indicate how you will determine regulatory jurisdiction while conducting operations underwater or in off-shore waters. Please describe how you will determine the jurisdictional status of the water in which you will conduct licensed operations. Please review 10 CFR 150.20 as it may be helpful when preparing your resubmittal.

15. Please note that the information contained in Appendix A, "Emergency Phone Numbers" requires updating. NRC Region I and Region II merged their materials program (Reference: 10 CFR 30.6(b)(2)(ii)). Please remove Region II from your listing and combine the affected States with Region I. In addition, Minnesota, Wisconsin, Pennsylvania, Virginia, and New Jersey are now Agreement States. Please remove them from your list as the NRC no longer has jurisdiction in these States. The Agreement State information can be found on our web page at <http://nrc-stp.ornl.gov/rulemaking.html>. Please revise Appendix A and provide with your resubmittal.
  
16. Please note that since this added licensed activity can be categorized as a mobile non-intrusive detection system, the NRC will add program code 03130 to your license. You may want to contact Shirley Crutchfield from the NRC Fees office at 301-415-6097 to assess any possible increase of your annual fee.