

Suggested Format for Providing Information Requested in Items 5 Through 11 of U.S. Nuclear Regulatory Commission Form 313

The table below is designed to help applicants develop their applications. In some instances, it is acceptable to simply indicate, by checking the box in the third column (Yes), that the applicant commits to adopting the model procedures referenced. If the third column contains an asterisk (*), the licensee is expected to describe its program or submit its procedures for the particular item. In this instance, the applicant is requested to check the box in the fourth column, indicating that the described program or procedures are attached to the application (NRC Form 313). If the third column contains an "N/A," the licensee is not required to describe or submit its programs and procedures during the licensing phase. However, these program areas may be reviewed during an inspection.

The table below also may be used as a License Reviewer Checklist for applications for ARDL licenses.

Item No.	Suggested Response	Yes	Description Attached
5.	<p>RADIOACTIVE MATERIAL Unsealed or Sealed Byproduct Material</p> <ul style="list-style-type: none"> • For unsealed materials: <ul style="list-style-type: none"> — For each radionuclide, provide the element name with mass number, the chemical and/or physical form, and the maximum requested possession limit. - <p style="margin-left: 20px;"> Hydrogen-3, Any, 50 millicuries Carbon-14, Any 50 millicuries Phosphorus-32 Any 20 millicuries </p> — For potentially volatile materials (e.g., I-125, I-131, H-3), specify whether the material will be free (volatile) or bound (non-volatile) and the requested possession limit for each form. <p style="margin-left: 20px;">Hydrogen-3 in solvent (bound)</p> • For sealed materials: <ul style="list-style-type: none"> — Identify each radionuclide (element name and mass number) that will be used and specify the maximum activity per source. Also, specify the maximum number of sources or total activity for each radionuclide. <p style="margin-left: 20px;">Nickel-63, 15 millicuries</p> — Provide the manufacturer's or distributor's name and model number for each sealed source and device requested. <p style="margin-left: 20px;"> Amersham Model NBC New England Nuclear Model NER-004 U.S. Radium Company Model LAB 508-3 </p> 	<p>*</p> <p>*</p> <p>*</p> <p>*</p>	<p>X</p> <p>X</p> <p>X</p> <p>X</p>

	<ul style="list-style-type: none"> — Confirm that each sealed source, device, and source/device combination is registered as an approved sealed source or device by NRC or an Agreement State and will be possessed and used in accordance with the conditions specified in the registration certificate. Provide the SSD registration certificate number, if available. — For each sealed source, device, or source and device combination that is not registered, provide the applicable information, as described in 10 CFR 30.32(g) and 32.210. • Provide an emergency plan, if required by 10 CFR 30.32(i) and 30.72 or 10 CFR 70.22(i) 	*	[]
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Item No.	Suggested Response	Yes	Description Attached
5.	<p>RADIOACTIVE MATERIAL (Continued) Financial Assurance and Recordkeeping for Decommissioning State the following: "Pursuant to 10 CFR 30.35(g), 10 CFR 40.36(f), and 10 CFR 70.25(g) and 10 CFR 70.51(b)(3), as appropriate, we will maintain records important to decommissioning and transfer these records to an NRC or Agreement State licensee before licensed activities are transferred or assigned, in accordance with 10 CFR 30.34(b), 10 CFR 40.46, and 10 CFR 70.36, as appropriate. Furthermore, pursuant to 10 CFR 30.51(f), 10 CFR 40.61(f), and 10 CFR 70.51(a)(3), as appropriate, prior to license termination, we will forward the records required by 10 CFR 30.35(g), 10 CFR 40.36(f), and 10 CFR 70.25(g), as appropriate, to the appropriate NRC Regional Office."</p> <p style="text-align: center;">AND</p> <p>If financial assurance is required, submit evidence of financial assurance following the guidance of NUREG-1757, Volume 3.</p>	<p style="text-align: center;">X</p> <p style="text-align: center;">*</p>	<p style="text-align: center;">[]</p>
6.	<p>PURPOSE(S) FOR WHICH LICENSED MATERIAL WILL BE USED List the specific use or purpose of each radionuclide.</p> <p>Hydrogen-3 Carbon-14 Phosphorus-32</p> <p>These radionucleotides will be used for in vitro based testing in a laboratory setting.</p> <p>Provide a description of uses in animals, if applicable. — Provide a description of tracer or field studies, if applicable.</p>	<p style="text-align: center;">*</p> <p style="text-align: center;">*</p> <p style="text-align: center;">*</p>	<p style="text-align: center;">X</p> <p style="text-align: center;">X</p> <p style="text-align: center;">X</p>
7.	<p>INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE Radiation Safety Officer (RSO)</p> <ul style="list-style-type: none"> • Provide the name of the proposed RSO and information demonstrating that the proposed RSO is qualified by training and experience. Information should include, at a minimum: <ul style="list-style-type: none"> — formal training or education in radiation safety [topics covered, duration of training, when training was received, identity and location of training provider (note: a course outline may be provided)] — experience using licensed materials (types, forms, quantities handled, activities performed, duration of experience) — experience performing the duties of an RSO (activities, duration of experience, scope of program) 	<p style="text-align: center;">*</p>	<p style="text-align: center;">X</p>

	<p>Ronald L Gagnon Jr Radiation Safety Officer Course – 40 Hours - NV5 40 Hour Hazwoper Trainer – National Association of Safety Professionals - 2021 Certified Safety Manager Course - National Association of Safety Professionals – 2021 DOT, NRC, & IATA Shipping RAM Training NV5 – 2022 Radiation Safety – Commerce Learning Center -6 months, inventories, license amendments and application paperwork. Decommissioning survey preparation</p> <p>Authorized Users (AUs) (persons who will use or supervise the use of licensed materials)</p> <ul style="list-style-type: none"> • Provide the name of each proposed AU, with the types and quantities of licensed material to be used. • Provide information demonstrating that each proposed AU is qualified by training and experience to use the requested licensed materials. Information should include, at a minimum: 	<p>*</p> <p>*</p>	<p>X</p> <p>X</p>
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Item No.	Suggested Response	Yes	Description Attached
7.	<p>INDIVIDUAL(S) RESPONSIBLE FOR RADIATION SAFETY PROGRAM AND THEIR TRAINING AND EXPERIENCE (Continued)</p> <p>Authorized Users (AUs) (persons who will use or supervise the use of licensed materials) (Continued)</p> <ul style="list-style-type: none"> — formal training or education in radiation safety [topics covered, duration of training, when training was received, identity and location of training provider (note: a course outline may be provided)] — experience using licensed materials (types, forms, quantities handled, activities performed, duration of experience) <p>Tod Leighfield, PhD -Twenty-nine years of experience using various radionuclides (S35, 32P, 3H, 14C, 51Cr) in lab based research. In situ application of 14C for primary productivity uptake experiments. - Synthesized hydrogen-3 and carbon-14 based chemicals, then conducted in vivo exposures using same for doctoral dissertation</p>	*	X

	<p>and numerous publications (PhD granted by the Medical University of South Carolina, 2013)</p> <ul style="list-style-type: none"> -Utilized phosphorous-32 for in vitro enzyme assays -Led multiple international regional training events as an International Atomic Energy Agency instructor for courses that taught the use of radionucleotides for the detection of environmental compounds (1999-2019) -Conducted expert missions for the International Atomic Energy Agency to assess research programs (2003-2018) - Completed 40hr radiation safety officer course (Harvard School of Public Health, 2015) 		
8.	<p>TRAINING FOR INDIVIDUALS WORKING IN OR FREQUENTING RESTRICTED AREAS (Occupationally Exposed Individuals and Ancillary Personnel)</p> <p>Submit a description of the radiation safety training program, including topics covered, groups of workers, assessment of training, qualifications of instructors, and the method and frequency of training.</p> <p>Basic Radiation Safety Course – Online Commerce Learning Center</p>	*	X
9.	<p>FACILITIES AND EQUIPMENT</p> <ul style="list-style-type: none"> — Describe the facilities and equipment that will be available at each location where radioactive material will be used (see Appendix G of this NUREG for topics to consider). Include the area(s) assigned for the receipt, storage, security, preparation, measurement, use, and disposal of radioactive materials. — Submit a diagram showing the locations of shielding, the proximity of radiation sources to unrestricted areas, and other items related to radiation safety. — When applicable to facilities where radioactive materials may become airborne, the diagrams should contain schematic descriptions of the ventilation systems, with pertinent airflow rates, pressures, filtration equipment, and monitoring systems. — Diagrams should be drawn to a specified scale, or dimensions should be indicated. — For facilities where it is anticipated that more than one laboratory or room may be used, a generic laboratory or room diagram may be submitted. — Describe how facility design and procedures for operation will minimize contamination of the facility and the environment, facilitate eventual decommissioning, and minimize the generation of radioactive waste. <p>Materials will be received in the HML receiving bay (E section) Materials will be used in laboratory N119. N119 is secured behind two locked doors (one to the section, and one to the posted work area) Geiger counters and scintillation counters are available in N119</p>	<p>*</p> <p>*</p> <p>*</p> <p>*</p> <p>*</p> <p>*</p>	<p>X</p> <p>[]</p> <p>[]</p> <p>[]</p> <p>[]</p> <p>[]</p>

	<p>Sealed sources are located in the HML second floor chemistry laboratories.</p> <p>Only N119 will be utilized for the experimental use of non-sealed radionucleotides with wipe tests conducted to measure contamination.</p> <p>Ron...storage location for waste? (haz mat building??)</p>		
10.	<p>RADIATION SAFETY PROGRAM</p> <p>Audit Program</p> <p>The applicant is not required to, and should not, submit its audit program to the NRC for review during the licensing phase. However, the audit program may be reviewed during NRC inspections.</p>	N/A	N/A

Item No.	Suggested Response	Yes	Description Attached
10.	<p>RADIATION SAFETY PROGRAM (Continued)</p> <p>Radiation Monitoring Instruments</p> <p>Describe the instrumentation that will be used to perform required surveys</p> <p style="text-align: center;">AND</p> <p>State that: "We will use instruments that meet the radiation monitoring instrument specifications published in Appendix I in NUREG-1556, Volume 7, Revision 1, 'Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope.' We reserve the right to upgrade our survey instruments as necessary."</p> <p>Instrument Calibration</p> <p>State that instruments will be calibrated before first use, at least annually thereafter, and after any repair, by a vendor that the NRC or an Agreement State has licensed to perform instrument calibration. Hand held Geiger counters and Scintillation counters are calibrated annually by outside vendors specializing in the equipment being used.</p> <p style="text-align: center;">OR</p> <p>State that: "We will implement the model radiation survey meter calibration program published in Appendix I in NUREG-1556, Volume 7, Revision 1 'Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope.'"</p> <p style="text-align: center;">OR</p> <p>Submit equivalent procedures for instrument calibrations.</p>	<p style="text-align: center;">*</p> <p style="text-align: center;">[]</p> <p style="text-align: center;">X</p> <p style="text-align: center;">[]</p> <p style="text-align: center;">*</p>	[]

	<p>Material Receipt and Accountability</p> <ul style="list-style-type: none"> State that: “We will develop, implement, and maintain procedures for ensuring accountability of licensed materials at all times.” If applicable, provide the following statement: “We will comply with the National Source Tracking System (NSTS) reporting requirement as described in 10 CFR 20.2207.” <p style="text-align: center;">AND</p> <ul style="list-style-type: none"> Provided either of the following: 	x	
	<ul style="list-style-type: none"> State that: “Physical inventories will be conducted at intervals not to exceed 6 months, to account for all sealed sources and devices received and possessed under the license. Records of inventory will be maintained for a period of 5 years from the date of each inventory, and will include the radionuclides, quantities, manufacturer’s name and model numbers, and the date of the inventory.” <p style="text-align: center;">OR</p> <ul style="list-style-type: none"> Provide a description of the procedures for ensuring that no sealed sources have been lost, stolen, or misplaced. 	x	
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10.	<p>RADIATION SAFETY PROGRAM (Continued)</p> <p>Occupational Dose Provide one of the following statements: “We will maintain, for inspection by the NRC, documentation demonstrating that unmonitored individuals are not likely to receive a radiation dose in excess of the limits in 10 CFR 20.1502.”</p> <p style="text-align: center;">OR</p> <p>“We will monitor individuals in accordance with the guidance in the section titled, ‘Radiation Safety Program–Occupational Dose’ in NUREG–1556, Volume 7, Revision 1, ‘Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Academic, Research and Development and Other Licenses of Limited Scope.’”</p> <p style="text-align: center;">OR, IN LIEU OF THESE STATEMENTS,</p> <p>Provide a description of an alternative method for demonstrating compliance with the referenced regulations.</p> <p>Public Dose No response is required from the applicant in a license application, but compliance will be examined during inspection. During NRC inspections, licensees must be able to demonstrate, by measurement or calculation, that the TEDE to an individual likely to receive the highest dose from the licensed operation does not</p>	[]	
		x	
		*	[]
		N/A	N/A

<p>exceed the annual limit for members of the public. See Appendix K of this NUREG for examples of methods to demonstrate compliance.</p> <p>Safe Use of Radionuclides, Security, and Emergency Procedures</p> <p>State that: “We will develop, implement, and maintain procedures for safe use, security and emergencies.”</p> <p style="text-align: center;">OR</p> <p>State that: “We will adopt the procedures for the safe use of radionuclides, security and emergencies as published in Appendix L in NUREG–1556, Volume 7, Revision 1, ‘Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope.’”</p> <p style="text-align: center;">OR</p> <p>Provide procedures for safe use of radionuclides, security of materials and emergencies.</p> <p>Emergency Plan</p> <p>If required by 10 CFR 30.32(i) and 30.72 or 10 CFR 70.22(i), provide an emergency plan for responding to the release of radioactive material, in accordance with the criteria listed in 10 CFR 30.32(i)(3) or 10 CFR 70.22(i)(3), as a separate part of the application.</p>	<p>X</p> <p>[]</p> <p>* []</p> <p>* []</p>	
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Item No.	Suggested Response	Yes	Description Attached
10.	<p>RADIATION SAFETY PROGRAM (Continued)</p> <p>Surveys</p> <p>State: “We will survey our facility and maintain contamination levels in accordance with the survey frequencies and contamination levels published in Appendix M in NUREG–1556, Volume 7, Revision 1, ‘Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope.’”</p> <p style="text-align: center;">OR</p> <p>Submit a description of an alternate radiation survey program, including survey frequencies and contamination levels, to evaluate a radiological hazard.</p> <p>Leak Tests</p> <p>State: “Leak tests will be performed at the intervals approved by the NRC or an Agreement State and specified in the SSD registration certificate.”</p> <p style="text-align: center;">AND</p> <p>If leak tests will be analyzed by an outside entity, state: “Leak tests will be analyzed by an organization authorized by the NRC or an Agreement State to provide leak testing services to other licensees.</p>	<p>X</p> <p>* []</p> <p>[]</p> <p>X</p>	<p>[]</p> <p>[]</p>

<p>Leak tests may be collected by the licensee, using the sealed source or plated foil manufacturer's (distributor's) and the leak test kit supplier's instructions. Such leak test kits will be supplied by an organization authorized by the NRC or an Agreement State to provide leak testing services."</p>		
<p style="text-align: center;">OR</p> <p>If leak tests will be analyzed by the applicant, state: "We will implement the model leak test program published in Appendix N in NUREG-1556, Volume 7, Revision 1 'Consolidated Guidance About Materials Licenses: Program-Specific Guidance About Academic, Research and Development, and Other Licensees of Limited Scope.'"</p>	<p>[]</p>	
<p style="text-align: center;">OR</p> <p>Submit a description of alternate equipment or procedures to evaluate a radiological hazard and for determining whether there is radioactive leakage from sealed sources or plated foils.</p>	<p>*</p>	<p>[]</p>
<p>Transportation No response is needed from applicants during the licensing phase. Transportation issues will be reviewed during inspections.</p>	<p>N/A</p>	<p>N/A</p>
<p>Security Program for Category 1 and Category 2 Radioactive Material No response is required from an applicant or licensee. Compliance with access authorization and security program requirements may be reviewed during NRC inspections.</p>	<p>N/A</p>	<p>N/A</p>

Item No.	Suggested Response	Yes	Description Attached
11.	<p>WASTE MANAGEMENT</p> <p>State that: “We will use the model waste procedures published in Appendix P in NUREG–1556, Volume 7, Revision 1, ‘Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope.’”</p> <p style="text-align: center;">OR</p> <p>If the applicant wishes to use only selected model procedures, state that: “We will use the [specify either (i) decay-in-storage or (ii) disposal of liquids into sanitary sewerage] model waste procedures that are published in Appendix P in NUREG–1556, Volume 7, Revision 1, ‘Program-Specific Guidance About Academic, Research and Development, and Other Licenses of Limited Scope.’”</p> <p style="text-align: center;">AND</p> <p>If the applicant wishes to compact or incinerate radioactive waste, provide the requested information concerning these activities in Appendix P to this NUREG.</p> <p style="text-align: center;">OR</p> <p>If needed, the applicant should request authorization for extended interim storage of waste.</p>	<p>[]</p> <p>*</p> <p>*</p> <p>*</p>	<p></p> <p>x</p> <p>[]</p> <p>[]</p>