4.6 Technical Staffing and Training

The State of Vermont is using the NRC Inspection Manual Chapter 1248 Formal Qualifications Program for Federal and State Materials and Environmental Management Programs as a model for technical staffing and for training program elements. This is described in this section of the Application. In Section 4.6.1 below, we describe the organization of the program, and provide a staffing analysis to indicate the organization will be sufficient to maintain the Agreement State Program. In Section 4.6.2, we describe the staff qualification plan, and in Section 4.6.3, we describe the qualifications of the current staff.

4.6.1 Organization

As described in Section 4.1.2, the Radioactive Materials Program will reside within the Environmental Health Division of the Vermont Department of Health. The staff responsible for the Agreement State Program work in the Radiological Sciences Program which is shown in the organization chart for the Environmental Health Division below. The staff devoting the most time to the Radioactive Materials Program are the Radiological Sciences Chief, the Senior Radiological Health Specialist, and the Radiological and Toxicological Scientist. The Program will also have support from the Division Business Administrator, the Environmental Health Information Director, the Environmental Compliance & Enforcement Advisor and additional legal support from the Office of the Attorney General. For emergency preparedness, the Radiological & Toxicological Analyst and State Radiological & Toxicological Risk Assessor support prevention, response and recovery efforts.

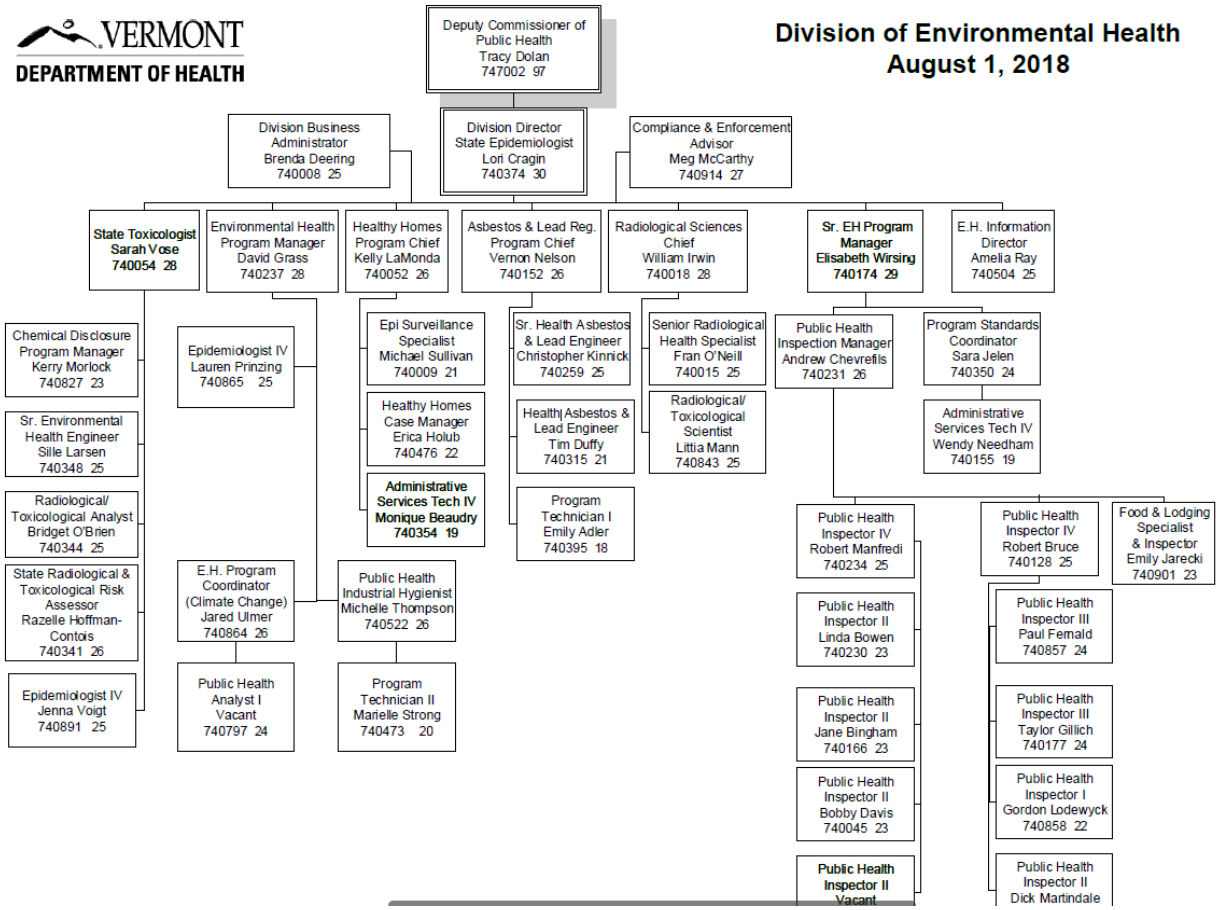

Figure 7: Division of Environmental Health

The primary document describing the qualifications and training of radioactive Materials Program staff is RMPP 5.1 *Qualifications and Training*. In this procedure, various roles are described. The Radiological Sciences Chief serves the role of Radiation Control Program Director, who manages the training and qualification program. The Director joins the Senior Radiological Health Specialist and the Radiological and Toxicological Scientist to make up the Radioactive Materials Program. These staff will become qualified Inspectors and License Reviewers following the guidance of RMPP 5.1. *Qualification and Training* and are tracked in RMPP 5.1 Attachment 5.1-1 *Radiological Health Specialist Qualification Journal*. The RMPP and Qualification Journal are in Section 4.6.2 below.

Staff Needs Analysis

An analysis was performed using the forms from the Handbook for Processing an Agreement. The first form is the Staff Needs Analysis Table 4.6-1. The values in the table are based on the types and numbers of licensees at the time of this application. The second form is the Staff Resource Analysis, Table 4.6-2. This indicates the time in days available for each of the individuals who may conduct inspections and license review activities. The final form, Table 4.6-3, shows the difference between the amount of staff time needed and available. It indicates that for the radioactive material licensees in Vermont, there is more than a sufficient amount of staff time available. Each of the categories of inspections in the tables include security inspections.

To estimate the time necessary to complete licensing and inspection activities, a review of all Vermont license activity over the prior ten years was conducted. Currently there are thirty-three specific radioactive materials licenses in the state of Vermont; twelve medical; twelve for measuring the properties of materials (portable gauges), four academic broad scope, two service providers, one nuclear pharmacy, one veterinary hospital, and one public health laboratory. The time allotted for individual licensing actions is based on an assumption that a typical licensing effort will encompass sixteen hours to complete, including email, telephone, and letter correspondence between the Radioactive Materials Program staff member and the applicant/licensee. This estimate includes program management and administrative functions.

Inspection program estimates also include time for inspection preparation, travel, inspection report generation and supervisory accompaniments. The VDH Radioactive Materials Program Staff will follow the NRC's materials program inspection frequencies as indicated in Enclosure 1 of NRC Inspection Manual 2800. This enclosure is used to describe the inspection priority codes assigned to program codes in the Vermont Radioactive Materials Program in RMPP 1.1 *Review of an Initial Application for a License or an Amendment Request* Attachment 1.1-6.

Based on conservative assumptions, Vermont's licensing and inspection activities will require 69 staff days for inspection and 129 staff days for licensing each year (the totals in the fifth and eighth columns in Table 4.6-1). Mr. Fran O'Neill can devote a minimum of 80 days to inspection and 133 days per year to licensing, while Ms. Littia Mann can devote 21 days to inspections and 25 days per year to licensing activities. The total days per year for inspection and licensing from the Radioactive Materials Program staff comes to 101 for inspections and 158 for licensing.

These allocations of time are considered reasonable. Allowing for weekends, holidays, and vacations, there are 240 work days per year. Mr. O'Neill will be 100 percent devoted to the Radioactive Materials Program, while Ms. Mann can provide 25 percent of her time to it. Using these percentages of a 240 work-day year, the two may provide as many as 300 work days to a program requiring 195 work days. These calculations are estimates, but indicate a sufficient margin exists with the Vermont staffing levels.

A guide for the suggested number of technical staff members is also provided in the Handbook for Processing an Agreement: "Agreement States typically employ 1 to 1.5 technical staff members per 100 active licenses." The number of licenses varies from year-to-year, especially with reciprocity, but has historically numbered less than 50. The Vermont Radioactive Materials Program with two staff members qualifying as Inspectors and License Reviewers meets this guidance. The Handbook also states that "the staff must consist of at least two technical staff." The Vermont Department of Health will always strive to maintain at least two qualified inspectors and license reviewers but is currently working to have three. Dr. Irwin is working on his qualifications, but has not completed them, at the time of this application.

Table 4.6-1

Staff Needs Analysis

License Category	No. of Licenses	Licensing actions/yr	Staff days/ action	Licensing staff days	Inspections per year	Staff days/ inspection	Inspection staff days
Academic Broad Scope	4	10	2	20	1	5	5
Nuclear Med Imaging and diagnostic	10	30	2	60	2	5	10
Nuclear Med – therapy	2	3	2	6	1	5	5
Bone Mineral	0	0	0	0	0	0	0
Brachytherapy	1	2	2	4	1	5	5
Teletherapy	0	0	0	0	0	0	0
Medical – Broad Scope	1	2	2	4	1	5	5
Nuclear Pharmacy	1	4	2	8	1	5	5
Fixed Gauge	7	2	1	2	1	3	3
Portable Gauge (+ reciprocity)	12	4	2	8	2	5	10
Industrial-other includes service providers	1	2	2	4	1	5	5
Broad Scope Industrial	0	0	0	0	0	0	0
Industrial Radiography (reciprocity)	0	8	1	8	3	5	15
GL Devices	~4,000*	100	0.05	5	1	1	1
Well Logging	0	0	0	0	0	0	0
LLRW broker	0	0	0	0	0	0	0
TOTAL				129			69

*This is the number of devices located in Vermont, not licenses.

Table 4.6-2

Staff Resource Analysis (in Days)

Staff Member	O'Neill		Mann		Total	
License Category	Insp	Lic	Insp	Lic	Insp	Lic
Academic Broad Scope	6	20	2	2	8	22
Nuclear Med – Imaging and Diagnostic	12	50	2	10	14	60
Nuclear Med - therapy	6	10	2	2	8	12
Bone Mineral	0	0	0	0	0	0
Brachytherapy	6	5	2	2	8	7
Teletherapy	0	0	0	0	0	0
Medical - Broad Scope	6	5	2	1	8	6
Nuclear Pharmacy	6	10	2	2	8	12
Fixed Gauge	3	2	1	1	4	3
Portable Gauge	12	10	2	2	14	12
Industrial – other includes service providers	6	6	2	1	8	7
Broad Scope Industrial	0	0	0	0	0	0
Industrial Radiography	15	10	4	2	19	12
LLRW Broker	0	0	0	0	0	0
General Licenses	2	5	0	0	2	2
Well Logging	0	0	0	0	0	0
Total	80	133	21	25	101	158

Table 4.6-3

Staff Balance Analysis

	Inspection staff days		Licensing staff days	
License Category	Needed	Available	Needed	Available
Academic Broad Scope	5	9	20	24
Nuclear Med – Imaging and Diagnostic	10	15	60	70
Nuclear Med - Therapy	5	9	6	14
Bone Mineral Analysis	0	0	0	0
Brachytherapy	5	9	4	8
Teletherapy	0	0	0	0
Medical - Broad Scope	5	9	4	7
Nuclear Pharmacy	5	9	8	14
Fixed Gauge	3	5	2	4
Portable Gauge	10	15	8	14
Industrial – other; includes irradiators	5	9	4	8
Broad Scope Industrial	0	0	0	0
Industrial Radiography	15	21	8	14
Well Logging	0	0	0	0
LLRW broker	0	0	0	0
Total	68	110	124	177

4.6.2 Qualification Program

The qualification program is described in RMPP 5.1 *Qualification and Training*. This is attached below. Individual accomplishment of the qualification process is documented in that person's Qualification Journal. In general, individuals are trained to conduct inspections and to do license review activities through training classes and on-the-job training. Individuals maintain proficiency through on-going training that enhances licensing and inspection professional abilities. These are described in the RMPP in Section 4.6.1 of this application. Individual completion of the qualification components are documented in that person's Qualification Journal. This, too, is in Section 4.6.3 of this application.

The processes described in RMPP 5.1 are for future staff. The qualifications of current technical staff are described in Section 4.6.3 of this application. The Radiation Control Program Director will take all steps available to replace staff that either leaves or retires from the Agreement State Program. One element of this is technical training and qualification of other Radiological and Toxicological Sciences Program staff. This will be undertaken after the three current staff members assigned to the Radioactive Materials Program are fully qualified.

Vermont is a statutory member of the New England Radiological Health Conference which maintains the New England Compact on Radiological Health Protection. By statute in each of the six States in the Compact, assistance is to be provided when a Compact State requests it. Assistance from a Compact State can be, and has been in the past, provided to augment a requesting Compact State's staff when there is a temporary vacancy. This could be used by Vermont should such a vacancy occur and strain Vermont's radioactive materials program licensing and inspection work completion capabilities. A copy of the Compact is found in Appendix 4.1-9. The enabling legislation in Vermont, which is identical to that in the other five New England States, is statutory and found in 18 VSA §§ 1601 – 1622, New England Compact on Radiological Health Protection. This is attached as Appendix 4.1-10.

State of Vermont Department of Health

Radioactive Materials Program

Procedure 5.1, Revision 0

Qualifications and Training

Prepared By: _____ **Date:** _____

Reviewed By: _____ **Date:** _____

Approved By: _____ **Date:** _____

Effective Date:

Revision	Date	Description of Changes
0		

Radioactive Materials Program Procedure 5.1, Revision 0

Qualifications and Training

Table of Contents

Section

1.0 PURPOSE

1.1 Applicability
1.2 References
1.3 Files
1.4 Definitions

2.0 RESPONSIBILITIES

2.1 Radiological Health Specialist
2.2 Senior Radiological Health Specialist
2.3 Radiation Control Program Director

3.0 PROCEDURE

3.1 Required Initial Training
3.2 Qualified Inspector and/or License Reviewer - Core Program
3.3 Specialized Training & Qualification
3.4 Refresher Training

4.0 RECORDS

5.0 ATTACHMENTS TO RMPP SECTION 5

5.1 **Attachment 5.1-1 Radiological Health Specialist Qualifications Journal**

Qualifications and Training

1.0 PURPOSE

1.1 Applicability

1.1.1 This procedure defines the minimum essential elements of training required for each Radiological Health Specialist position and additional training required for the performance of specialized activities. The procedure also details the training required to maintain ~~a~~ qualified technical staff.

1.1.2 The procedure describes the Qualifications Journal maintained by/for the Radiological Health Specialist.

1.2 References

1.2.1 NRC Inspection Manual Chapter 1248, "Qualification Programs for Federal and State Materials and Environmental Management Programs."

1.2.2 NRC Inspection Manual Chapter 1248, Appendix A, "Materials Health Physics License Review Qualification Journal."

1.2.3 NRC Inspection Manual Chapter 1248, Appendix B, "Materials Health Physics Inspector Qualification Journal."

1.2.4 NRC Inspection Manual Chapter 1248, Appendix F "Training Requirements and Qualification Journal for Decommissioning Inspector."

1.2.5 Vermont Radioactive Materials Rule.

1.3 Files

1.3.1 Radiological Health Specialist Qualifications Journal(s).

1.4 Definitions

1.4.1 Advanced training: Training beyond the core training that is used to enhance inspector or license reviewer expertise. Not required for all Radiological Health Specialists, it is encouraged to increase the capabilities of the individual and the program.

1.4.2 Agency: The Radioactive Materials Program (RMP) of the Vermont Department of Health (VDH, Department or Health Department).

1.4.3 Core training: Minimum classroom and on-the-job training required for an

inspector or license reviewer.

1.4.4 Continuing education: Education designed to update and maintain level of proficiency. Methods used may include training courses, professional meetings, review of policy and guidance documents, reading professional journals or newsletters, etc.

1.4.5 Inspector: A Radiological Health Specialist qualified to plan, perform, and document an inspection of a specific category of license and where appropriate, to prepare enforcement documents and review the response to such a document for adequacy.

1.4.6 Lead Inspector: A Radiological Health Specialist qualified to plan, supervise, and document an inspection by a team of inspectors. An inspector shall not act as a lead inspector in any category of license that they are not qualified, unless being evaluated or supervised by a qualified inspector. A lead inspector is responsible for review of a licensee's reply to a Notice of Violation (NOV) when a Team Inspection is conducted.

1.4.7 License Reviewer: A Radiological Health Specialist qualified to review, process and document a specific category of licensing action. A license reviewer shall not perform a second review for any category of license for which they are not qualified.

1.4.8 On-the-job Training (OJT): A training method using structured hands-on activities to develop the required job-related knowledge and skills.

1.4.9 Program Orientation: Instructions provided to a new employee regarding state, Health Department, and agency policies, statutes, rules, and procedures.

1.4.10 Refresher Training: Additional training required after qualification that allows a staff member to maintain a "qualified" status.

1.4.11 Specialized Training: Additional training necessary for each category of radioactive material use, such as medical, industrial radiography, well logging, large irradiators, etc. Specialized training in processing allegations, medical events, over exposures, and incidents may also be necessary.

1.4.12 Supervision: The Radiation Control Program Director may review and approve inspection and licensing activities, will discuss inspection and licensing issues with the inspector and Radioactive Materials Program staff, will determine if adequate inspection and licensing actions are performed, and will identify any additional training needs of the inspectors and license reviewers.

1.4.13 Trainee: A Radiological Health Specialist assigned to the Radioactive Materials Program, working on qualification in an inspection or license action program.

2.0 RESPONSIBILITIES

2.1 Radiological Health Specialist

2.1.1 Assists in the orientation of new employees in the RMP and ensures he or she has access to copies of the Vermont Radioactive Materials Rule, RMP Procedures, NRC guidance and other required or relevant documents for training.

2.1.2 Maintains his or her personal training records and Qualifications Journals.

2.2 Senior Radiological Health Specialist

2.2.1 When qualified in each program type, is responsible for assisting trainees in becoming qualified, as assigned.

2.2.2 Participates in a continuing education program, refresher training, specialized training, and qualification programs, as assigned.

2.2.3 May serve as the Radioactive Materials Program Manager.

2.3 Radiation Control Program Director

2.3.1 Manages the training and qualification program.

2.3.2 Assures that a qualified staff is available to adequately perform the RMP licensing, inspection, and enforcement activities.

2.3.3 Periodically audits the RMP training and qualification program.

3.0 PROCEDURE

Health Department and RMP orientation shall be provided by other RMP staff and by Department of Health and Department of Human Resources staff. Attachment 5.1-1 **Radiological Health Specialist Qualification Journal** is used to document self-study, formal, on-the-job, core, specialized, enhancement, refresher training, and continuing education to satisfy the requirements of NRC Inspection Manual Chapter 1248, "Qualification Programs for Federal and State Materials and Environmental Management Programs" and its appendices to qualify and maintain qualification as an Inspector and License Reviewer.

The qualification journal contains a detailed series of activities and study areas. The Radiological Health Specialist will complete the activities in the qualification journal usually within two years after hire. If more than two years is needed to complete their qualification journal, the RCPD may grant an extension. The RCPD may designate qualified staff members to sign and verify qualification for the training activities completed.

3.1 Required Initial Training

The self-study, core training, and on-the-job training described below is required for all Radiological Health Specialists assigned to the RMP to perform inspections of material licensee's facilities and to process radioactive material licensing actions. Credit for training may be granted by the RCPD for applicable education, training, and/or experience received prior to joining the RMP.

3.1.1 Self Study: The trainee is responsible for completing the following activities and for having completion signed off in their Qualification Journal by the RCPD or assignee, as soon as possible. The new employee should be encouraged to ask questions of and assistance from other Radiological Health Specialists with more experience in the RMP.

- Review of Vermont Radioactive Materials Rule.
- Review of RMPPs.
- Review of appropriate NRC Regulatory Guides.
- Review of NUREG-1556, "Consolidated Guidance About Materials Licenses."
- Review of current and historical (as needed) RMP reading file.
- Review of appropriate NRC Information Notices.
- Review of appropriate RMP Information Notices.

3.1.2 Core Training: The following courses are minimum formal classroom training requirements. Attendance at these courses will be scheduled, as openings become available through the NRC or equivalent training courses. The RCPD may grant an exemption to courses based on previous education and/or training.

- Advanced Health Physics Course (H-201)
- Inspection Procedures Course (G-108)
- Nuclear Medicine Course (H-304)
- Licensing Procedures Course (G-109)
- Brachytherapy and Gamma Knife Course (H-313)
- Industrial Radiography (H-305)
- Transportation of Radioactive Materials (H-308)
- Materials Control and Security Systems (S-201)

3.1.3 On-the-Job Training (OJT): The following activities, Inspection (I) and

Licensing (L), shall be conducted in concert with a qualified inspector or license reviewer at a specific category licensee facility or on a specific category license action. Items (I) and (L) shall be completed for each of the principal categories of licensees and licensing actions. These are identified in the table in Section 3.2 below. The individual actions shall be conducted at different licensee facilities or on different license actions. The trainee shall inspect, or process license actions as follows:

3.1.3.1 Type (I) Inspection of Specific Categories of Licensees

3.1.3.1.1 Trainee observes the qualified inspector preparing for and conducting an inspection. During the inspection, the trainee may be assigned minor duties that don't interfere with the observation of the inspection.

3.1.3.1.2 Under the supervision of the qualified inspector, the trainee prepares for, conducts, and records findings for assigned parts of the inspection. This step should be conducted with at least two different types of licenses.

3.1.3.1.3 Under the observation of the RCPD, the trainee prepares for and conducts an inspection, including recording inspection findings and preparing enforcement correspondence. If problems are observed, this activity should be repeated.

3.1.3.2 Type (L) Processing of Specific Categories of License Licensing Actions

3.1.3.2.1 The trainee is provided examples of standard licenses, access to the NUREG-1556 Series, Vermont's Radioactive Materials Rule, standard form letters, standard deficiency paragraphs, reviewer checklists, and standard license formats and assigned directed review of selected licensing case work. Directed review consists of:

3.1.3.2.1.1 Trainee observes the reviewer processing an application for a license or a license renewal in entirety.

3.1.3.2.1.2 Trainee will be assigned sample licensing actions for evaluation.

3.1.3.2.1.3 Trainee shall be assigned processing of selected license actions under the supervision of a reviewer.

3.1.3.2.2 Under the supervision of a reviewer, the trainee processes a license application or a license renewal in entirety, including preparing the license, tying-down all license conditions, and recommending the license for signature to the license reviewer. This step should be conducted twice with different reviewers and licensing actions.

3.1.3.2.3 Under the observation of the RCPD or assignee, the trainee processes an application for license or an application for license renewal in entirety, including preparing the license, tying down all license conditions, and recommending the license to the RCPD or assignee for signature. If problems are identified this step may be repeated.

3.2 Qualified Inspector and/or License Reviewer

3.2.1 The trainee becomes qualified as an inspector or license reviewer in one or more of the various core program categories as described in the following table by completing the classroom, on-the-job training and supervised inspections as describe in subsection 3.1. If all the section 3.1 items have been completed and signed-off in the trainee's Qualification Journal, a trainee becomes qualified as an inspector or license reviewer as follows:

Training Completed	OJT Completed	Qualified Program
Advanced Health Physics (H-201) Inspection Procedures (G-108) Transportation of Rad. Mat. (H-308)	All Broad Scopes - except Medical Fix. & Port. Gauges In vitro	Inspection – 1100-1120, 3610-3630, 3211-3213 prog. Inspection – 3120/3121 prog. Inspection – 2410 prog.
Advanced Health Physics (H-201) Inspection Procedures (G-108) Nuclear Medicine (H-401) Brachytherapy & Gamma Knife (H-313) Transportation of Rad. Mat. (H-308)	Medical Institution- (Broad – A, B, & C)	Inspection – 2110-2113 prog.
	WD required WD not required Mobile	Inspection – 2120/2200 prog. Inspection – 2121/2201 prog. Inspection – 2220/2231 prog
	HDR/Teletherapy Other Med. Uses Veterinary	Inspection – 2230/2300 prog. Inspection – 2240 programs Inspection – 2400 programs

Advanced Health Physics (H-201) Inspection Procedures (G-108) Nuclear Medicine (H-401) Transportation of Rad. Mat. (H-308)	Nuclear Pharmacies	Inspection- 2500 programs
Advanced Health Physics (H-201) Inspection Procedures (G-108) Safety Aspects of Ind. Radio. (H-305) **OR** Brachy. & Gamma Knife (H-313) Transportation of Rad. Mat. (H-308) NRC Mat. Cont. & Security Sys. (S-201)	Industrial Radiography Gamma Knife	Inspection - 3310/3320 prog. Inspection 2310 prog.
Advanced Health Physics (H-201) Licensing Procedures (H-305) Transportation of Rad. Mat. (H-308)	All Broad Scopes - except Medical Fix. & Port. Gauges In-vitro	Licensing – 1100-1120, 3610-3630, 3211-3213 prog Licensing – 3120/3121 prog Licensing - 2410
Advanced Health Physics (H-201) Licensing Procedures (H-305) Nuclear Medicine (H-304) Brachytherapy & Gamma Knife (H-313) Transportation of Rad. Mat. (H-308)	Medical Institution- (Broad – A, B, & C) No WD Required WD required Mobile HDR/Teletherapy Other Med. Uses Veterinary	Licensing – 2110-2113 prog. Licensing– 2121/2201 prog Licensing– 2120/2200 prog. Licensing – 2220/2231 prog. Licensing – 2230/2300 prog Licensing – 2240 programs Licensing – 2400 programs
Advanced Health Physics (H-201) Licensing Procedures (H-305) Nuclear Medicine (H-304) Transportation of Rad. Mat. (H-308)	Nuclear Pharmacies	Licensing - 2500 programs
Advanced Health Physics (H-201) Licensing Procedures (H-305) Safety Aspects of Ind. Radio. (H-305) **OR** Brachy. & Gamma Knife (H-313) Transportation of Radioactive Mat. (H-308) NRC Mat. Cont. & Security Sys. (S-201)	Ind. Radiography Gamma Knife	Licensing – 3310/3320 programs Licensing – 2310 programs

3.3 Specialized Training

3.3.1 In addition to the above Type I and/or Type L training and OJT requirements, the inspector and/or reviewer may become qualified in the following programs on completion of additional training, as follows:

Training Completed	Qualified Program
Irradiator Technology Course (H-315)	Inspection & Licensing 3521 programs
Safety Aspects of Well Logging (H-314)	Inspection & Licensing 3110 programs
Advanced Health Physics (H-201) Inspection Procedures (G-108) Licensing Practices and Procedures (G-109)	Decontamination Services Inspection & Licensing 3219 programs
Inspecting for Performance - Materials (G-304) Root Cause/Incident Investigation Training (G-205) Management of Allegations Training	Inspection - all programs
Characterization and Planning For Decommissioning (H-115)	Inspection- all programs 3900 Programs

3.3.2 In order to enhance the knowledge of the inspectors and reviewers and to improve the program, selected personnel shall complete the following training:

- Internal Dosimetry & Whole Body Counting (H-312)
- Environmental Monitoring for Radioactivity (H-111)
- Air Sampling for Radioactive Material (H-119)
- Respiratory Protection (H-311)

3.4 Refresher Training

3.4.1 Refresher Training

3.4.1.1 Qualified materials license reviewer and inspectors must maintain their qualification by completing 24 hours of refresher training in a

requalification schedule of 24 months. The beginning of each requalification cycle will be determined using the month and year the inspector completed their initial qualification.

3.4.1.2 Refresher training may relate to various health and safety or security topics. Examples of training that may be considered include: Health Physics Topics (H-401) of the NRC technical training courses; external training courses such as those for Preventive Radiological Nuclear Detection (PRND), directed self-study courses related to health and safety or security from the Health Physics Society (HPS), Conference of Radiation Control Program Directors (CRCPD), or other training approved by the qualified staff Radiation Control Program Director (RCPD). Examples of training that may be considered include:

- NRC-sponsored technical training courses
- State sponsored technical training courses
- Webinars sponsored by NRC, State or vendors
- External training courses provided by vendors or universities
- Lectures given at professional organizations
- State developed presentations in subjects related to health and safety, security, or regulation of radioactive materials

NOTE: License reviewers and inspectors may retake a course they had taken previously as refresher training. The RCPD should consider whether it would be beneficial for the license reviewer to retake the course, whether there have been changes in technology, regulations, or if the course has changed considerably since the last time the license reviewer took the course before allowing a course to be retaken as refresher training. If the RCPD allows the license reviewer to retake the course, the license reviewer must complete and pass the exam, if the course has one, to receive credit for the course

3.4.1.3 Before taking refresher training, Radioactive Materials Program Staff should receive approval from the RCPD to confirm that the training will be credited as refresher training.

4.0 RECORDS

4.1 Radiological Health Specialist Qualification Journal

4.2 Electronic records are found in Web-Based Licensing and S:\Environmental\Rad-Tox Program\Rad Documents\Rad Materials Program\Training Course Documents

5.0 ATTACHMENTS TO RMPP SECTION 5

Attachment 5.1-1 Radiological Health Specialist Qualification Journal

Attachment 5.1-1 to RMPP 5.1, Revision 0

Radioactive Materials Program
Radiological Health Specialist
Qualification Journals

Applicability:

This Qualifications Journal implements Radioactive Materials Program Procedure Section 5.1, "Qualifications and Training" by documenting the qualifications and training of Radioactive Materials Program (RMP) Radiological Health Specialist performing inspections at materials licensed facilities and processing licensing actions for radioactive materials licensees. The Qualifications Journal provides traceable documentation that minimum requirements are met for each RMP Radiological Health Specialist.

The Qualifications Journal consists of a series of qualification guides and signature blocks. Each signature block is used to document task completion as indicated by the appropriate signature. The corresponding qualification guide establishes the minimum knowledge levels or areas of study that must be completed for each signature block. The trainee should complete the self-study section of the qualifications before starting on the other sections.

.

NAME: **TITLE:**

SELF STUDY

VDH ORIENTATION

A. Radioactive Material Program Orientation

1. New Employee Processing _____ _____
Trainee Date

2. Facility Tour and Introductions _____ _____
RCPD Date

B. VDH Orientation

1. Review of VDH and RMP organization _____ _____
Trainee Date

2. Discussion of VDH and RMP organization _____ _____
RCPD Date

CVR 13-140-030, 'Vermont Radiation Protection Regulations'

A. Familiarization with CVR 13-140-030 _____ _____
Trainee Date

B. Discussion of contents of CVR13-140-030 _____ _____
RCPD Date

RMP POLICIES AND PROCEDURES

A. Familiarization with RMP Policies and Procedures _____ _____
Trainee Date

B. Discussion of contents of RMP Policies and Procedures _____ _____
RCPD Date

REGULATORY GUIDANCE

A. Selected VDH RMP Regulations

1. Review of Selected VDH RMP Regulations _____ _____
Trainee Date

2. Discussion of Selected VDH Regulations _____ _____
RCPD Date

B. Selected NRC Bulletins and Information Notices

1. Review of Selected NRC Bulletins _____ _____

and Information Notices	Trainee	Date
2. Discussion of Selected NRC Bulletins and Information Notices	_____ RCPD	_____ Date

C. NUREG-1556, "Consolidated Guidance About Materials Licenses"

1. Review of NUREG-1556	_____ Trainee	_____ Date
2. Discuss Review of NUREG-1556	_____ RCPD	_____ Date

FORMAL TRAINING

Copies of formal training certifications or the basis for exemption to the specific course should be appended to the back of this document.

CORE TRAINING

A. Advanced Health Physics Course (H-201)
Dates Attended: RCPD _____

B. Inspection Procedures Course (G-108)
Dates Attended: RCPD _____

C. Diagnostic and Therapeutic Nuclear Medicine Course (H-304)
Dates Attended: RCPD _____

D. Licensing Practices and Procedures Course (G-109)
Dates Attended: RCPD _____

E. Brachytherapy and Gamma Knife Course (H-313)
Dates Attended: RCPD _____

F. Safety Aspects of Industrial Radiography (H-305)
Dates Attended: RCPD _____

G. Transportation of Radioactive Materials (H-308)
Dates Attended: RCPD _____

H. Materials Control & Security Systems & Principles (S-201)
Dates Attended: RCPD_____

SPECIALIZED TRAINING

I. Irradiator Technology Course (H-315)
Dates Attended_____ RCPD _____

J. Safety Aspects of Well Logging (H-314)
Dates Attended: RCPD _____

K. Radiological Surveys in Support of Decommissioning (H-120)
Dates Attended_____ RCPD _____

L. Inspecting for Performance - Materials (G-304)
Dates Attended_____ RCPD _____

M. Root Cause/Incident Investigation Training (G-205)
Dates Attended: RCPD _____

N. Management of Allegations Training
Dates Attended_____ RCPD _____

O. Characterization and Planning for Decommissioning (H-315)
Dates Attended: RCPD

ENHANCEMENT TRAINING

P. Internal Dosimetry and Whole Body Counting (H-312)
Dates Attended_____ RCPD _____

Q. Environmental Monitoring for Radioactivity (H-111)
Dates Attended_____ RCPD _____

R. Air Sampling for Radioactive Material (H-119)
Dates Attended_____ RCPD _____

S. Respiratory Protection (H-311)
Dates Attended_____ RCPD _____

T. Multi-Agency Radiation Survey and Sites Investigation Manual (MARSSIM)
Dates Attended_____ RCPD _____

ON-THE-JOB TRAINING

INSPECTIONS

A. Program 01100 – 01120 Academic

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 01100-01120 licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 01100-01120 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 01100-01120 licensee.

Licensee_____ Date _____

_____
RCPD

B. Program 02110 - Medical Institution-Broad

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02110 licensee.

Licensee: Date:

Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02110 licensee inspection.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and, as necessary, preparing enforcement correspondence for a Program 02110 licensee.

Licensee_____ Date _____

_____
RCPD

C. Program 02120 – Medical Institution Written Directive Required

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02120 licensee.

Licensee: Dates

Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02120 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02120 licensee.

Licensee_____ Date _____

_____
RCPD

D. Core Program Code: 02121 Medical Institution Written Directive (WD) Not Required

1) Trainee observes an Inspector preparing for and conducting an inspection of a 02121 Program licensee.

Licensee: Dates

Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02121 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD the Trainee prepares for and conducts an inspection, including recording of inspection findings and, as necessary, preparing enforcement correspondence for 02121 Program Code licensee.

Licensee_____ Date _____

_____
RCPD

E. Program 02230/02300 - HDR or Teletherapy

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02230 or 02300 licensee.

Licensee: Dates:

Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of Program 02230 or 02300 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee _____ Date_____

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02230 or 02300 licensee.

Licensee_____ Date _____

_____
RCPD

F. Program 02231 Mobile Medical Services WD Required

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02231 licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02231 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02231 licensee.

Licensee_____ Date _____

_____
RCPD

G. Program 02240 Emerging Technologies

1) Trainee observes an Inspector preparing for and conducting an inspection of a 02240 Program licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of 02240 Program licensee inspections.

Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a 02240 Program licensee.

Licensee_____ Date _____

_____
RCPD

H. Program 02400 Veterinary Nonhuman Subjects

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02400 licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of Program 02400 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02400 licensee.

Licensee_____ Date _____

_____
RCPD

I. Program 02410 *In-Vitro* Testing Laboratories

1) Trainee observes an Inspector preparing for and conducting an inspection of a 02410 Program licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of 02410 Program licensee inspections.

Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02410 licensee.

Licensee_____ Date _____

_____
RCPD

J. Program 02500 - Nuclear Pharmacy

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02500 licensee.

Licensee _____ Dates_____

_____
Inspector

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions for a Program 02500 licensee inspections.

Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02500 licensee.

Licensee_____ Date _____

_____
RCPD

K. Program 03121 – Measuring Systems-Portable Gauges

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 03121 licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 03121 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03121 licensee.

Licensee_____ Date _____

_____
RCPD

L. Program 03219 Decontamination Services

1) Trainee observes an Inspector preparing for and conducting an inspection of a 03219 Program licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two 03219 different Program licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03219 licensee.

Licensee_____ Date _____

_____
RCPD

M. Program 03310/03320 - Industrial Radiography

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 03310 or 03320 licensee.

Licensee _____ Dates_____

_____
Inspector

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 03310 or 03320 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03310 or 03320 licensee.

Licensee_____ Date _____

_____
RCPD

N. Program 03510 – Irradiators Self Shielded Less Than or Equal to 10,000 Curies

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 03510 licensee.

Licensee _____ Dates_____

_____
Inspector

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of Program 03510 licensee inspections.

Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03510 licensee.

Licensee_____ Date _____

_____
RCPD

LICENSING

A. 01100-01120 Academic Broad Scope

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 01100-01120 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 01100-01120 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 01100-01120 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 01100-01120 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

B. 02110 Medical Institution Broad Scope

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02110 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02110 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 02110 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02110 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

C. 02120 Medical Institution Written Directive (WD) Required

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02120 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02120 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 02120 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02120 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

D. 02121 Medical Institution Written Directive Not Required

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02121 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02121 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 02121 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02121 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

E. 02230 High-Dose Rate Remote Afterloader

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02230 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02230 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 02230 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02230 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

F. 02231 Mobile Medical Services WD Required

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02231 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02231 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 02231 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02231 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

G. 02240 Medical Therapy Other Emerging Technologies

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02240 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02240 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 02240 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02240 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

H. 02400 Veterinary Nonhuman Subjects

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02400 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02400 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 02400 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02400 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

I. 02410 *In-Vitro* Testing Laboratories

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02410 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02410 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 02410 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02410 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

J. 02500 Nuclear Pharmacy

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02500 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02500 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 02500 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02500 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

K. 03121 Measuring Systems-Portable Gauges

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03121 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03121 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 03121 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03121 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

L. 03219 Service Providers

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03219 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03219 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 03219 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03219 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

M. 03310/03320 Industrial Radiography

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03310/03320 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03310/03320 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 03310/03320 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03310/03320 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

N. 03510 Irradiators Self Shielded Less Than or Equal to 10,000 Curies

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03510 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03510 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 03510 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03510 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

Qualification

Training Completed	Date	OJT Completed	Date	Qualified-Program Date
		Inspections		
Advanced HP (H-201)	**N/A**	All Broad Scopes –		Inspection: 01100-1120
Inspect Procedure (G-108)	____	except Medical	____	3610-3630, 32111-3213
Trans of Rad Mat(H-308)	____			programs ____
		Fixed & Port.		Inspection: 3120/3121
		Gauges	____	programs ____
	____	In vitro	____	Inspection: 2410 prog.____
Advanced HP (H-201)	**N/A**	Medical Institution	____	Inspection – 02110-02113
Inspect Procedure (G-108)	____	(Broad – A, B, & C)		programs ____
Nuclear Med (H-304) ____		No WD Required	____	Inspection – 2121/2201 ____
Brachy. & Gam. Knf (H-313)	____	WD required	____	Inspection – 2120/2200 ____
Trans. of Rad. Mat. (H-308)	____	Mobile	____	Inspection – 2220/2231 ____
		HDR/Teletherapy	____	Inspection – 2230/2300 ____
		Other Med. Uses	____	Inspection – 2240 prog. ____
		Veterinary	____	Inspection – 2400 prog. ____
Advanced HP (H-201)	**N/A**	Nuclear Pharmacy	____	Inspection – 2500 prog. ____
Inspect Procedure (G-108)	____			
Nuclear Med (H-304)	____			
Trans. of Rad. Mat. (H-308)	____			
Advanced HP (H-201)	**N/A**	Ind. Radiography	____	Inspection – 3310/3320
Inspect Procedures (G-108)	____			programs ____
Saf. Asp. Ind. Radio. (H-305)	____			
OR Brachy. & GK (H-313)	____	Gamma Knife	____	Inspection – 2310 prog ____
Trans. of Rad. Mat. (H-308)	____			
Mat Con & Sec Sys (S-201)	____			
Advanced HP (H-201)	**N/A**	Irradiator	____	Inspection- 3521 prog. ____
Inspect Procedur (G-108)	____			
Trans of Rad Mat(H-308)	____			
Irradiator Tech (H-315)	____			
Advanced HP (H-201)	**N/A**	Decommissioning	____	Inspection- 3900 prog. ____
Fund of Inspect(G-101)	____	Facilities		
OR Inspect Procedur (G-108)	____			
Trans of Rad Mat(H-308)	____			
Rad Srvy Decom (H-120)	____	Decon Services	____	Inspection – 3219 prog. ____

Licensing

Advanced HP (H-201)	**N/A**	All Broad Scopes -		Licensing – 1100-1120,
Lic Prac & Proc (G-109)	____	except Medical	____	3610-3630, 3211-3213
Trans of Rad Mat(H-308)	____			programs _____
		Fixed & Port.		Licensing: 3120/3121
		Gauges	____	programs _____
	____	In vitro	____	Licensing 2410 prog. _____
Advanced HP (H-201)	**N/A**	Medical Institution	____	Licensing - 02110 ____
Lic Prac & Proc (G-109)	____	(Broad A, B, & C)		
Nuclear Med (H-304)	____	No WD Required	____	Licensing – 2121/2201 ____
Brachy. & Gam Knf (H-313)	____	WD required	____	Licensing – 2120/2200 ____
Trans of Rad Mat(H-308)	____	Mobile	____	Licensing – 2220/2231 ____
		HDR/Teletherapy	____	Licensing – 2230/2300 ____
		Other Med. Uses	____	Licensing – 2240 prog. ____
		Vet.	____	Licensing – 2400 prog. ____
Advanced HP (H-201)	**N/A**	Nuclear Pharmacy	____	Licensing – 2500 prog. ____
Lic Prac & Proc (G-109)	____			
Nuclear Med (H-304)	____			
Trans of Rad Mat (H-308)	____			
Advanced HP (H-201)	**N/A**	Indust. Radiography	____	Licensing – 3310 prog.
_____				
Lic Prac & Proc (G-109)	____			
Trans of Rad Mat (H-308)	____			
Safe Indust Rad (H-305)	____			
OR Brachy. & G. K. (H-313)	____	Gamma Knife	____	Licensing – 2310 prog. ____
Mat. Con. & Sec. Sys. (S-201)	____			
Advanced HP (H-201)	**N/A**	Irradiator ____		Licensing- 3521 prog. ____
Lic Prac & Proc (G-109)	____			
Trans of Rad Mat(H-308)	____			
Irradiator Tech (H-315)	____			
Advanced HP (H-201)	**N/A**	Decommissioning	____	Licensing – 3900 prog. ____
Lic Prac & Proc (G-109)	____	Facilities		
Trans of Rad Mat(H-308)	____			
Rad Srvy Decom (H-120)	____	Decon Services	____	Licensing – 3219 prog. ____

Specialized Training

Inspect Perform Mat(G-304) ____ Inspection – All ____

Root Cause/Incid Inv(G-205) ____ Inspection – All ____

Manage Allegations ____ Inspection – All ____

Characterization and Planning

For Decommissioning (H-115) _____ Inspection – ALL ____

Enhancement Training

Internal Dosimetry & Whole

Body Counting (H-312) ____

Environmental Monitoring

for Radioactivity (H-111) ____

Air Sampling for

Radioactive Mat (H-119) ____

Respiratory Protection (H-311) ____

Multi-Agency Radiation Survey and Site Investigation Manual (H-121) _____

4.6.3 Current Staff Qualification Program

With the formal establishment of the Agreement State Program, qualification of the current staff will be established in a manner based on RMPP 5.1 but modified to account for the fact that Radioactive Materials Program work may begin soon, even immediately, after the Agreement is established. In particular, the Senior Radiological Health Specialist and the Radiological and Toxicological Scientist will be deemed fully qualified as documented in writing by the Radiation Control Program Director. This qualification is substantiated by significant evidence which includes their completion of all of the core training courses identified in RMPP 5.1, their accompaniment of NRC inspectors on inspections of most of Vermont's licensees, and their spending two weeks studying in person NRC staff license review activities conducted at the NRC Region 1 King of Prussia, Pennsylvania office.

The Senior Radiological Health Specialist, Fran O'Neill, will serve the Radioactive Materials Program as its Manager. Littia Mann is our Radiological and Toxicological Scientist. Both will be documented fully qualified at the time of the Agreement taking effect. This is documented in a letter from the Radiation Control Program Director in Appendix 4.6-1. Both have documentation for their training and experience in their individual Qualification Journals. These Qualification Journals are in Appendix 4.6-2. Vermont is planning for Mr. O'Neill and Ms. Mann to accompany the NRC on their inspections of Vermont licensees many more times before completion of the Agreement. Mr. O'Neill has been on 30 NRC inspection accompaniments and Ms. Mann has been on 11 NRC inspection accompaniments. Like Mr. O'Neill, Ms. Mann spent two weeks studying license review work by the NRC at Region 1 before completion of the Agreement. Their experiences encompass the range of radioactive materials uses that the State of Vermont will regulate when the Agreement goes into effect.

Dr. William Irwin, the Radiation Control Program Director, will not be required to, but is planning to, become fully qualified as an inspector and license reviewer. He has extensive work experience and training in radiation protection and licensed radioactive materials activities. He has also completed some of the NRC Agreement State training core courses. Table 4.6-4 documents the RMP staff Agreement State course completion. Ms. Mann, a chemist by experience and advanced training completed the Fundamental Health Physics and Advanced Health Physics courses as she had only limited prior training in health physics. Mr. O'Neill and Dr. Irwin are exempt from both health physics courses on the basis of their extensive health physics experience and previous advanced health physics training. Mr. O'Neill took Safety Aspects of Well Logging in case a license is sought in Vermont for such, though none exist at this time. Other staff may take this course as specialized training in the future. Specialized training will be used by all as refresher training, and to be prepared for other and new license types in Vermont.

Table 4.6-4

Current Staff Training Course Completion

Radioactive Materials Program Core Training Courses	**Req'd For Licensing**	**Req'd For Inspection**	**License Reviewer/Inspector**		
			Irwin	**Mann**	**O'Neill**
G-109: Licensing Practices & Procedures	Yes		3/14/19	3/13/17	4/11/16
H-304: Diagnostic & Therapeutic Medicine	Yes	Yes		5/23/16	8/1/16
H-305: Safety Aspects of Industrial Radiography	Yes	Yes		11/2/15	10/17/16
H-308: Transportation of Radioactive Materials	Yes	Yes		11/16/15	7/11/16
H-313: Brachytherapy, Gamma Knife & Emerging Technologies	Yes	Yes		3/14/16	5/16/16
S-201: NRC Materials Control & Security Systems & Principles	Yes	Yes	8/15/16	8/14/17	5/23/16
H-201: Advanced Health Physics	Yes	Yes	Exempt	8/8/16	Exempt
G-108: Inspection Procedures		Yes		10/24/16	3/7/16
G-205: Root Cause/Incident Investigation Workshop		Yes	4/25/16	2/29/16	4/25/16
H-122: Fundamental Health Physics (Blended 8 weeks)			Exempt	4/25/16	Exempt
Specialized and Enhancement Training Courses					
H-312: Internal Dosimetry					
H-500 Visual Sampling Plan					
H-117: Introductory Health Physics			Exempt	Exempt	Exempt
H-121: MARSSIM					
H-410: RESRAD Training Workshop					
H-119: Air Sampling for Radioactive Materials					
H-111: Environmental Monitoring					
H-413: MILDOS-Area Training Workshop					
H-120: MARSAME					
H-123: Intermediate Health Physics			Exempt	6/27/16	Exempt
H-411 RESRAD Offsite					
H-115: Characterization & Planning for Decommissioning					2/1/19
H-412: Advanced RESRAD Training Workshop					
H-314: Safety Aspects of Well Logging			N/A	N/A	9/19/16
F-104: Health Physics for Uranium Recovery					
H-315: Irradiator Technology					

Appendix 4.6-1

Letter of Current Staff Qualification

State of Vermont Department of Health

Radioactive Materials Program

Letter of Current Staff Qualification

19 February 2019

This letter documents the full qualification of Fran O'Neill, MS and Littia Mann, MS as Radiological Health Specialists authorized to conduct radioactive materials licensing and inspection activities for the Program Codes for licenses in Vermont at the time Vermont becomes a Nuclear Regulatory Commission (NRC) Agreement State.

This qualification is substantiated by both Fran and Littia having:

- Completed all of the required initial Agreement State Training as described in Radioactive Materials Program Procedure (RMPP) 5.1 *Qualification and Training*;
- Accompanied NRC Inspectors conducting inspections of Vermont licensees;
- Worked for two weeks with qualified NRC License Reviewers performing licensing actions at the NRC Region 1 Offices in King of Prussia, Pennsylvania;
- Reviewed the NRC regulations, policies, plans and procedures being incorporated into the Vermont Application to Become an Agreement State; and
- Engaged for more than three years writing, reviewing and revising RMPPs, regulations and other components of the Vermont Application to Become an Agreement State.

Documentation of these qualifications is found in the Qualification Journals for Fran and Littia.

William Irwin, ScD, CHP

Radiation Control Program Director

Appendix 4.6-2

Current Staff Qualification Journals

Radioactive Materials Program
Radiological Health Specialist
Qualification Journals

Attachment 5.1-1 to RMPP 5.1, Revision 0

Applicability:

This Qualifications Journal implements Radioactive Materials Program Procedure Section 5.1, "Qualifications and Training" by documenting the qualifications and training of Radioactive Materials Program (RMP) Radiological Health Specialist performing inspections at materials licensed facilities and processing licensing actions for radioactive materials licensees. The Qualifications Journal provides traceable documentation that minimum requirements are met for each RMP Radiological Health Specialist.

The Qualifications Journal consists of a series of qualification guides and signature blocks. Each signature block is used to document task completion as indicated by the appropriate signature. The corresponding qualification guide establishes the minimum knowledge levels or areas of study that must be completed for each signature block. The trainee should complete the self-study section of the qualifications before starting on the other sections.

NAME: Francis X O'Neill **TITLE: Senior Radiological Health Specialist**

QUALIFICATION JOURNAL

SELF STUDY

VDH ORIENTATION

A. Radioactive Material Program Orientation

1. New Employee Processing	Francis O'Neill Trainee	12/2015 Date
2. Facility Tour and Introductions	RCPD	2/19/19 Date

B. VDH Orientation

1. Review of VDH and RMP organization	Francis O'Neill Trainee	12/2015 Date
2. Discussion of VDH and RMP organization	RCPD	2/19/19 Date

CVR 13-140-030, 'Vermont Radiation Protection Regulations'

A. Familiarization with CVR 13-140-030	Francis O'Neill Trainee	2/2019 Date
B. Discussion of contents of CVR13-140-030	RCPD	2/19/19 Date

RMP POLICIES AND PROCEDURES

A. Familiarization with RMP Policies and Procedures	Francis O'Neill Trainee	2/2019 Date
B. Discussion of contents of RMP Policies and Procedures	RCPD	2/19/19 Date

REGULATORY GUIDANCE

A. Selected VDH RMP Regulations

1. Review of Selected VDH RMP Regulations	Francis O'Neill Trainee	2/2019 Date
2. Discussion of Selected VDH Regulations	RCPD	2/19/19 Date

B. Selected NRC Bulletins and Information Notices

1. Review of Selected NRC Bulletins and Information Notices	Francis O'Neill Trainee	2/2019 Date
2. Discussion of Selected NRC Bulletins and Information Notices	Francis O'Neill RCPD	2/2019 2/19/19 Date

C. NUREG-1556, "Consolidated Guidance About Materials Licenses"

1. Review of NUREG-1556	Francis O'Neill Trainee	12/2015 Date
2. Discuss Review of NUREG-1556	RCPD	2/19/19 Date

FORMAL TRAINING

Copies of formal training certifications or the basis for exemption to the specific course should be appended to the back of this document.

CORE TRAINING

A. Advanced Health Physics (H-201)
Dates Attended: RCPD:

B. Inspection Procedures Course (G-108)
Dates Attended: **3/7/2016** RCPD:

C. Diagnostic and Therapeutic Nuclear Medicine Course (H-304)
Dates Attended: **8/1/2016** RCPD:

D. Licensing Practices and Procedures Course (G-109)
Dates Attended: **4/11/2016** RCPD:

E. Brachytherapy and Gamma Knife Course (H-313)
Dates Attended: **5/16/2016** RCPD:

F. Safety Aspects of Industrial Radiography (H-305)
Dates Attended: **10/17/2016** RCPD:

G. Transportation of Radioactive Materials (H-308)
Dates Attended: **7/11/2016** RCPD

H. Materials Control & Security Systems & Principles (S-201)
Dates Attended: **5/23/2016** RCPD:

QUALIFICATION JOURNAL

SPECIALIZED TRAINING

I. Irradiator Technology Course (H-315)
Dates Attended_____ RCPD: _____

J. Safety Aspects of Well Logging (H-314)
Dates Attended: **9/19/2016** RCPD: _____

K. Radiological Surveys in Support of Decommissioning (H-120)
Dates Attended_____ RCPD _____

L. Inspecting for Performance - Materials (G-304)
Dates Attended_____ RCPD _____

M. Root Cause/Incident Investigation Training (G-205)
Dates Attended: **4/25/2016** RCPD: _____

N. Management of Allegations Training
Dates Attended_____ RCPD: _____

O. Characterization and Planning for Decommissioning (H-115)
Dates Attended: **2/1/2019** RCPD: _____

ENHANCEMENT TRAINING

P. Internal Dosimetry and Whole Body Counting (H-312)
Dates Attended_____ RCPD _____

Q. Environmental Monitoring for Radioactivity (H-111)
Dates Attended_____ RCPD _____

R. Air Sampling for Radioactive Material (H-119)
Dates Attended_____ RCPD _____

S. Respiratory Protection (H-311)
Dates Attended_____ RCPD _____

T. Multi-Agency Radiation Survey and Sites Investigation Manual (MARSSIM)
Dates Attended_____ RCPD _____

Note: Attach copies of training certifications or the basis for exemption to the back of this document.

ON-THE-JOB TRAINING

A. Program 01100 – 01120 Academic 2/19/19

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 01100-01120 licensee.

Licensee: University of Vermont Date: 2/23/2017

Inspector: Dennis Lawyer

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 01100-01120 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 01100-01120 licensee.

Licensee NRC Date _____

2/19/19 *
RCPD

B. Program 02110 - Medical Institution-Broad

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02110 licensee.

Licensee: University of Vermont Medical Center Date: 3/1/2016

Inspector: Dennis Lawyer

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02110 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and, as necessary, preparing enforcement correspondence for a Program 02110 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

C. Program 02120 – Medical Institution Written Directive Required

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02120 licensee.

Licensee: Central Vermont Medical Center Dates: 7/6/2017

Inspector: John Miller

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02120 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02120 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

D. Core Program Code: 02121 Medical Institution Written Directive (WD) Not Required

1) Trainee observes an Inspector preparing for and conducting an inspection of a 02121 Program licensee.

Licensee: North Country Hospital Date: 10/4/2018

Inspector: Janice Nguyen

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02121 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD the Trainee prepares for and conducts an inspection, including recording of inspection findings and, as necessary, preparing enforcement correspondence for 02121 Program Code licensee.

Licensee_____ Date_____

2/19/19 *
RCPD

E. Program 02230/02300 - HDR or Teletherapy

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02230 or 02300 licensee.

Licensee: University of Vermont Medical Center Dates: 3/1/2016

Inspector: Dennis Lawyer

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of Program 02230 or 02300 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee _____ Date_____

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for Program 02230 or 02300 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

F. Program 02231 Mobile Medical Services WD Required

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02231 licensee.

Licensee: Insight Health Dates: 4/17/2018

Inspector: Tara Weidner

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02231 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02231 licensee.

Licensee_____ Date _____

2/19/19*
RCPD

G. Program 02240 Emerging Technologies

1) Trainee observes an Inspector preparing for and conducting an inspection of a 02240 Program licensee.

Licensee: UVMc Medical Center Dates: ~~10/1/18~~ 2/19/19 3/1/16

Dennis Lawyer
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02240 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02440 licensee.

Licensee_____ Date _____

2/19/19
RCPD

H. Program 02400 Veterinary Nonhuman Subjects

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02400 licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02400 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02400 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

I. Program 02410 *In-Vitro* Testing Laboratories

1) Trainee observes an Inspector preparing for and conducting an inspection of a 02410 Program licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02410 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02410 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

J. Program 02500 - Nuclear Pharmacy

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02500 licensee.

Licensee: Pharmalogic Date: 4/19/2018

Inspector: Penny Lanzisera

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02500 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02500 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

K. Program 03121 – Measuring Systems-Portable Gauges

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 03121 licensee.

Licensee: Beck Engineering Dates: 6/29/2017

Inspector: John Miller

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 03121 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03121 licensee.

Licensee_____ Date _____

2/19/19*
RCPD

L. Program 03219 Decontamination Services

1) Trainee observes an Inspector preparing for and conducting an inspection of a 03219 Program licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two 03219 different Program licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03219 licensee.

Licensee_____ Date _____

_____
RCPD

M. Program 03310/03320 - Industrial Radiography

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 03310 or 03320 licensee.

Licensee _____ Dates_____

_____
Inspector

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 03310 or 03320 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03310 or 03320 licensee.

Licensee_____ Date _____

_____
RCPD

N. Program 03510 – Irradiators Self Shielded Less Than or Equal to 10,000 Curies

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 03510 licensee.

University of Vermont Medical Center Date: 3/1/2016

Inspector: Dennis Lawyer

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 03510 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03510 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

A. 01100-01120 Academic Broad Scope *

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 01100-01120 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 01100-01120 amendments.

License	Amendment Type	Date	License Reviewer
07-13441-02	Renewal	12/2016	Jim Cassata

2) Under the supervision of License Reviewers, Trainee processes two Program 01100-01120 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 01100-01120 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *
RCPD

* These forms can be copied and utilized multiple times to record all OJT for Core Program Code licensees as designated in Section 3.1 of RMPP 5.1 and/or to record any other OJT necessary as determined by the Radiation Control Program Director

B. 02110 Medical Institution Broad Scope

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02110 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02110 amendments.

License	Amendment Type	Date	License Reviewer
44-10187-03	Add AU	12/2016	Monica Ford

2) Under the supervision of License Reviewers, Trainee processes two Program 02110 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02110 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19

RCPD

C. 02120 Medical Institution Written Directive (WD) Required

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02120 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02120 amendments.

License	Amendment Type	Date	License Reviewer
44-13353-01	Add RSO, delete RSO	12/2016	Monica Ford
44-13976-01	ADD AU and RSO	12/2016	Monica Ford
44-19050-01	Renewal	12/2016	Monica Ford

2) Under the supervision of License Reviewers, Trainee processes two Program 02120 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02120 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

D. 02121 Medical Institution Written Directive Not Required

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02121 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02121 amendments.

License	Amendment Type	Date	License Reviewer
44-13353-01	Add RSO, delete RSO	12/2016	Monica Ford
44-13976-01	ADD AU and RSO	12/2016	Monica Ford
44-19050-01	Renewal	12/2016	Monica Ford

2) Under the supervision of License Reviewers, Trainee processes two Program 02121 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02121 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19*

RCPD

E. 02230 High-Dose Rate Remote Afterloader

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02230 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02230 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow at Region 1		12/20/16	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02230 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02230 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

F. 02231 Mobile Medical Services WD Required

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02231 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02231 amendments.

License	Amendment Type	Date	License Reviewer
NRC	Shadow at Region 1	12/20/16	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02231 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02231 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

G. 02240 Medical Therapy Other Emerging Technologies

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02240 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02240 amendments.

License	Amendment Type	Date	License Reviewer
NRC	Shadow at Region 1	12/20/16	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02240 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02240 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

H. 02400 Veterinary Nonhuman Subjects

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02400 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02400 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow at Region 1		12/20/16	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02400 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02400 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

I. 02410 *In-Vitro* Testing Laboratories

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02410 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02410 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow at Region 1		12/20/16	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02410 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02410 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License_____ Date_____

2/19/19 *

RCPD

J. 02500 Nuclear Pharmacy

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02500 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02500 amendments.

License	Amendment Type	Date	License Reviewer
45-25221-01MD	Add ANP	12/2016	Penny Lanzisera

2) Under the supervision of License Reviewers, Trainee processes two Program 02500 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02500 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19
RCPD

K. 03121 Measuring Systems-Portable Gauges

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03121 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03121 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow at Region 1		12/20/16	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 03121 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03121 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

L. 03219 Decontamination Services

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03219 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03219 amendments.

License	Amendment Type	Date	License Reviewer

2) Under the supervision of License Reviewers, Trainee processes two Program 03219 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03219 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

M. 03310/03320 Industrial Radiography

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03310/03320 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03310/03320 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 03310/03320 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03310/03320 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

N. 03510 Irradiators Self Shielded Less Than or Equal to 10,000 Curies

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03510 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03510 amendments.

License	Amendment Type	Date	License Reviewer
NRC	Shadow at Region 1	12/20/16	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 03510 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03510 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19*

RCPD

QUALIFICATION JOURNAL

Qualification

Training Completed	Date	OJT Completed	Date	Qualified-Program	Date	
		Inspections				
Advanced HP (H-201) Inspect Procedure (G-108) Trans of Rad Mat(H-308)	**N/A** **10/24/16** **7/11/16**	All Broad Scopes – except Medical programs	**3/2/16**	Inspection: 01100-1120 3610-3630, 32111-3213	2/19/19	Qualified
		Fixed & Port. Gauges	**4/23/18**	Inspection: 3120/3121	2/19/19	
		In-Vitro		Inspection: 2410	2/19/19	
Advanced HP (H-201) Inspect Procedure (G-108) Nuclear Med (H-304) Brachy. & Gam. Knf (H-313) Trans. of Rad. Mat. (H-308)	**N/A** **10/24/16** **8/1/16** **5/16/16** **7/11/16**	Medical Institution (Broad – A, B, & C)	**3/1/16**	Inspection – 02110-02113 programs		
		No WD Required	**10/4/18**	Inspection- 121/2201	2/19/19	Qualified
		WD required	**4/17/18**	Inspection-2120/2200	2/19/19	
		Mobile	**4/17/18**	Inspection -2220/2231	2/19/19	
		HDR/Teletherapy	**3/1/16**	Inspection -2230/2300	2/19/19	
		Other Med. Uses	____	Inspection -2240 prog.	2/19/19	
		Vet.	____	Inspection -2400 prog.	2/19/19	
Advanced HP (H-201) Inspect Procedure (G-108) Nuclear Med (H-304) Trans. of Rad. Mat. (H-308)	**N/A** **10/24/16** **8/1/16** **7/11/16**	Nuclear Pharmacy	**10/24/16**	Inspection– 2500 prog.	2/19/19	Qualified
Advanced HP (H-201) Inspect Procedures (G-108) Saf. Asp. Ind. Radio. (H-305) **OR** Brachy. & GK (H-313) Trans. of Rad. Mat. (H-308) Mat. Con. & Sec. Sys. (S-201)	**N/A** **10/24/16** **10/17/16** **5/16/16** **7/11/16** **5/23/16**	Ind. Radiography	____	Inspection – 3310/3320 programs	____	
		Gamma Knife		Inspection – 2310 prog	____	
Advanced HP (H-201) Inspect Procedur (G-108) Trans of Rad Mat(H-308) Irradiator Tech (H-315)	**N/A** **10/24/16** **7/11/16** ____	Irradiator	**3/1/16**	Inspection- 3521 prog.	2/19/19	Qualified
Advanced HP (H-201) Fund of Inspect(G-101) OR Inspect Procedur (G-108) Trans of Rad Mat(H-308) Rad Srvy Decom (H-120)	**N/A** **10/24/16** **7/11/16** ____	Decommissioning Facilities	____	Inspection- 3900 prog.	____	
		Decon Services	____	Inspection – 3219 prog.	____	

QUALIFICATION JOURNAL

Training Completed	Date	OJT Completed	Date	Qualified-Program	Date
		Licensing			
Advanced HP (H-201)	**N/A**	All Broad Scopes -		Licensing – 1100-1120,	
Lic Prac & Proc (G-109)	**4/11/16**	except Medical	**12/20/16**	3610-3630, 3211-3213	2/19/19 Qualified
Trans of Rad Mat(H-308)	**7/11/16**			programs	
		Fixed & Port.		Licensing: 3120/3121	2/19/19
		Gauges	**12/20/16**	programs	*
		In-Vitro	**12/20/16**	Licensing 2410	2/19/19
Advanced HP (H-201)	**N/A**	Medical Institution	**12/20/16**	Licensing – 02110	2/19/19
Lic Prac & Proc (G-109)	**4/11/16**	(Broad A, B, & C)			Qualified
Nuclear Med (H-304)	**8/1/16**	No WD Required	**12/20/16**	Licensing – 2121/2201	2/19/19
Brachy. & Gam Knf (H-313)	**5/16/16**	WD required	**12/20/16**	Licensing – 2120/2200	2/19/19
Trans of Rad Mat(H-308)	**7/11/16**	Mobile	**12/20/16**	Licensing – 2220/2231	2/19/19
		HDR/Teletherapy	**12/20/16**	Licensing – 2230/2300	2/19/19
		Other Med. Uses	**12/20/16**	Licensing – 2240 prog.	2/19/19 *
		Vet.	**12/20/16**	Licensing – 2400 prog.	2/19/19
Advanced HP (H-201)	**N/A**	Nuclear Pharmacy	**12/20/16**	Licensing – 2500 prog.	2/19/19
Lic Prac & Proc (G-109)	**4/11/16**				Qualified
Nuclear Med (H-304)	**8/1/16**				
Trans of Rad Mat (H-308)	**7/11/16**				
Advanced HP (H-201)	**N/A**	Indust. Radiography	____	Licensing – 3310 prog.	____
Lic Prac & Proc (G-109)	**4/11/16**				
Trans of Rad Mat (H-308)	**7/11/16**				
Safe Indust Rad (H-305)	**10/17/16**				
OR Brachy. & G. K. (H-313)	**5/6/16**	Gamma Knife	____	Licensing – 2310 prog.	____
Mat. Con. & Sec. Sys. (S-201)	**5/23/16**				
Advanced HP (H-201)	**N/A**	Irradiator	**12/20/16**	Licensing- 3521 prog.	2/19/19 Qualified
Lic Prac & Proc (G-109)	**4/11/16**				
Trans of Rad Mat(H-308)	**7/11/16**				
Irradiator Tech (H-315)					
Advanced HP (H-201)	**N/A**	Decommissioning	____	Licensing – 3900 prog.	____
Lic Prac & Proc (G-109)	**4/11/16**	Facilities			
Trans of Rad Mat(H-308)	**7/11/16**				
Rad Srvy Decom (H-120)	____	Decon Services	____	Licensing – 3219 prog.	____

* *Fran is part of the initial Agreement State staff. He qualifies based on more than three years of initial core training; accompaniment of NRC inspections of Vermont licensees; continuous review of program rules, policies and procedures; two weeks shadowing NRC License Reviewers in Region 1; and past decades of training and experience as a health physicist and radiation protection professional. 2/19/19

Radioactive Materials Program
Radiological Health Specialist
Qualification Journals

Attachment 5.1-1 to RMPP 5.1, Revision 0

Applicability:

This Qualifications Journal implements Radioactive Materials Program Procedure Section 5.1, "Qualifications and Training" by documenting the qualifications and training of Radioactive Materials Program (RMP) Radiological Health Specialists performing inspections at materials licensed facilities and processing licensing actions for radioactive materials licensees. The Qualifications Journal provides traceable documentation that minimum requirements are met for each RMP Radiological Health Specialist.

The Qualifications Journal consists of a series of qualification guides and signature blocks. Each signature block is used to document task completion as indicated by the appropriate signature. The corresponding qualification guide establishes the minimum knowledge levels or areas of study that must be completed for each signature block. The trainee should complete the self-study section of the qualifications before starting on the other sections.

NAME: Littia C Mann **TITLE: Radiological and Toxicological Scientist**

QUALIFICATION JOURNAL

SELF STUDY

VDH ORIENTATION

A. Radioactive Material Program Orientation

1. New Employee Processing	Littia Mann Trainee	**1/12/2015** Date
2. Facility Tour and Introductions	RCPD	2/19/19 Date

B. VDH Orientation

1. Review of VDH and RMP organization	Littia Mann Trainee	**2/12/2015** Date
2. Discussion of VDH and RMP organization	RCPD	2/19/19 Date

CVR 13-140-030, 'Vermont Radiation Protection Regulations'

A. Familiarization with CVR 13-140-030	Littia Mann Trainee	**2/12/2015** Date
B. Discussion of contents of CVR13-140-030	RCPD	2/19/19 Date

RMP POLICIES AND PROCEDURES

A. Familiarization with RMP Policies and Procedures	Littia Mann Trainee	**2/19/2019** Date
B. Discussion of contents of RMP Policies and Procedures	RCPD	2/19/19 Date

REGULATORY GUIDANCE

A. Selected VDH RMP Regulations

1. Review of Selected VDH RMP Regulations	Littia Mann Trainee	**2/19/2019** Date
2. Discussion of Selected VDH Regulations	RCPD	2/19/19 Date

B. Selected NRC Bulletins and Information Notices

1. Review of Selected NRC Bulletins and Information Notices	Littia Mann Trainee	**2/19/2019** Date
2. Discussion of Selected NRC Bulletins and Information Notices	RCPD	2/19/19 Date

C. NUREG-1556, "Consolidated Guidance About Materials Licenses"

1. Review of NUREG-1556	Littia Mann Trainee	**2/19/2019** Date
2. Discuss Review of NUREG-1556	RCPD	2/19/19 Date

FORMAL TRAINING

Copies of formal training certifications or the basis for exemption to the specific course should be appended to the back of this document.

CORE TRAINING

A. Advanced Health Physics (H-201)
Dates Attended: **8/9/2016 – 8/19/2016** RCPD _____

B. Inspection Procedures Course (G-108)
Dates Attended: **10/24/2016 – 10/28/2016** RCPD _____

C. Diagnostic and Therapeutic Nuclear Medicine Course (H-304)
Dates Attended: **5/23/2016 – 5/27/2016** RCPD _____

D. Licensing Practices and Procedures Course (G-109)
Dates Attended: **3/13/2017 – 3/16/2017** RCPD _____

E. Brachytherapy and Gamma Knife Course (H-313)
Dates Attended: **3/14/2016 – 3/18/2016** RCPD _____

F. Safety Aspects of Industrial Radiography (H-305)
Dates Attended: **11/2/2015 – 11/6/2015** RCPD _____

G. Transportation of Radioactive Materials (H-308)
Dates Attended: **11/16/2015 – 11/20/2015** RCPD _____

H. Materials Control & Security Systems & Principles (S-201)
Dates Attended: **8/14/2017 – 8/18/2017** RCPD: _____

QUALIFICATION JOURNAL

SPECIALIZED TRAINING

I. Irradiator Technology Course (H-315)
Dates Attended: _____ RCPD _____

J. Safety Aspects of Well Logging (H-314)
Dates Attended: RCPD _____

K. Radiological Surveys in Support of Decommissioning (H-120)
Dates Attended: RCPD _____

L. Inspecting for Performance - Materials (G-304)
Dates Attended: RCPD _____

M. Root Cause/Incident Investigation Training (G-205)
Dates Attended: **2/29/2016 – 3/4/2017** RCPD _____

N. Management of Allegations Training
Dates Attended: _____ RCPD _____

O. Characterization and Planning for Decommissioning (H-315)
Dates Attended: RCPD

ENHANCEMENT TRAINING

P. Internal Dosimetry and Whole Body Counting (H-312)
Dates Attended: RCPD _____

Q. Environmental Monitoring for Radioactivity (H-111)
Dates Attended: RCPD _____

R. Air Sampling for Radioactive Material (H-119)
Dates Attended: RCPD _____

S. Respiratory Protection (H-311)
Dates Attended: _____ RCPD _____

T. Multi-Agency Radiation Survey and Sites Investigation Manual (MARSSIM)
Dates Attended: RCPD _____

QUALIFICATION JOURNAL

U. S. Food and Drug Administration - Center for Devices and Radiological Health - Division of Mammography Quality and Radiation Programs

MQSA Course I - Introduction to Radiological Physics (certificate date 1/12/2016)
MQSA Course II - Fundamentals of MQSA Inspections (certificate date 2/24/2016)
MQSA Course III - MQSA Inspection Procedures (dates of training 4/12/2016 - 4/21/2016)

Note: Attach copies of training certifications or the basis for exemption to the back of this document.

Required by FDA Contract. Records on file.

ON-THE-JOB TRAINING

CORE TRAINING – INSPECTION

A. Program 01100 – 01120 Academic *

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 01100-01120 licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 01100-01120 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 01100-01120 licensee.

Licensee_____ Date _____

_____
RCPD

B. Program 02110 - Medical Institution-Broad

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02110 licensee.

Licensee: University of Vermont Medical Center Date: **10/1/2018**

Inspector: Janice Nguyen

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02110 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and, as necessary, preparing enforcement correspondence for a Program 02110 licensee.

Licensee_____ Date _____

2/19/19
RCPD

C. Program 02120 – Medical Institution Written Directive Required

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02120 licensee.

Licensee: Central Vermont Medical Center Dates: **7/6/2017**

Inspector: John Miller

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02120 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02120 licensee.

Licensee_____ Date _____

2/19/19
RCPD

D. Core Program Code: 02121 Medical Institution Written Directive (WD) Not Required

1) Trainee observes an Inspector preparing for and conducting an inspection of a 02121 Program licensee.

Licensee: University of Vermont Medical Center Dates: **10/1/2018**

Inspector: Janice Nguyen

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02121 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD the Trainee prepares for and conducts an inspection, including recording of inspection findings and, as necessary, preparing enforcement correspondence for 02121 Program Code licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

E. Program 02230/02300 - HDR or Teletherapy

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02230 or 02300 licensee.

Licensee: University of Vermont Medical Center Dates: **10/1/2018**

Inspector: Janice Nguyen

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02230 or 02300 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee _____ Date_____

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02230 or 02300 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

F. Program 02231 Mobile Medical Services WD Required

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02231 licensee.

Licensee: Dates: 3

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02231 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02231 licensee.

Licensee_____ Date _____

2/19/19*
RCPD

G. Program 02240 Emerging Technologies

1) Trainee observes an Inspector preparing for and conducting an inspection of a 02240 Program licensee.

Licensee: UVM Medical Ctr Dates: 10/1/18

Janice Nguyen
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02240 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a 02240 Program licensee.

Licensee_____ Date_____

2/19/19 *
RCPD

H. Program 02400 Veterinary Nonhuman Subjects

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02400 licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02400 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02400 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

I. Program 02410 *In-Vitro* Testing Laboratories

1) Trainee observes an Inspector preparing for and conducting an inspection of a 02410 Program licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02410 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02410 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

J. Program 02500 - Nuclear Pharmacy

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 02500 licensee.

Licensee _____ Dates_____

_____
Inspector

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 02500 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 02500 licensee.

Licensee_____ Date _____

_____
RCPD

K. Program 03121 – Measuring Systems-Portable Gauges

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 03121 licensee.

Licensee: Beck Engineering Dates: **6/29/2017**

Inspector: John Miller

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 03121 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03121 licensee.

Licensee_____ Date _____

2/19/19 *
RCPD

L. Program 03219 Decontamination Services

1) Trainee observes an Inspector preparing for and conducting an inspection of a 03219 Program licensee.

Licensee: Dates:

_____
Inspector:

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 03219 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03219 licensee.

Licensee_____ Date _____

_____
RCPD

M. Program 03310/03320 - Industrial Radiography

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 03310 or 03320 licensee.

Licensee _____ Dates_____

_____
Inspector

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 03310 or 03320 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03310 or 03320 licensee.

Licensee_____ Date _____

_____
RCPD

N. Program 03510 – Irradiators Self Shielded Less Than or Equal to 10,000 Curies

1) Trainee observes an Inspector preparing for and conducting an inspection of a Program 03510 licensee.

Licensee _____ Dates_____

_____
Inspector

2) Under the supervision of an Inspector, Trainee prepares for, conducts and records findings of selected portions of two different Program 03510 licensee inspections.

a) Licensee_____ Date_____

_____
Inspector

b) Licensee_____ Date_____

_____
Inspector

3) Under the observation of the RCPD, the Trainee prepares for and conducts an inspection, including recording of inspection findings and preparing, as necessary, enforcement correspondence for a Program 03510 licensee.

Licensee_____ Date _____

_____
RCPD

QUALIFICATION JOURNAL

A. 01100-01120 Academic Broad Scope*

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 01100-01120 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02110-02113 amendments.

License	Amendment Type	Date	License Reviewer
NRC	Shadow at Region 1	11/9/17	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 01100-01120 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 01100-01120 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19
RCPD

* These forms can be copied and utilized multiple times to record all OJT for Core Program Code licensees as designated in Section 3.1 of RMPP 5.1 and/or to record any other OJT necessary as determined by the Radiation Control Program Director

B. 02110 Medical Institution Broad Scope

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 01100-01120 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02110 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow	at Region 1	8/3/18	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02110 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02110 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

C. 02120 Medical Institution Written Directive (WD) Required

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02120 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02120 amendments.

License	Amendment Type	Date	License Reviewer
NRC	Shadow at Region 1	8/3/18	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02120 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02120 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

D. 02121 Medical Institution Written Directive Not Required

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02121 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02121 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow	AT Region 1	8/3/18	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02121 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02121 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/15/19 *

RCPD

E. 02230 High-Dose Rate Remote Afterloader

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02230 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02230 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow	at Region 1	8/3/18	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02230 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02230 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19*

RCPD

F. 02231 Mobile Medical Services WD Required

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02231 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02231 amendments.

License	Amendment Type	Date	License Reviewer
NRC SAMPLE	AT Region 1	8/3/18	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02231 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02231 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

G. 02240 Medical Therapy Other Emerging Technologies

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02240 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02240 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow at Region 1		8/3/18	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02240 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02240 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

H. 02400 Veterinary Nonhuman Subjects

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02400 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02400 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow	at Region 1	8/3/18	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02400 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02400 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

I. 02410 *In-Vitro* Testing Laboratories

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02410 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02410 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow at Region 1		11/9/19	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02410 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02410 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

J. 02500 Nuclear Pharmacy

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 02500 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02500 amendments.

License	Amendment Type	Date	License Reviewer
NRC Shadow	at Region I	8/3/15	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 02500 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 02500 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License_____ Date_____

8/19/19 *

RCPD

K. 03121 Measuring Systems-Portable Gauges

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03121 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03121 amendments.

License	Amendment Type	Date	License Reviewer
NRC	Shadow at Region I	11/9/17	NRC

2) Under the supervision of License Reviewers, Trainee processes two Program 03121 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03121 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

2/19/19 *

RCPD

QUALIFICATION JOURNAL

L. 03219 ~~Service Providers~~ Decontamination Services 2/19/19

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03219 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03219 amendments.

License	Amendment Type	Date	License Reviewer

2) Under the supervision of License Reviewers, Trainee processes two Program 03219 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03219 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

M. 03310/03320 Industrial Radiography

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 03310/03320 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 03310/03320 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 03310/03320 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 03310/03320 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

N. Irradiators Self Shielded Less Than or Equal to 10,000 Curies

1) Trainee is assigned directed review of selected licensing case-work and observes a License Reviewer process a Program 01100-01120 application for license or a license renewal in entirety.

Under supervision of a License Reviewer, the Trainee shall be assigned processing of three to five selected Program 02110-02113 amendments.

License	Amendment Type	Date	License Reviewer
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2) Under the supervision of License Reviewers, Trainee processes two Program 01100-01120 applications for license or applications for a license renewal in entirety and recommends the license for signature.

a) License_____ License Reviewer_____

b) License_____ License Reviewer_____

3) The Trainee shall process a Program 01100-01120 application for license or license renewal in entirety, including preparing the license, tying down all license conditions and recommending the license to the RCPD for signature.

License _____ Date _____

_____
RCPD

QUALIFICATION JOURNAL

Qualification

Training Completed	Date	OJT Completed	Date	Qualified-Program Date
		Inspections		
Advanced HP (H-201) Inspect Procedure (G-108) Trans of Rad Mat(H-308)	**8/8/16** **10/24/16** **11/16/15**	All Broad Scopes except Medical programs Fixed & Port. Gauges In Vitro	**4/23/18** **4/23/18** **4/23/18**	Inspection: 01100-1120 3610-3630, 32111-3213 2/19/19 Qualified Inspection: 3120/3121 programs 2/19/19 Inspection: 2410 2/19/19
Advanced HP (H-201) Inspect Procedure (G-108) Nuclear Med (H-304) Brachy. & Gam. Knf (H-313) Trans. of Rad. Mat. (H-308)	**8/8/16** **10/24/16** **5/23/16** **3/14/16** **11/16/15**	Medical Institution (Broad – A, B, & C) No WD Required WD required Mobile HDR/Teletherapy Other Med. Uses Vet.	**4/23/18** **4/23/18** **10/1/18** **10/1/18** **10/1/18**	Inspection – 02110-02113 programs 2/19/19 Inspection – 2121/2201 2/19/19 Inspection – 2120/2200 2/19/19 Qualified Inspection – 2220/2231 2/19/19 Inspection – 2230/2300 2/19/19 Inspection – 2240 prog. 2/19/19 Inspection – 2400 prog. 2/19/19
Advanced HP (H-201) Inspect Procedure (G-108) Nuclear Med (H-304) Trans. of Rad. Mat. (H-308)	**8/8/16** **10/24/16** **5/23/16** **11/16/15**	Nuclear Pharmacy	____	Inspection – 2500 prog. ____
Advanced HP (H-201) Inspect Procedures (G-108) Saf. Asp. Ind. Radio. (H-305) **OR** Brachy. & GK (H-313) Trans. of Rad. Mat. (H-308) Mat. Con. & Sec. Sys. (S-201)	**8/8/16** **10/24/16** **11/2/15** **3/14/16** **11/16/15** **8/14/17**	Ind. Radiography Gamma Knife	____ ____	Inspection – 3310/3320 programs ____ Inspection – 2310 prog ____
Advanced HP (H-201) Inspect Procedur (G-108) Trans of Rad Mat(H-308) Irradiator Tech (H-315)	**8/8/16** **10/24/16** **11/16/15** ____	Irradiator	____	Inspection- 3521 prog. ____
Advanced HP (H-201) Fund of Inspect(G-101) OR Inspect Procedur (G-108) Trans of Rad Mat(H-308) Rad Srvy Decom (H-120)	**8/8/16** **10/24/16** **11/16/15** ____	Decommissioning Facilities Decon Services	____ ____	Inspection- 3900 prog. ____ Inspection – 3219 prog. ____

QUALIFICATION JOURNAL

Training Completed	Date	OJT Completed	Date	Qualified-Program Date
		Licensing		
Advanced HP (H-201) Lic Prac & Proc (G-109) Trans of Rad Mat(H-308)	**8/8/16** **3/13/17** **11/16/15**	All Broad Scopes - except Medical programs	**11/9/17**	Licensing – 1100-1120, 3610-3630, 3211-3213 2/19/19 Qualified
		Fixed & Port. Gauges	**11/9/17**	Licensing: 3120/3121 programs. 2/19/19
		In-Vitro	**11/9/17**	Licensing: 2410 2/19/19
Advanced HP (H-201) Lic Prac & Proc (G-109) Nuclear Med (H-304) Brachy. & Gam Knf (H-313) Trans of Rad Mat(H-308)	**8/8/16** **3/13/17** **5/23/16** **3/14/16** **11/16/15**	Medical Institution (Broad A, B, & C) No WD Required WD required Mobile	**8/3/18** **8/3/18** **8/3/18** **8/3/18**	Licensing - 02110 2/19/19 Licensing – 2121/2201 2/19/19 Licensing – 2120/2200 2/19/19 Qualified Licensing – 2220/2231 2/19/19
		HDR/Teletherapy	**8/3/18**	Licensing – 2230/2300 2/19/19
		Other Med. Uses	____	Licensing – 2240 prog. 2/19/19
		Vet.	**8/3/18**	Licensing – 2400 prog. 2/19/19
Advanced HP (H-201) Lic Prac & Proc (G-109) Nuclear Med (H-304) Trans of Rad Mat (H-308)	**8/8/16** **3/13/17** **5/23/16** **11/16/15**	Nuclear Pharmacy	**8/3/18**	Licensing – 2500 prog. ____
Advanced HP (H-201) Lic Prac & Proc (G-109) Trans of Rad Mat (H-308) Safe Indust Rad (H-305) **OR** Brachy. & G. K. (H-313) Mat. Con. & Sec. Sys. (S-201)	**8/8/16** **3/13/17** **11/16/15** **11/2/15** **3/14/16** **8/14/17**	Indust. Radiography Gamma Knife	____ ____	Licensing – 3310 prog. ____ Licensing – 2310 prog. ____
Advanced HP (H-201) Lic Prac & Proc (G-109) Trans of Rad Mat(H-308) Irradiator Tech (H-315)	**8/8/16** **3/13/17** **11/16/15** ____	Irradiator ____		Licensing- 3521 prog. ____
Advanced HP (H-201) Lic Prac & Proc (G-109) Trans of Rad Mat(H-308) Rad Srvy Decom (H-120)	**8/8/16** **3/13/17** **11/16/15** ____	Decommissioning Facilities Decon Services	____ ____	Licensing – 3900 prog. ____ Licensing – 3219 prog. ____

*Littia is part of the initial Agreement State staff. She qualifies based on more than three years of initial core training; accompaniment of NRC inspections of Vermont licensees; continuous review of program rules, policies and procedures; two weeks shadowing NRC License Reviewers in Region 1; and past training and experience as an FDA MQSA Inspector and as Vermont's radiation-producing machine program manager. 2/19/19

Appendix 4.6-3

Resumes of William E. Irwin, ScD, CHP;

Francis X. O'Neill, MS

and Littia C. Mann, MS

Education

- **Doctor of Science, Work Environment Engineering**, University of Massachusetts Lowell
- **Master of Science, Radiological Sciences**, University of Massachusetts Lowell
- **Master of Business Administration**, Southern New Hampshire University
- **Bachelor of Arts, Philosophy and History**, Christopher Newport University

Current Work

- ***Vermont Department of Health, December 2005-present: Radiological and Toxicological Sciences Program Chief.*** Manage a staff of scientists who provide guidance to the public, state agencies and other stakeholders on the health risks and methods of health protection for acute and chronic exposures to ionizing and non-ionizing radiation and toxic materials. Provide guidance on regulated and unregulated radiological and toxicological health matters. Manage environmental surveillance and emergency preparedness for the Vermont Yankee Nuclear Power Station. Expertise employed investigating radiofrequency radiation and extremely low frequency electromagnetic fields, as well as testimony on sound levels from wind turbines. Qualified and serve as Emergency Support Function 8 Lead at the State Emergency Operations Center (SEOC) and as Health Operations Center (HOC) Incident Commander, Technical Advisor and Planning Section Chief. Served for extended durations in SEOC for Hurricane Irene and in HOC for H1N1 Influenza Pandemic, as well as in numerous periodic and catastrophic exercises.

- ***Vermont Department of Public Safety, September 2006-present: Vermont Hazardous Materials Response Team (VHMRT) Crew Chief.*** Responsible for one of four hazmat companies and one of the five Chief Officers who rotate on-call responsibility for the entire VHMRT throughout the year. Previously served four years as the VHMRT Training Officer. Certified under the criteria of NFPA 472. Capable of all officer and technician duties for routine CBRN agents as well as WMD and meet the NFPA 472 criteria of a Specialist. Respond to and manage incidents involving a wide variety of chemical, biological and radiological agents. Proficient in many chemical, biological and radiological field analysis techniques and instruments. Certified through the Emergency Management Institute ICS L-449 to teach all levels of Incident Command System Curricula training under the authority of the Vermont Criminal Justice Training Council.

- ***Counter Terrorism Operations Support (CTOS), August 2017-present: Radiological Operations Support Specialist (ROSS) Subject Matter Expert (SME) and Instructor.*** As an extension of three-year's work on the FEMS/DHS/DOE/CRCPD ROSS Steering Committee,

serving as a Type 1 ROSS (interim FEMA typing) at the Vibrant Response 14 and Gotham Shield 17 IND exercises, serving as a Type 1 ROSS at the Vigilant Guardian 17 RDD exercise, conducting job task analysis (JTA) and writing lesson plans with Lawrence Livermore National Laboratory (LLNL), and providing the first ROSS 40-hour training based on the JTA, taught a second pilot of the LLNL lesson plans and served as an SME to revise them for presentation as a CTOS pilot. Qualified to provide instruction.

Professional Support to Government Authorities and NGOs

- ***Federal Emergency Management Agency, October 2017 to Present: Chemical Operations Support Specialist Steering Committee.*** Serve as a chemical, biological and radiological emergency subject matter expert representing the objectives of State toxicological and hazardous materials response professionals.

- ***Federal Emergency Management Agency, October 2014 to Present: Radiological Operations Support Specialist (ROSS) Steering Committee.*** Serve as a radiological and nuclear emergency response and recovery subject matter expert representing the objectives of State radiological and hazardous materials response professionals.

- ***Interpol, July 2017 to the Present: Preventive Radiological Nuclear Detection subject matter expert to Project Stone.*** Provided training and exercise support to Interpol's effort to assist nations around the world to prevent the smuggling of illicit radiological and nuclear sources through international ports. Serve in a team with the Royal Canadian Mounted Police, and scientists from the United States Department of Energy National Nuclear Security Administration and several research institutions.

- ***Conference of Radiation Control Program Directors, April 2014 to the present: Representative to the Radiological Operations Support Specialist (ROSS) Steering Committee.*** Represent the objectives and goals of state and local government in the development of the ROSS.

Past Work Experience

- ***Radiation Dose Reconstruction, 2005 – 2006***: As a consultant to Radiation Safety & Control Services worked on the Energy Employee Occupation Illness Compensation Program to estimate radiation doses to employees at Department of Energy facilities exposed occupationally to radiation and radioactive materials in an effort to determine the likelihood their illness or death was related to that exposure.

- ***Harvard University, October 2001-September 2005: Health Physicist, Laser Safety Officer, Associate Radiation Protection Officer.*** Directed technical services for environmental health and safety programs at Harvard University. Managed a staff of eight technicians and physicists at the Harvard Medical School and the Faculty of Arts and Sciences. Significant accomplishments included direction of radiological and environmental health activities during the decommissioning of the Harvard Cyclotron Laboratory, and development and

initial implementation of the Harvard University Laser Safety Program. Taught courses in laser health physics. Extensive work with magnetic fields and radiofrequency radiation as used in medicine and research.

- ***Massachusetts Institute of Technology, October 1992-October 2001: Health Physicist, Assistant Radiation Protection Officer.*** Managed the safe use of ionizing and non-ionizing radiation producing devices for campus research laboratories. Designed safety measures for radiological hazards, taught courses in radiological health protection, performed measurements and calculations for radiological emissions, supervised technicians, and determined doses and potential consequences of radiological exposures. Special projects included leading the MIT-Cambridge Collaboration on Education for the Environment. Extensive training and work with laser radiation, radiofrequency radiation and magnetic fields as employed in research and academia.

- ***Biological, Chemical and Radiological Occupational Health Consultant, 1994-2005:*** Praecis Pharmaceuticals; Suntory Pharmaceuticals, Wolfe Laboratories, Inc.; Satori Pharmaceuticals, Inc.; Cubist Pharmaceuticals; Arcturus Pharmaceuticals; Millenium Pharmaceuticals; Kinetix Pharmaceuticals; Animal Rescue League of Boston; W.R.Grace; Sontra Pharmaceuticals, Inc.; Implant Sciences; East Coast Chiropractic; Chemical & Atomic Workers Union; Lasertron; Vizidyne; Duracell; Gillette; Senior Flexonics; Telephotonics; Esdaile, Barret & Esdaile; AT&T Wireless; Bell Atlantic Mobile; Entel; NLS; Omnipoint; Verizon Wireless; Sprint PCS; T-Mobile Communications; the Town of Medfield, MA; the Town of Wrentham, MA; General Dynamics, Inc.

- ***North Atlantic Energy Services, July 1990--October 1992:*** Institute of Nuclear Power Operations (INPO) certified Health Physics and Supervisor Training Instructor. Designed, developed and taught courses in health physics, nuclear power plant operations, and supervision. Emergency Responder and Emergency Response Trainer.

- ***Arizona Public Service Company, December 1985 –July 1990:*** Institute of Nuclear Power Operations (INPO) certified Health Physics, Chemistry, and Engineering Training Instructor and Supervisor. Designed, developed and taught courses in health physics, nuclear power plant operations, and chemistry. Led the team of instructors who prepared and presented courses in engineering and plant operations and supervised the team of chemistry instructors. Fully trained and certified in INPO Objectives Based Training.

- ***Contract Health Physics Instructor and Technician during refueling and maintenance outages, June 1984 -December 1985:*** Virginia Power (Surry and North Anna Stations); Southern Nuclear Operating Company (Farley Station); South Carolina Electric & Gas (Brunswick Station); Carolina Power & Light (V.C. Summer Station).

- ***Newport News Shipbuilding and Dry Dock Company, Newport News, Virginia, Radiological Controls Technician. October 1981 –June 1984.*** Trained and worked according to the US Navy Training Criteria of NAVSEA 389-0288 on submarines, aircraft carriers and guided missile cruisers.

Certifications

- **Certified Health Physicist**, certified by the American Board of Health Physics, comprehensive examination passed July1996. Re-certified in 2000, 2004 ,2008, 2012, 2016.
- **Radiological Operations Support Specialist (ROSS) Type** 1, interim FEMA certification and typing 2017.
- **FRMAC Assessment Scientist**, certified by Sandia National Laboratory 2006, 2009 and 2016.
- **Hazardous Materials Technician** certified by criteria of National Fire Protection Administration NFPA 472 by the Vermont Hazardous Materials Response Team, August 2007.
- **Firefighter I**, certified by the Vermont Fire Service Training Council, May 2008
- **Firefighter II**, certified by the Vermont Fire Service Training Council, February 2012
- **Emergency Medical Technician,** certified by the National Registry of Emergency Medical Technicians, June 2013 with recertification through 2020
- **Incident Command System (ICS) 449,** Certified to teach all Incident Command System training classes by Vermont Homeland Security Emergency Management using Emergency Management Institute Incident Command System Curricula Train the Trainer, April 2014.
- **Homeland Security Exercise and Evaluation Program (HSEEP) Certified Controller/Evaluator**, trained and certified by the Vermont Homeland Security Unit, March 2007
- **AgriSafe Provider,** certified by the University of Iowa Center for Agricultural Safety & Health, July 2013.
- **Professional Ski Instructor**, certified by the Professional Ski Instructors of America, March 2009

Professional Affiliations

- **National Council on Radiation Protection and Measurements (NCRP)**
  - Council Member**,** 2015 to present;
  - Member, Program Area Committee PAC 3: Nuclear and Radiological Security and Safety, 2014 to present;
  - Member, Council Committee CC-1 *Radiation Protection Guidance for the United States*, 2014 to present;
  - Member, Scientific Committee SC 3-1, *Guidance for Emergency Responder Dosimetry,* August 2014 to October 2017.
  - Member, Scientific Committee SC 3-1P2, Implementation of Guidance for Emergency Responder Dosimetry, 2017 to present.
  - Member of Program Committee for 2019 Annual Meeting Scientific Program, January 2017 to present.
- **Conference of Radiation Control Program Directors (CRCPD)**
  - Chair-Elect, Chair and Past Chair of the Board, 2014 to present
  - Director Member, 2005 to present;

- Chair of Homeland Security/Emergency Response Committee 4 for evaluation of resources for radiological and nuclear emergency response, 2006 to present;
- Advisor to CRCPD Environmental Task Force 43 for radiological data sharing policy development, 2012 to present.
- Liaison to the International Commission on Radiological Protection (ICRP), 2015 and 2016.

- **American Academy of Health Physics**, Diplomat, 1996 to present.
- **American Board of Health Physics**, Member of the Part II Panel of Examiners, 1999 to 2002.
- **Health Physics Society**, Plenary Member, 1992 to present.
- **Technical Electronic Products Radiation Safety Standards Committee** of the US Food and Drug Administration, December 16, 2016 to the present
- **New England Radiological Health Conference**, Executive Board Member, 2006 to present.
- **Nuclear Decommissioning Citizens Advisory Panel Member,** Appointed by the Vermont Legislature, serving from 2014 to the present.
- **Vermont State Nuclear Advisory Panel**, Appointed by Vermont Secretary of the Agency of Human Service, 2006 through 2013.
- **Bakersfield Planning Commission**
  - Chair 2015 to present;
  - Member 2012 to 2015.
- **Northwest Regional Planning Commission**
  - Executive Committee Member 2015 to present;
  - Policy and Project Review Committee Chair, 2015 to present;
  - Member 2012 to present.
- **Vermont Firefighters Association**, Member, 2006 to present.
- **National Registry of Emergency Medical Technicians**, 2013 to present.
- **Bakersfield Volunteer Fire Department**, Assistant Chief, Fire Captain, Rescue Captain and Training Officer, 2006 to present.

Publications

- ***The ROSS: A Radiological/Nuclear Subject Matter Expert Filling a Critical National Need,*** Health Physics, the Radiation Safety Journal, Volume 114, Number 2, Wolters Kluwer, Hagerstown, MD, February 2018.
- ***NCRP Report 180 Management of Exposure to Ionizing Radiation: Radiation Protection Guidance for the United States***, National Council on Radiation Protection and Measurements Council Committee 1, NCRP, Bethesda, Maryland.
- ***NCRP Report 179 Guidance for Emergency Response Dosimetry***, National Council on Radiation Protection and Measurements, Scientific Committee 3-1, NCRP, Bethesda, Maryland, October 2017.
- ***NCRP Commentary Implementation of Guidance for Emergency Responder Dosimetry (draft)***, National Council on Radiation Protection and Measurements, Scientific Committee 3-1P2, NCRP, Bethesda, Maryland, Due 2019.

- ***The Science of Responding to a Nuclear Reactor Accident: Summary of a Symposium,*** Nuclear and Radiation Studies Board; Division on Earth and Life Studies; National Research Council, Washington, DC: National Academies Press; December 2014.
- ***Symptoms Associated with prolonged Radio Frequency Radiation Exposure,*** Lee, Ernest C., Irwin, William E. and Winters, Thomas H., Environmental Health Perspectives, June 2004.
- ***Radio Frequency Radiation Risk - A Focus on Wireless Telephones***. Dissertation for The University of Massachusetts Lowell, 2002.
- ***New Technology in Art.*** Encyclopedia of Occupational Health and Safety, Fourth Edition, International Labour Office, Geneva, Switzerland, 1996.

Software Knowledge

- **HPAC, RASCAL, MetPac** and **HotSpot** for dose modeling and assessment in radiological and nuclear emergencies.
- **RadResponder** for radiological emergency situational awareness and sample and survey data collection and analysis.
- **ChemResponder** for chemical emergency situational awareness and sample and survey data collection and analysis, serving on the ChemResponder Steering Committee.
- **OneReponder** for managing National Incident Management System (NIMS) emergency preparedness qualification position task books, with special work on ROSS and COSS PTBs.
- **TurboFRMAC, RESRAD, EPA Decon Application and Waste Estimation Support Tool** for environmental assessment, remediation and cleanup following radiological and nuclear emergencies.
- **IND Rapid Hazard Assessment Tool** for estimating the severe, moderate and light damage zones and the dangerous fallout zone following a nuclear detonation to promptly identify shelter in place sectors around and downwind.
- **DOE 10-Point Monitoring Survey** for organizing initial radiological incident radiation and contamination measurements and calibrating dose and plume projection models.
- **CMweb** data products, tools and other content for radiological and nuclear emergencies.
- **CAMEO** for computer assisted management of emergency operations for chemical releases.
- **WISER, ERG, REMM, ICCR, CDC Blast Injury, Hazmat IQ and CDC NIOSH** applications for rapid identification of CBRN agents and initial protective actions.
- **Microshield** for external dose and shielding calculations.
- **Varskin** for skin dose calculations.
- **INDOS** for internal dose calculations.
- **Lazan** for laser nominal hazard zone, MPE and OD calculations
- **SPSS** for epidemiological statistics and **Stata** for other statistics.
- **Microsoft Word** for word processing, **Excel** for spreadsheets, **PowerPoint** for presentations, **Access** for databases, and **Project** for project management.

Selected Presentations

- ***Radiological Operations Support Specialist (ROSS) Initial Training***, second 40-hour pilot course of Lawrence Livermore National Laboratory lesson plans to train radiological and nuclear emergency subject matter experts for FEMA certification and NIMS typing with Angela Leek and Matt McKinley September 18-22, 2017.
- ***Radiological Operations Support Specialist (ROSS) Initial Training***, first 40-hour pilot course of Lawrence Livermore National Laboratory lesson plans to train radiological and nuclear emergency subject matter experts for FEMA certification and NIMS typing with Angela Leek and Matt McKinley September 19-23, 2016.
- ***Radiation Protection in the United States***, CRCPD Annual Meeting, on behalf of NCRP Council Committee CC-1, May 2016***.***
- ***Radiation Emergency Worker Dosimetry***, CRCPD Annual Meeting, on behalf of NCRP Scientific Committee SC 3-1, May 2016***.***
- ***Radiological Operations Support Specialist***, eight-hour training with Brooke Buddemeier, CRCPD Annual Meeting, May 2016.
- ***Radiological Dispersal Device First Responder Guidance,*** New England Radiological Health Conference, Norwich, CT, November 2015.
- ***Vermont's Preventive Radiological/Nuclear Detection Program,*** Vermont EMS and Emergency Preparedness Conference, Jay, VT, October 2015.
- ***Radiological Operations Support Specialist***, Health Physics Society, Indianapolis, IN, July 2015.
- ***Radiation Emergency Dose Issues***, International Dosimetry Symposium, Annapolis, MD.
- ***Radiological Operations Support Specialist***, Conference of Radiation Control Program Directors, St. Louis, MO, May 2015.
- ***Radiological Operations Support Specialist***, National Radiological Emergency Preparedness Conference, Sacramento, CA, April 2015.
- ***Vermont Yankee Decommissioning,*** New England Chapter of the Health Physics Society, Boston, MA, May 2014.
- ***Science and Response to a Nuclear Reactor Accident,*** National Academies of Science, Washington, DC, May 2014.
- ***Regional Rad/Nuc Exercises,*** Conference of Radiation Control Program Directors, Atlanta, GA, May 2014
- ***Chemical and Biological Weapons Exposure,*** Vermont Hospital Preparedness Conference, Jay, VT, October 2013.
- ***Chemical and Biological Weapons***, Vermont Hazardous Materials Response Team, Colchester, VT, July 2013.
- ***The Vermont Dairy Air: Formaldehyde Use on Farms,*** National Environmental Health Association, Alexandria, VA, July 2013.
- ***Public Health Response to an Improvised Nuclear Device.*** Vermont Emergency Medical Services Conference, Burlington, Vermont, October 2012.

- ***Public Health Response to an Improvised Nuclear Device.*** New England Radiological Health Conference, Burlington, VT, October 2012.
- ***Public Health Response to an Improvised Nuclear Device.*** Vermont Healthcare Preparedness Conference, Burlington, Vermont, June 2012.
- ***Tri-State Radiological Analysis of Fish.*** New England Radiological Health Conference, Burlington, VT, October 2012.
- ***Vermont Yankee Groundwater Protection and the 2010 Tritium Leak.*** Northeast Epidemiology Conference, Meredith, NH, October 2012.
- ***The CRCPD Radiological/Nuclear Emergency Toolbox for Response and Recovery for an RDD or IND.*** Conference of Radiation Control Program Directors, Orlando, Florida, May 2012.
- ***TMI, Chernobyl, Fukushima and their Impacts on Vermont Yankee.*** Vermont Emergency Preparedness Conference, Stowe, Vermont, November 2011.
- ***The Fukushima Reactor and Spent Fuel Pool Accidents.*** Vermont Healthcare Preparedness Conference, Stowe, Vermont, October 2011.
- ***Situational Awareness and Assessment.*** CDC Radiation Emergencies Bridging the Gaps Conference, Atlanta, Georgia, March 2011.
- ***Vermont Yankee Tritium Release.*** International Emergency Management Conference, Portsmouth, NH, December 2010.
- ***Vermont and Empire 09.*** The National Radiological Emergency Preparedness Conference, Chicago, Illinois, July 2009.
- ***The NERHC 2007 RDD Conference Exercise.*** Conference of Radiation Control Program Directors, Columbus, Georgia, May 2009.
- ***Radiological/Nuclear Emergency Response for EMS.*** Vermont Emergency Medical Services Conference, Burlington, Vermont, March 2009.
- ***The Health Physics of Radon.*** Vermont Radon Conference, Bolton, Vermont, January 2009.
- ***Radiological/Nuclear Emergency Response for Emergency Department Directors.*** Killington, Vermont, September 2007.
- ***Radio Frequency Radiation Risk from Base Stations in the Environment***. Hundreds of Presentations to communities in Massachusetts, Connecticut, Rhode Island, New Hampshire and New York; January 1993 to September 2004.
- ***Radio Frequency Radiation Risk - A Focus on Wireless Telephones***. Presentation to the Health Physics Society, Washington, DC, July 2004.
- ***Decommissioning of the Harvard Cyclotron***. Presentation to the Health Physics Society, Washington, DC, July 2004.
- ***Decommissioning of the Harvard Cyclotron***. Presentation to the New England Chapter of the Health Physics Society, Westford, MA, June 2003.
- ***Radon in the Home and Laser Safety***. Presentations for the Massachusetts Institute of Technology Independent Activities Period, 1995 - 2000.
- ***Radiation Safety***, for the Massachusetts Safety Council, Braintree, MA, December 2000.
- ***Laser Accidents at the Massachusetts Institute of Technology***. Presentation to the North American Campus Radiation Safety Officers, 17th Biennial CRSO Conference, July 1999.

Testimony

- Testimony before the Vermont Public Service Board on incorporating Health Impact Assessment into the certificate of public good process, July 2014.
- Testimony before the Vermont Public Service Board relative to the granting of a Certificate of Public Good for the on Vermont Yankee Nuclear Power Station, June 2013.
- Testimony before Vermont Legislature on wind turbine sound, radiofrequency radiation from smart meters, Vermont Yankee Nuclear Power Station and radiological program funding from 2009 to present.
- Testimony on the physics and health impacts of wind turbine sound at the Vermont Public Service Board, February 2011.
- Testimony on the physics and health effects of electromagnetic field and radio frequency radiation sources:
    - In Massachusetts - Arlington, Barnstable, Billerica, Boston, Boxboro, Braintree, Brighton, Brookline, Bridgewater, Brookfield, Brookline, Burlington, Cambridge, Dedham, Dennis, Dorchester, Easton, Fairhaven, Fall River, Fitchburg, Gloucester, Grafton, Groton, Groveland, Hamilton, Hanson, Harvard, Harwich, Holliston, Hudson, Jamaica Plain, Lancaster, Lexington, Lincoln, Lynnfield, Mansfield, Marblehead, Marshfield, Mattapoisett, Maynard, Medfield, Methuen, Middleton, Millis, Nantucket, Needham, Newton, Norfolk, Northborough, North Dartmouth, Norton, Norwell, Ogunquit, Orleans, Oxford, Peabody, Plymouth, Provincetown, Quincy, Randolph, Reading, Revere, Rochester, Rockport, Saugus, Sharon, Scituate, Stoneham, Sudbury, Sutton, Swampscott, Tewksbury, Tisbury, Townsend, Waltham, Wellfleet, Westborough, Weston, West Roxbury, Westminster, Westwood, Weymouth, Winthrop, Worcester and Wrentham
    - In New Hampshire - Candia, Derry, Goffstown, Hollis, Hudson, Nashua, Sutton and Pelham
    - In New York - Duanesburg and Saratoga Springs
    - In Rhode Island - Barrington, Johnston, Portsmouth, Providence, Middletown, North Providence, North Smithfield, Smithfield, Warwick and Woonsocket.

Teaching Experience

- **Counter Terrorism Operations Support (CTOS), August 2017-present:** FEMA MGT-455 Radiological Operations Support Specialist (ROSS) Instructor. Taught three courses for FEMA certification, one each in Dallas TX, Washington DC and Phoenix AZ.
- **Centers for Disease Control and Prevention September 2017:** Radiological Operations Support Specialist (ROSS) Initial Training, second 40-hour pilot course of Lawrence Livermore National Laboratory lesson plans to train radiological and nuclear emergency subject matter experts for FEMA certification and NIMS typing.

- **Conference of Radiation Control Program Directors, September 2016:** Radiological Operations Support Specialist (ROSS) Initial Training, first 40-hour pilot course of Lawrence Livermore National Laboratory lesson plans to train radiological and nuclear emergency subject matter experts for FEMA certification and NIMS typing.
- **Harvard University, 2001-September 2005, *Laser Safety*:** Two-hour course delivered to research faculty, students and staff on the physics of lasers, biological effects of lasers, engineering and administrative controls for laser safety.
- **Massachusetts Institute of Technology, 1992-2001, *Radiation Safety:*** Three-hour course to research students, faculty and staff on physics of radiation, biological effects of radiation, radiation detection methods, and radiation protection regulations. ***Laser Safety*:** Two-hour course delivered to research faculty, students and staff on the physics of lasers, biological effects of lasers, engineering and administrative controls for laser safety. ***Occupational and Environmental Law, Radiological Risk Management in High Technology Enterprise, Environmental Health and Safety Case Studies - The Microelectronics and Biotechnology Industries***; ***Comprehensive Environmental Health and Safety Program Design Projects***: Presentations for the MIT Independent Activities Period, 1999.
- **North Atlantic Energy Services, 1990-1992, *Team Building*:** As part of the overall management training program, this eight-hour course used a variety of tools to better understand people and how they might be motivated to become part of a highly successful team. ***Kepner-Tregoe Problem Solving and Decision Analysis:*** As part of the management Training Program, this 24-hour course presented a set of tools for systematic analysis of work situations leading to effective decisions and well-planned strategies for work. ***Power Plant Fundamentals*:** Forty-hour course in mathematics, physics and chemistry fundamentals; nuclear fission; electrical power generation; plant systems and components; instrumentation and control; normal and emergency plant operations
- **Arizona Public Service, 1985-1990, *Nuclear Power Plant Operations*:** Forty-hour course as part of the engineering and chemistry training programs that presented power plant fundamentals, nuclear fission, reactor systems, startup, routine operations, and emergency operations. ***Plant Systems*:** Forty-hour course in all major systems of a nuclear power plant, including the nuclear reactor, steam generation, electricity generation and safety system components.

Specialized Training

- **Hazard Prediction and Assessment Capability (HPAC),** 40-hour course conducted by the Defense Threat Reduction Agency and the Interagency Modeling & Atmospheric Assessment Center on chemical, nuclear, radiological, nuclear and explosive consequence modeling, November 2014.
- **Turbo FRMAC, Assessment Scientist**, 24-hour course conducted by Sandia National Laboratories on the use of derived response level, derived intervention level and emergency worker protection computer software, July 2013.
- **Emergency Medical Technician,** 144-hour course with scheduled completion by April 2013.

- **Agricultural Medicine and Occupational Safety Training**, 48-hour course on agricultural illnesses, injuries and exposures with a focus on prevention, as well as care presented by the University of Iowa Center for Agricultural Safety & Health and the New York Center for Agricultural Medicine & Health, July 2013.
- **Computer Assisted Management of Emergency Operations**, 24-hour course conducted by the Environmental Protection Agency, May 2013.
- **HazCat Field Identification Course,** 32-hour course presented by Haz Tech Systems, Inc., February 2013.
- **Firefighter II**, 90-hour training and certification provided by the Vermont Fire Service Training Council, February 2012.
- **Turbo FRMAC, Assessment** Scientist, 24-hour course conducted by Sandia National Laboratories on the use of derived response level, derived intervention levels and emergency worker protection computer software, March 2009.
- **HazCat Field Identification Course,** 32-hour course presented by Haz Tech Systems, Inc., October 2008.
- **Small-scale Chemical and Biological Weapons Production,** 40-hour course by Responders Resource Technology, January 2007.
- **Homeland Security Exercise Evaluation Program**, Vermont Homeland Security Unit, November 2008
- **Firefighter I**, 160-hour training and certification provided by the Vermont Fire Service Training Council, May 2008.
- **Hazardous Materials Technician**, Vermont Hazardous Materials Response Team, February 2007-2012.
- **Hazardous Materials Emergency Responder.** 24-hour course presented by Harvard University, 2001, 2002, 2003, 2004, 2005.
- **Multi-Agency Radiological Survey and Site Investigation Manual.** 8-hour course presented by the American Academy of Health Physics, July 2004.
- **Concepts and Methods for Communicating with Responders and the Public**. 8-hour course presented by the American Academy of Health Physics, July 2003.
- **Medical Management of Patients from Radiological Terrorist Events.** 8-hour course presented by the American Academy of Health Physics, June 2002.
- **Incident Command System.** NIMS 700, ICS 100, 200, 300, 400, 441 and 449 qualified through courses presented by the Vermont Criminal Justice Training Council through May 2006-September 2014.
- **Non-Ionizing Radiation Safety: Evaluation and Management Techniques**, 24-hour course presented by Narda Microwave, November 1998.
- **Radiofrequency Radiation Safety in the Telecommunications Industry**, 8-hour course presented by Narda Microwave, September 1996.
- **Advanced Laser Safety**, 24-hour course presented by the Engineering Technology Institute, August 1996.
- **Health Physics at Research Reactors**, 8-hour course presented by the American Academy of Health Physics, July 1996.
- **Radiation Physics at Accelerators**, 8-hour course presented by the American Academy of Health Physics, July 1995.

- **Environmental Radioactivity Quantification**, 8-hour course presented by Canberra Industries, June 1994.
- **Laser Safety**, 32-hour course presented by the Engineering Technology Institute, June 1993.
- **MIT Reactor Safety Study,** 40-hour course presented by the Massachusetts Institute of Technology, Department of Nuclear Engineering, July 1988.
- **Arizona Public Service, Instructor Development:** Instructor Platform Skills; Course Documentation; Conducting Topic, Task and Paradigm Analysis; Incorporation of Operating Experiences in Training Programs; Learning Objectives; Evaluating Student Performance; Maintaining Training Materials; Motivating Students and Responding to Student Needs; Advanced Platform Skills; Laboratory instruction.
- **Arizona Public Service Technical Development:** Management Oversight and Risk Tree Root Cause Analysis; Emergency Planning; Fundamentals of Working Fluids; Chemistry; Mitigating Core Damage; Plant Modifications; Instrumentation and Process Controls; Systems, Plant Components and Design Bases; reactor Theory; Plant Operations, Human Performance Evaluation Systems; Hazardous Materials Control; Nuclear Reactor Safety
- **NAVSEA 389-0288. Article 108 U.S. Naval Reactors Radiological Controls Technician.** Three-month training program presented by Newport News Shipbuilding and Dry Dock Company, October-December 1981.

Education Details

- **University of Massachusetts Lowell, Work Environment Engineering, Doctor of Science:** Doctoral courses in Biostatistics, Epidemiology, Ergonomics, Industrial Hygiene, Environmental Law, Occupational Law, Pollution Prevention, Cleaner Production and Healthy Work Organization Design. Research in occupational cancer policy, recombinant DNA health protection, radio frequency radiation risk and the Environmental Protection Agency. Dissertation: A risk assessment on wireless telephones.
- **University of Massachusetts, Lowell, Radiological Sciences, Master of Science:** Masters courses in Mathematical Methods, Radiochemistry, Internal Dosimetry, Radiation Shielding, Radiation Dosimetry and Radiation Safety and Control. Research thesis on Gamma Spectroscopy.
- **Southern New Hampshire University, Masters in Business Administration:** Graduate courses in Managerial Accounting, Finance, Statistics, Economics, Marketing, Management, Business Law, Strategic Analysis, Operations Management, Research Methods, Database Management, Information Engineering, Organizational Behavior and Computer Information Systems. Research in electric utility operations management.
- **Arizona State University, Business Administration:** Computer Information Systems, Managerial Statistics, Management, Managerial Marketing, Legal Environment of Business, Managerial Accounting, Financial management, Managerial Communications and Macro- and Micro-economics.
- **Old Dominion University, Physics:** Algebra, Trigonometry, Calculus and Chemistry.

- **Christopher Newport University, Bachelor of Arts in Philosophy and History:** In addition to the required curriculum for a bachelor's degree, courses in Logic, Ethics, Aesthetics, Epistemology, Metaphysics, Politics, Existentialism, and Chinese, Indian, and Greek Philosophy; American, European, Russian and Asian History. Thesis in Architectural History.

References

Ruth McBurney, CHP
Executive Director of the CRCPD
Office of the Executive Director
rmcburney@crcpd.org

Clayton S. French, Ph.D.
University of Massachusetts-Lowell
Professor, Physics/Applied Physics
clayton.french@uml.edu

Adela Salame-Alfie, Ph.D.
CDC Radiation Studies Branch
Yta1@cdc.gov

Armin Ansari, Ph.D., CHP
CDC Radiation Studies Branch
aansari@cdc.gov

Daniel Blumenthal, Ph.D., CHP
Department of Energy
National Nuclear Security Agency
Daniel.blumenthal@nnsa.doe.gov

Mitchell Galanek, CHP
Radiation Safety Officer
Massachusetts Institute of Technology
galanek@mit.edu

FRANCIS X. O'NEILL, BS, RTT, MS

2015 - Present: Senior Radiological Health Specialist
State of Vermont:
Division of Radiological and Toxicological Sciences

-Assigned to Agreement State Radioactive Materials Program.
-Develop Radioactive Materials Program Procedures, checklists and forms to support the Agreement State Program.
-Attended various required Agreement State NRC training courses.
-Participate in State Rad Responder Network.
-NRC inspection accompaniments of materials licensees in the State of Vermont.
-Member Council of Radiation Control Program Directors.
-CRCPD liaison to American Society for Radiation Oncology

2008-2011, Contract Radiological Engineer,
Nucore Corp. Supervisor Gopal Patel

- Performing radiological calculations to determine the level of exposure to certain electrical components for various nuclear power plants.
- Perform as built retro shielding calculations for ALARA (as low as reasonably achievable) compliance.

2001-2008, Assistant Chief Therapist
Radiation Therapy
Thomas Jefferson University

-500+ bed Major hospital, research and cancer center.
-Clinical instructor for the Thomas Jefferson School of Radiation Therapy.
-Member of Thomas Jefferson School of Radiation Therapy Advisory Board which made decisions on direction of curriculum and administrative issues.
- Obtained initial accreditation as an outstanding Radiation Therapy College program.
-Responsible for daily Quality assurance, CT simulations and delivering radiation treatments to cancer patients.
-Coordinate and assist with Gamma knife boost for Brain lesions.
-Responsible for input to IMPAQ record and verify treatment delivery system and establishing break points for conedowns and boost in accordance with the written

directive
-Radiation Therapy machines used:
Phillips Sl-25 dual energy plus electrons
Elekta Synergy IMRT/IGRT and Precise, both utilizing Electronic Portal Imaging -(EPID) and CT-cone beam
Elekta breath-gating device for breast irradiation
GE light speed CT scanner for CT-simulations
CMS treatment planning system
IMPAQ record and verify Electronic Medical Records system
Elekta Gamma Knife

1994-2001 Assistant Chief Therapist
Temple university Hospital, 500+ bed teaching hospital

-Responsible for all radiation therapy treatments, computer verification, monthly statistics and billing and maintaining safety checks on Co-60 treatment machine and Clinac 18, 1800 and 2100c.
-Maintained hardware and software upgrades.
-Developed scheduling program to coordinate departmental and physician schedules.
-Assist Medical Physics with patient set up and head frame placement for Stereotactic CT planning, simulation and QA for setup parameters.
-Responsible for all input to the IMPAC record and verify treatment delivery module and establishing break points for cone downs and boost as defined in the written directive.
-Responsible for all High Dose Rate after-loader treatment functions, assist Medical Physics with patient setup, QA and treatment delivery.
-Radiation Therapy machines used:
Varian Clinac 18, 1800, 2100C
Siemens Mevatron
Theratronics 780 Co-60
Kermath Simulator
Clinac 18 modified for Stereotactic Radiotherapy and Radiosurgery, using the Gill-Thomas head frame localization device, with a floor stand mount for head positioning.
Diacor custom block cutting system with built-In cooling trays.
Brain-lab software for stereotactic planning and beam delivery.
IMPAQ record and verify, Electronic Medical Record System.
Nucletron HDR Brachytherapy system.

1990-1994, Senior Therapist
Thomas Jefferson University

-Responsible for delivering prescribed radiation therapy treatments
-Radiation Therapy machines used:
Phillips Sl-25 dual energy/ electron beam

1979-1980, Temple University Hospital
Staff Therapist

-Assigned to deliver daily prescribed Radiation Therapy treatments.
-Assist Medical Physics with dosimetry and maintain/ document Radioactive
-Source inventory in the "Hot lab"
-Radiation Therapy machines used:
Theratronics 780 Co-60
Van de Graff Generator
Betatron dual energy plus electron beam therapy

1986-1990, Health Physics
PECO Radiological Engineer/Health Physicist. Limerick Station

-large scale utility with 3 operating nuclear reactors supplying 1500 watts power to the greater Philadelphia area
-Assigned to Radiological Engineering with overall responsibility for monitoring and measuring plant conditions.
-Responsible for monitoring and implementing measures to protect workers from environmental hazards.
-Perform weekly walk through ALARA reviews. This required an in-depth analysis of the steam cycle. Necessary for determining expected radiation environment in plant areas.
-Met regularly with NRC inspectors regarding Radiologic Safety issues and to ensure compliance with 10 CFR 20 requirements.
-Formed Tie-in Team for Limerick Unit1 and Unit 2, involving construction, operations, health physics and Emergency Preparedness.
-Led Radioactive-waste Task Force to reduce contamination and resultant airborne issues due to shipping concerns.
-responsible for Radiological concerns for the tie-in of Unit 2 to Unit 1, while experiencing significant fuel damage resulting in enhanced radiation, contamination and airborne radioactivity in the common areas of Both Units.
- provided in depth surveys and source term development for the Unit 2 Transverse

-In-Core Probe (TIP) room for the addition of required shielding for ALARA concerns due to design deficiencies.

1980-1986 Radiological Engineer
Stone & Webster Engineering Corporation

-Assigned to Radiation Protection division with primary responsibility was to perform radiologic analyses for shielding, off site dose calculations to maintain compliance with 10 CFR 20 and develop radiation exposure to Category 1 safety related equipment from normal operations, 40-year life span including Design Basis Loss of Coolant Accident for River Bend station.
-Performed off site dose calculations, shielding analysis, including 2 dimensional and 3-dimensional scattering transport codes.
-Perform ALARA reviews of all plant areas containing radiation sources.
- As part of the Lessons learned from TMI, performed component specific radiation environment calculations, to determine a replacement schedule for category one safety related equipment throughout the plant.
-The process involved obtaining manufacturer diagrams and parts list so that the most sensitive component would be identified and the appropriate radiation doses applied.

Education:

2008 Thomas Jefferson University
M.S. Radiologic and Imaging Sciences

1986 Widener University
B.S. Radiologic Technology

1979 Gwynedd-Mercy College
A.S. Radiation Therapy Technology

Training:

-PECO Maintenance Training facility 1988: Control rod drive removal and rebuild.
Oak Ridge Associated universities 1989: Sampling for airborne radioactivity program.
-2016 – 2019 US Nuclear Regulatory Commission Agreement State Training:
Inspection Procedures
Diagnostic and Therapeutic Nuclear Medicine

Licensing Practices and Procedures
Brachytherapy and Gamma Knife
Safety Aspects of Industrial Radiography
Transportation of Radioactive Materials
Materials Control and Security Systems
Safety Aspects of Well Logging
Root Cause/Incident Investigation Training
Characterization and Planning for Decommissioning

Affiliations:

Past Member American Association of Physicists in Medicine (1979-1990)
Past Member Health Physics Society (1980-2000)
Retired American Society of Radiologic Technologists, Registered Radiation Therapist (RTT), (1979-2010).

Littia C. Mann

Work Experience

1/12/2015 – Present State of Vermont, Department of Health Burlington, VT

Radiological & Toxicological Scientist

- Registration and inspection of radiation-producing machines for employee and public health protection purposes
- Inspections of medical facilities to verify compliance with U.S. Food and Drug Administration Mammography Quality Standards Act requirements
- Environmental surveillance for Vermont Yankee Nuclear Power Plant
- Training for Radioactive Materials Program licensing and inspection

10/13/2014 – 12/31/2014 Pinnacle Environmental Consultants Hurricane, WV

Laboratory Director

- Supervised and trained laboratory analysts
- Prepared laboratory for NVLAP audits
- Developed project and cost proposals for new and existing clients

6/1/2008 – 10/13/2014 Pinnacle Environmental Consultants Hurricane, WV

Laboratory Analyst

- Analyzed bulk samples for asbestos using Polarized Light Microscopy (PLM)
- Analyzed air samples for fibers using Phase Contrast Microscopy (PCM)
- Created analysis reports and communicated results

5/28/2002 – 5/30/2008 Bio-Chem Testing, Inc. Hurricane, WV

Laboratory Analyst/Quality Control Officer

- Prepared and analyzed water and soil samples for various parameters on laboratory instruments, including ICP-AES
- Supervised Sample Receiving/Data Entry personnel

- Reviewed laboratory reports and standard operating procedures
- Prepared laboratory and personnel for regulatory audits
- Initiated and maintained quality control procedures

Education

1/2011 – 12/2013	Marshall University	Huntington, WV
	M.S., Environmental Science	
6/2008	MICA	Chicago, IL
	Asbestos Identification Using Polarized Light Microscopy	
9/1994 – 5/1997	Marshall University	Huntington, WV
	B.S., Biological Sciences	

Training

2015 – 2017 US Nuclear Regulatory Commission Agreement State Training:

Advanced Health Physics
Inspection Procedures
Diagnostic and Therapeutic Nuclear Medicine
Licensing Practices and Procedures
Brachytherapy and Gamma Knife
Safety Aspects of Industrial Radiography
Transportation of Radioactive Materials
Materials Control and Security Systems
Root Cause/Incident Investigation Training