

4.6 Technical Staffing and Training

This section addresses the technical staffing requirements and training program the Department will utilize for agreement state staff. The Department uses 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 as described in this section of the application.

Section 4.6.1 describes the organization of the program and provides a staffing analysis to indicate the organization will be sufficient to maintain the agreement state program. Section 4.6.2 describes the staff qualification plan, and Section 4.6.3 describes the qualifications of the current staff. The relevant procedure, RCP-903.1, *Qualification and Training* is attached.

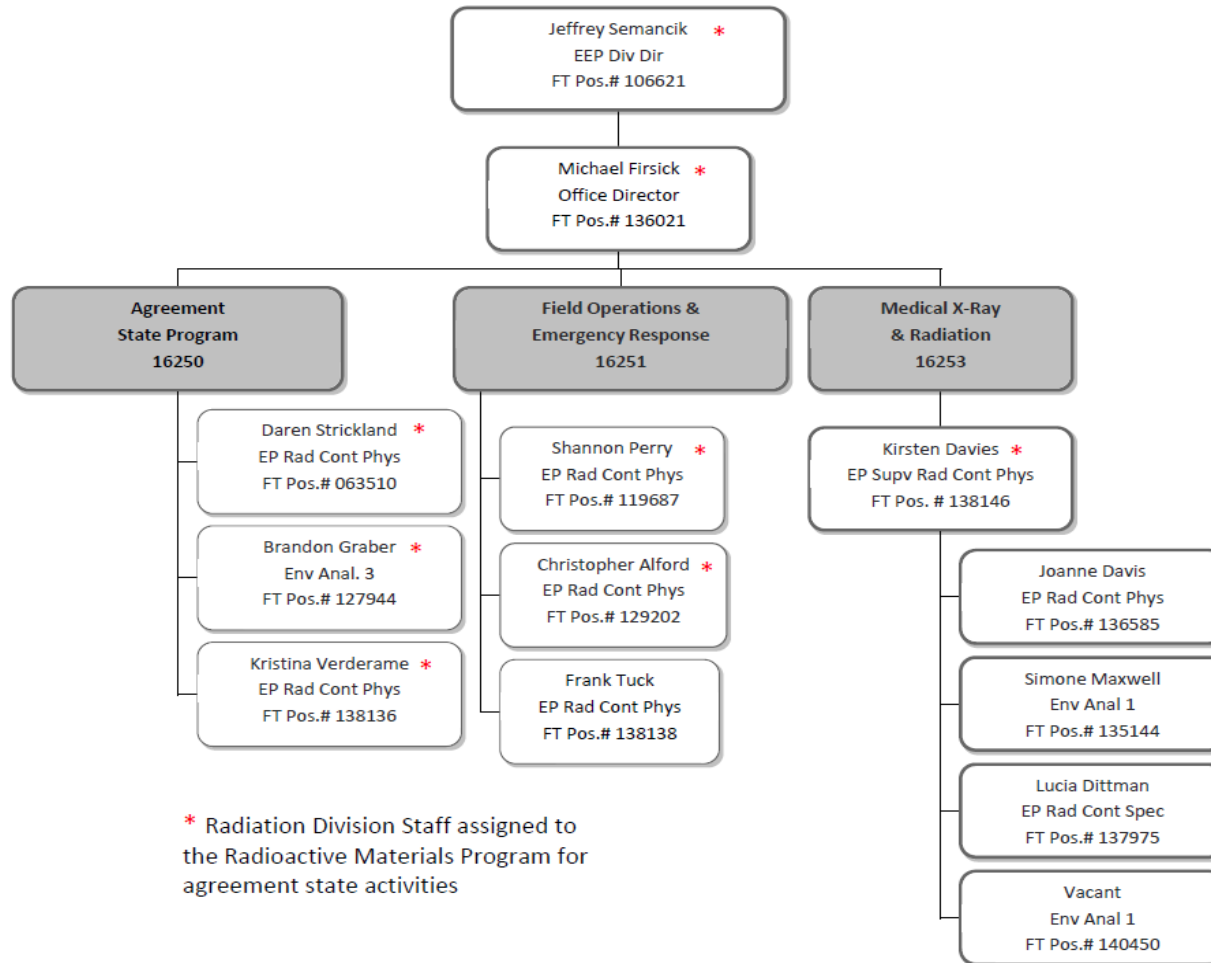
4.6.1 Technical Staff Organization

SA-700 4.6.1.1

As described in Section 4.1.2, the RMP resides within the Radiation Division in the Bureau of Air Management of the Connecticut Department of Energy and Environmental Protection (Department). The current staff responsible for the agreement state work in the RMP are shown in the organization chart for the Radiation Division, Figure 7. The staff implementing the RMP include the Radiation Division Director (RDD), the Radiation Division Office Director (RDOD), an Environmental Analyst III (EA3), the Supervising Radiation Control Physicist (SRCP), and four Radiation Control Physicists (RCP). Other staff members are available to support the program and can be trained to provide defense-in-depth, if needed. While current staffing levels are sufficient to run the program, the Department has budgeted for additional staffing including a supervisory position as funding from license fees are realized. The RMP will also have support from various offices and bureaus within the Department as well as various State agencies regarding legal support, emergency preparedness, law enforcement, prevention, and recovery efforts.

Figure 7 Radiation Division Organizational Chart

**Bureau of Air Management
Radiation Division
DEP43500-064250**



The primary document describing the qualifications and training of RMP staff is RCP-903.1, *Qualifications and Training*. In this procedure, various roles are described. The RDD serves the role of managing the training and qualification program. The RDD joins the RDOD, an EA3, the SRCP, and four RCPs to make up the RMP. These staff will become qualified inspectors and license reviewers following the guidance of RCP-903.1, *Qualification and Training* and are tracked in RCP-903.1 Attachment 1, *Qualifications Journal*. The RCP-903.1 and Qualifications Journal are in Section 4.6.2 below.

Staff Needs Analysis

An analysis was performed using the forms from the NRC Handbook for Processing an Agreement. The first form is the Staff Needs Analysis Table 4.6.1-1. The form has been modified to reflect the types of license programs the State will regulate. 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 4.6.1-2. This indicates the time in days available for each of the individuals who may conduct inspections and license review activities. The final form, Table 4.6.1-3, shows the difference between the amount of staff time needed and available. It indicates that for the radioactive material licensees in Connecticut, 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 Connecticut license activity for 2018 through 2020 was conducted. More recent data was not utilized because of the potential underrepresentation of time during the COVID-19 global pandemic. Currently there are approximately one hundred twenty specific radioactive materials licenses in the state of Connecticut broken down by license type as follows:

<u>License Type (January 2024 data)</u>	<u>Quantity</u>
Academic Broad Scope	3
Medical Broad Scope	2
Medical	47
Nuclear Pharmacy	1
Veterinary	4
Measuring Systems	26
Radionuclide Production Using Accelerator	2
Manufacturer and/or Distribution	12
Industrial Radiography	3
Service Providers	5
Self-Shielded Irradiator	1
Research and Development Broad Scope	2
Research and Development	9
Special Nuclear Material less than critical mass	3
Total	120

The time allotted for individual licensing actions is based on a three-year analysis with the assumption that a typical licensing effort will encompass an average of three days to complete, including email, telephone, and letter correspondence between the RMP staff member and the applicant/licensee. This estimate includes program management and administrative functions.

The inspection program estimates also include time for inspection preparation, travel, inspection report generation and supervisory accompaniments. The RMP 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 RMP procedure RCP-900.1, *Review of an Initial Application for a License or an Amendment Request*, Attachment 6.

Based on conservative assumptions, Connecticut's licensing and inspection activities will require 400 staff days for licensing and 487 staff days for inspections each year (the totals in the fifth and eighth columns in Table 4.6.1-1). Mr. Graber can devote a minimum of 129 days to inspection and 106 days per year to licensing activities per year. Mrs. Verderame and Mr. Strickland each can devote 103 days to inspections and 85 days to licensing activities per year. Ms. Perry and Mr. Alford can each devote 45 days to inspections per year and 37 days to licensing per year. Mr. Semancik, Mr. Firsick and Ms. Davies can devote 13, 52, and 26 days respectively to inspections and 11, 42, and 21 days respectively to licensing activities per year. The total number of days per year for inspection and licensing from the RMP staff comes to 517 for inspections and 423 for licensing.

These allocations of time are considered reasonable. There are 235 workdays per year including holidays, vacations, and weekends. Mr. Graber will be 100% devoted to the RMP, while Mrs. Verderame and Mr. Strickland can each devote 80% of their time to agreement state work. Ms. Perry and Mr. Alford will each devote 35% of their time. Mr. Semancik, Mr. Firsick and Ms. Davies will devote 10%, 40% and 20% respectively of their time. Using these percentages and the standard work year of 235 days, the RMP staff may provide as many as 940 workdays to a program requiring 895 workdays. These calculations are estimates, but indicate a sufficient margin exists with the Department staffing levels. Additionally, the State discussed staffing with Vermont due to similarities in program size. Discussions with Vermont suggested that Vermont's estimate for their staffing is similar to those determined by Connecticut.

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 150. The RMP with 8 staff members and the RDD qualifying as Inspectors and License Reviewers meets this guidance. The Handbook also states that "the staff must consist of at least two technical staff." Three additional staff members of the Radiation Division have commenced taking NRC Agreement State courses to provide professional knowledge and defense in depth the RMP. The Department will always strive to maintain at least two qualified inspectors and license reviewers.

Table 4.6.1-1
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
Industrial Radiography	3	0.3	6.3	2.1	3	8.7	27
Industrial Measuring Systems, Irradiators - Self Shielded	27	3.3	3.7	12.4	5.4	17.31	94
Broad Scope Non-Medical	7	4.7	12.0	56.1	2.5	19.7	50
Nuclear Pharmacy	1	0.3	0.1	0.04	0.5	4.7	3
Medical	31	9.7	3.6	34.9	9.9	13.7	136
Mobile Therapy, High Dose Rate Remote Afterloader	16	28.3	4.1	116	8	12	96
Medical - Broad Scope	2	3.7	3.6	13.1	1	8.6	9
Research and Development, Veterinary, Manufacturing and Unsealed SNM	19	9.7	16.0	154.5	3.8	10.7	41
Distribution	6	1.7	2.4	4	1	4.7	6
Sealed Special Nuclear Material	3	1.0	2.3	2.3	1	2.9	3
Service - Decontamination, Instrument Calibration	5	1.0	4.2	4.2	1.3	17.1	22
GL Devices**							
TOTAL	120	63.7	19.5	399.7	37.4	120.11	487

* This table is modified from SA-700 Appendix B to reflect the categories of licenses in Connecticut. Similar license categories have been combined.

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

Table 4.6.1-2

Staff Resource Analysis (in Days)*

Staff Member	B. Graber		K. Verderame		D. Strickland		S. Perry		C. Alford		M. Firsick		K. Davies		J. Semancik	
License Category	Insp	Lic	Insp	Lic	Insp	Lic	Insp	Lic	Insp	Lic	Insp	Lic	Insp	Lic	Insp	Lic
Industrial Radiography	7	1	6	1	6	1	3	0	3	0	3	0	1	0	1	0
Industrial Measuring Systems, Irradiators - Self Shielded	25	3	20	3	20	3	9	1	9	1	10	1	5	1	2	0
Broad Scope Non-Medical	13	15	11	12	11	12	5	5	5	5	5	6	3	3	1	1
Nuclear Pharmacy	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0
Medical	36	9	29	7	29	7	13	3	13	3	15	4	7	2	4	1
Mobile Therapy, High Dose Rate Remote Afterloader	25	30	20	24	20	24	9	11	9	11	10	12	5	6	3	3
Medical - Broad Scope	2	4	2	3	2	3	1	1	1	1	1	1	0	1	0	0
Research and Development, Veterinary, Manufacturing and Unsealed SNM	11	40	9	32	9	32	4	14	4	14	4	16	2	8	1	4
Distribution	2	1	1	1	1	1	1	0	1	0	1	1	0	0	0	0
Sealed Special Nuclear Material	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
Service - Decontamination, Instrument Calibration, Other	6	1	5	1	5	1	2	0	2	0	2	1	1	0	1	0
TOTAL	129	106	103	85	103	85	45	37	45	37	52	42	26	21	13	11

*This table is modified from SA-700 Appendix B to reflect the categories of licenses in Connecticut. Similar license categories have been combined.

Table 4.6.1-3

Staff Balance Analysis*

License Category	Inspection staff days		Licensing staff days	
	Needed	Available	Needed	Available
Industrial Radiography	27	29	2.1	3
Industrial Measuring Systems, Irradiators - Self Shielded	94	100	12.4	13
Broad Scope Non-Medical	50	53	56.1	59
Nuclear Pharmacy	3	3	0.04	1
Medical	136	145	34.9	36
Mobile Therapy, High Dose Rate Remote Afterloader	96	102	116	121
Medical - Broad Scope	9	10	13.1	14
Research and Development, Veterinary, Manufacturing and Unsealed SNM	41	44	154.5	161
Distribution	6	6	4	5
Sealed Special Nuclear Material	3	3	2.3	3
Service - Decontamination, Instrument Calibration, Other	22	23	4.2	5
GL Devices*				
Total	487	517	399.7	423

* This table is modified from SA-700 Appendix B to reflect the categories of licenses in Connecticut. Similar license categories have been combined.

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

SA-700 4.6.1.2

The State has modified the forms from Appendix B of the SA-700 Handbook to reflect the types of licenses in the State. The types of licenses listed in the table are a mix of license programs that the State will regulate. The Department has staffed the program with enough qualified personnel based on the analysis provide. The Department will have 8 qualified personnel (5 fully qualified, 3 partially qualified including the Director) which is more than adequate of the needed technical staff required for inspections and license review. The Department’s estimated workload for each staff member is accepted based on organization, policies, practices, and procedures the State has adopted.

4.6.2 Formal Qualification Program

SA-700 4.6.2.1

The qualification program is described in RCP 903.1, *Qualification and Training*. The procedure is attached to this section of the application. 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 RCP 903.1, *Qualification and Training*, attached in this section of the application. Individual completion of the qualification components are documented in that person's Qualification Journal.

The processes described in RCP-903.1 are for future staff. The qualifications of current technical staff are described in section 4.6.3 of this application. The RDD will take all steps available to replace staff that either leave or retire from the Department working in the RMP. One element of this is technical training and the qualifications of other Radiation Division staff. This will be undertaken after the current staff members assigned to the RMP are qualified.

Connecticut is a statutory member of the New England Radiological Health Conference (NERHC) which maintains the New England Compact (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 Connecticut should such a vacancy occur and strain the state's RMP licensing and inspection work completion capabilities. A copy of the Compact is found in Section 4.1 of this application. The enabling legislation in the State, which is identical to that in the other five New England states, is statutory and found in the Connecticut General Statutes (CGS), Chapter 446a Section 22a-159, New England Compact on Radiological Health Protection. This is also included in Section 4.1 of this application.

SA-700 4.6.2.2

Each technical staff position meets the requirements of a bachelor's degree in the physical, life science or engineering; or an equivalent combination of education and experience has been substituted for the degree. The Department has submitted RCP-903.1 as a written qualification plan. The procedure also addresses job specific training and experience that can be substituted for educational requirements.

4.6.3 Qualification of Current Technical Staff

SA-700 4.6.3.1

The qualifications of the current technical staff are described in this section of the application. Current technical staff qualifications are substantiated by having:

1. Completed all the required initial Agreement State Training as described in Radioactive Materials Program Procedure (RMPP) RCP-903.1 *Qualification and Training*;
2. Accompanied NRC Inspectors conducting inspections of Connecticut licensees;
3. Worked for two weeks with qualified NRC License Reviewers performing licensing actions at the NRC Region 1 Offices in King of Prussia, Pennsylvania;
4. Reviewed the NRC regulations, policies, plans and procedures being incorporated into Connecticut's application to become an agreement state; and
5. Engaged for more than three years writing, reviewing and revising RMPPs, regulations and other components of Connecticut's application to become an agreement state.

Documentation of these qualifications for the individuals listed above is found in Appendix 4.6.3-1, Letter of Current Staff Qualification, Appendix 4.6.3-2, Current Staff Qualifications, and Appendix 4.6.3-3, Resumes.

SA-700 4.6.3.2

All current technical staff have met the RMP's qualification requirements as listed above. The Radiation Division Director has submitted a Letter of Current Staff Qualification demonstrating the current technical staff has met the qualifications required for the State to becoming an agreement state. A table providing formal training and on-the job training based from staff's RCP-903.1 Qualifications Journal has been provided. Resumes of each qualified staff has been provided also.