

Radiation Safety Management Regulation of Thai Research Reactor-1/Modification 1 for Reactor Health Physicist Implementation



P. Rintarak^{1*}, C. Dararutana¹, S. Polthum¹, N. Changkit¹, W. Vechgama²

¹Nuclear Safety Section, General Affair Division, Thailand Institute of Nuclear Technology, (Public Organization), Nakhon Nayok, Thailand

²Environmental Technology Section, Nuclear Technology Research and Development Center, Thailand Institute of Nuclear Technology (Public Organization), Bangkok, Thailand

*Corresponding author: panupong@tint.or.th

Abstract

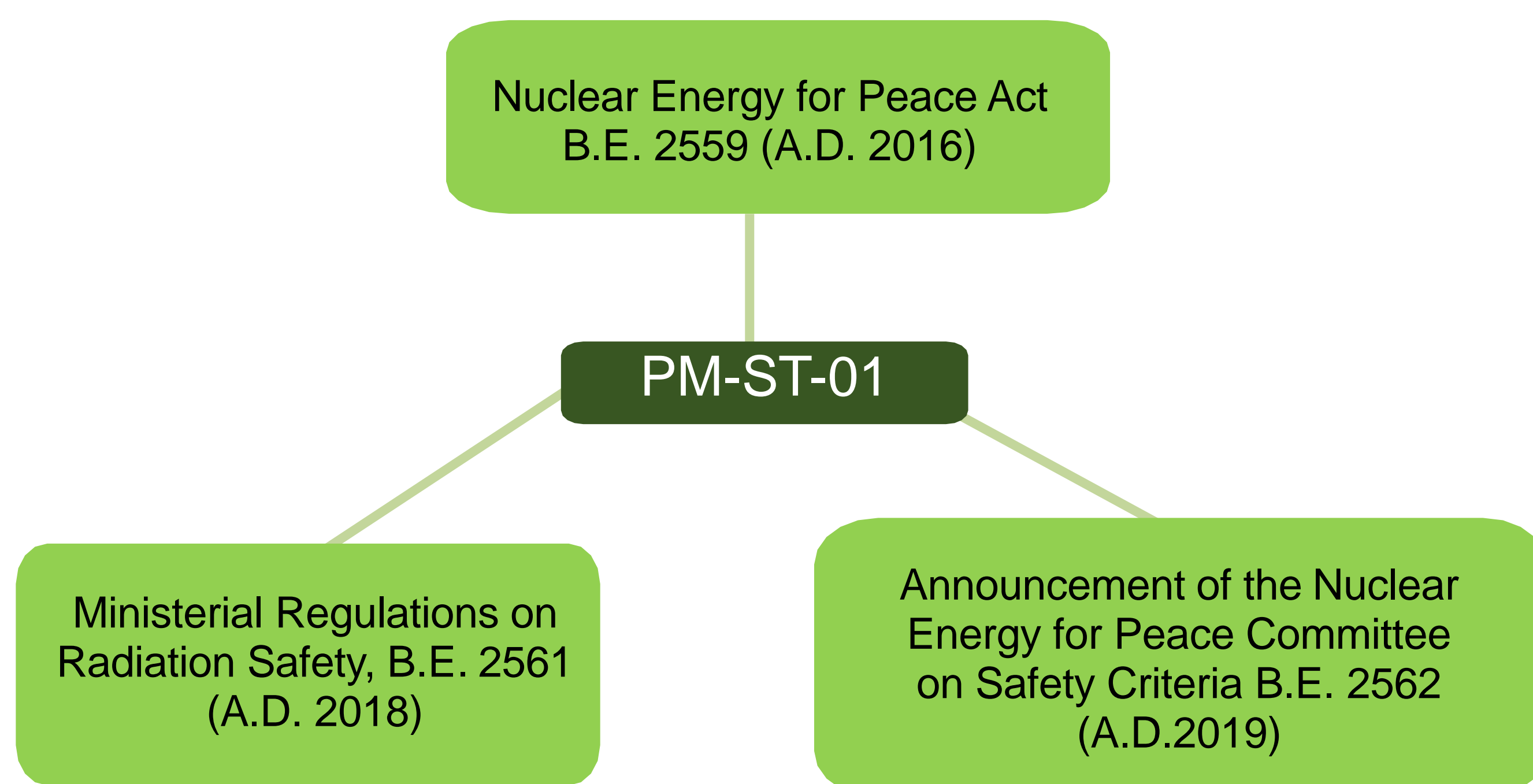
The Procedure of Radiation Safety Management of The Research Reactor (PM-ST-01) is a control document under ISO 9001: 2015 quality management systems and a part of the safety management system of Thailand Institute of Nuclear Technology Thailand. The main purpose of the procedure manual is to implement nuclear and radiation safety evaluations for workers and visitors. The safety evaluations were performed by health physicists. This procedure is also consistent with the regulations such as the “Nuclear Energy for Peace Act B.E. 2559 (A.D. 2016)”, “Ministerial Regulations on Radiation Safety, B.E. 2561 (A.D. 2018)”, and “Announcement of the Nuclear Energy for Peace Committee on Safety Criteria B.E. 2562 (A.D.2019)”. The main responsibilities of the health physicists according to in the PM-ST-01 included (1) Preparation of nuclear-measuring instruments, (2) Performed safety control for radiation workers and visitors, (3) Evaluated the internal exposure from I-131 radionuclide and others, (4) Surveillance of contamination from fission product in reactor coolant during operation, and (5) Performing safety service for irradiated sample transfer. Throughout the time this manual has been used, it has been proven that it can help health physicist effectively by comply with reactor safety management regulations.

1. Introduction

Thailand Institute of Nuclear Technology (TINT) is the government organization that has been carrying out core missions related to nuclear applications and radiation techniques. Thai Research Reactor-1/Modification 1 (TRR-1/M1) has been one of the main cores for the utilization of nuclear applications at TINT since 1962. This research reactor served the radioisotope production, nuclear technology research and development, and nuclear reactor education and training. The TRR-1/M1 is the TRIGA-Mark III type having 8.5 wt.% and 20 wt.% uranium fuels and four neutron beamlines within an open reactor pool covered by high-density concrete shielding. Light water is used as the coolant, moderator, and reflector. The maximum operation power of TRR-1/M1 is 1.3 MW. Generally, during the TRR-1/M1 operation, health physicists from the Nuclear Safety Section have the responsibility to help regulate the nuclear safety management for TRR-1/M1 operators and others in the plant. The reactor safety management for the health physicists was constructed in the “Procedure Manual of Radiation Safety Management of The Research Reactor” or called PMST-01, which is a controlled document under the ISO 9001:2015. The main purpose of the PM-ST-01 is to implement the nuclear and radiation safety evaluations for workers and visitors.

2. Methodology

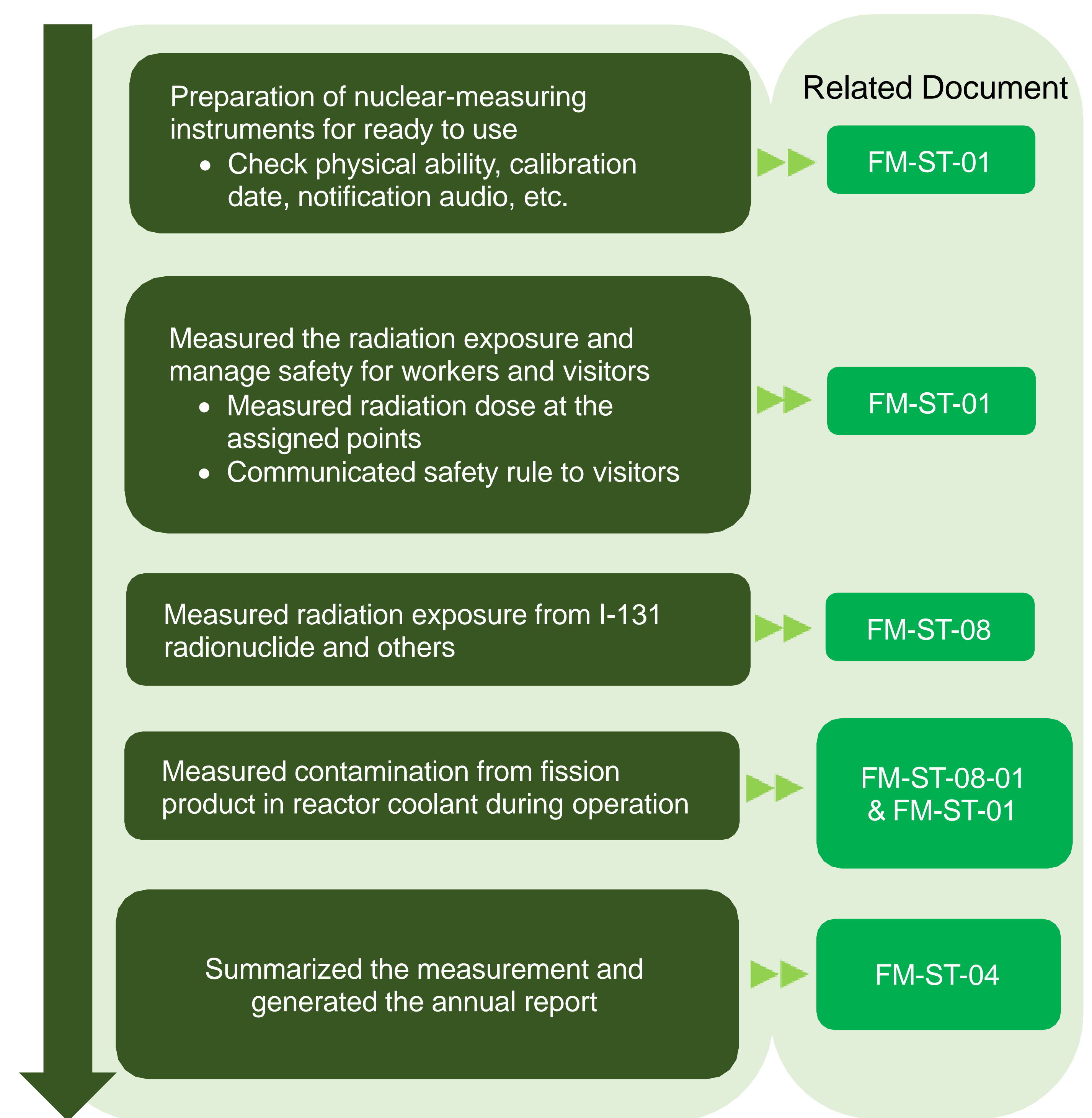
1. Setting up of The Procedure of Radiation Safety Management of The Research Reactor (PM-ST-01)



The PM-ST-01 consists of details from the three regulations of Thailand

2.2 Responsibilities of Health Physicist under PM-ST-01's Implementation

During the operation of the TRR-1/M1, health physicists must follow the activities according to the PM-ST-01 as shown below;



Flow-chart of health physicist activities during the operation of TRR-1/M1



Activities of health physicist during reactor operation time

3. Results and Discussion

The results of safety management according to PM-ST-01 create safety mechanisms for workers and visitors well. The document records from health physicist activities have shown that all values for radiation exposure, radiation contamination, I-131 detection, and observation of fission product were not exceeding the safety limit. This could be implied that the PM-ST-01 help in created radiation safety management.

4. Conclusion

The activities of health physicist under the PM-ST-01 have been created safety mechanism in safety management for the TRR-1/M1 reactor effectively.

5. Acknowledgement

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