

Thailand Report
3rd RASCAP Meeting
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Serpong, Tangerang Selatan,
INDONESIA

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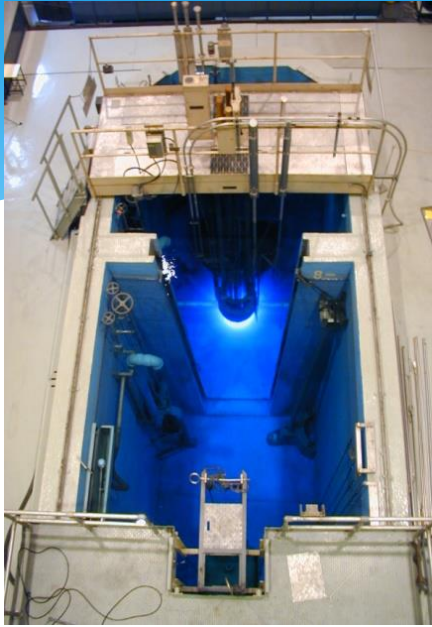
- **Thai Research Reactor1/Modification1 (TRR-1/M1)**
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Thai Research Reactor1/Modification1 (TRR-1/M1)

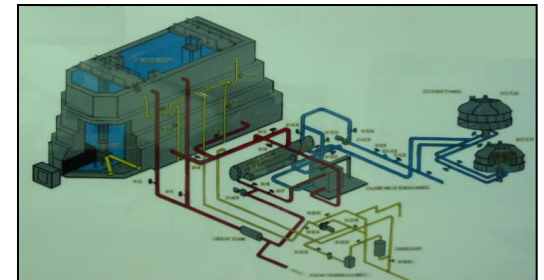
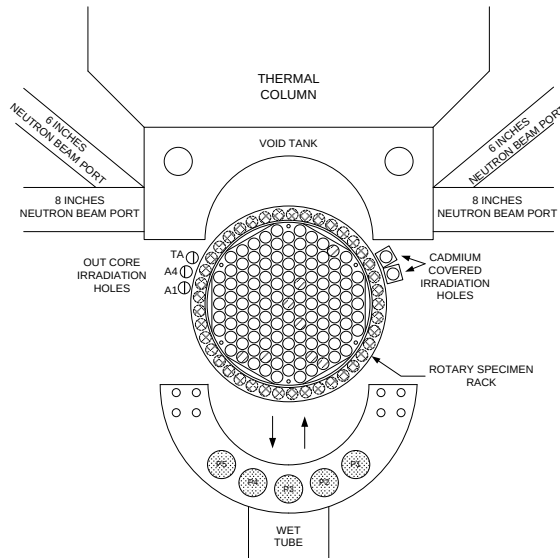
Since 1977



TRR-1/M1 Characteristics



- Thai Research Reactor₁/Modification₁ (TRR-1/M₁) Since 1977
- TRIGA MARK III : Fuel UZrH : 8.5 wt-% type and 20 wt-% type
- 38 years of operation, Core Number 20
- Operation 26 Hours / two weeks
- Annual maintenance: (Feb – March)
- 40 MWD per year
- Isotope Production (I-131, P-32 and Sm-153)
- Pneumatic Sample Transfer for NAA
- Rotary Specimen Rack NAA
- Out-core tubes for NAA
- Wet Tube, Void tank and In-core, Gemstone
- Beam ports for neutron radiography

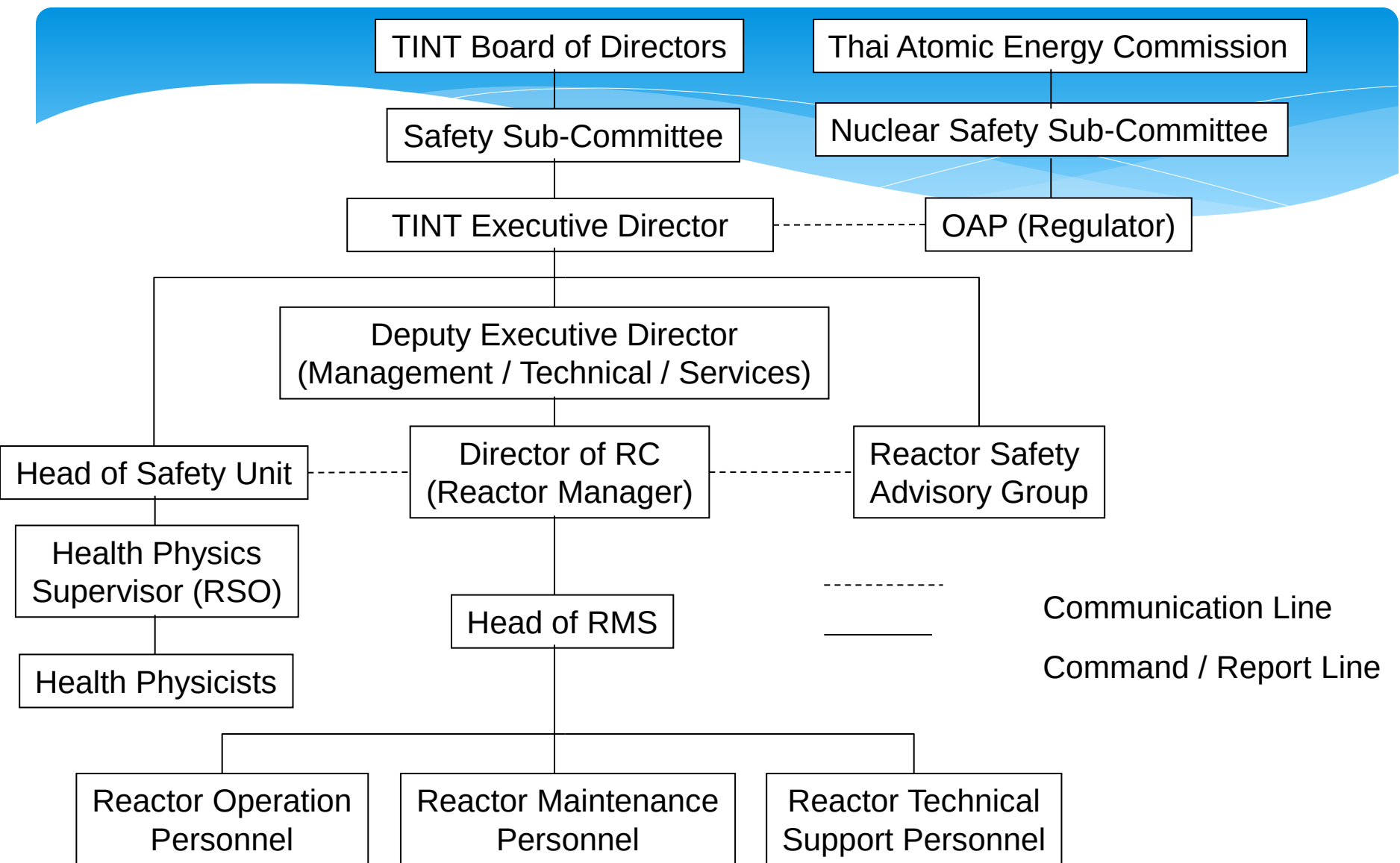


Utilization of TRR-1/M1





Safety Infrastructure



Management Organizational Structure for TRR-1/M1 Safety

Nuclear Safety Sub-Committee (NSSC)

The secretary of NSSC is the director of BNSR (Bureau of Nuclear Safety Regulation).

The Main responsibilities of NSSC

- * Regulate the Thai nuclear power program such as NPPs, RRs, fuel cycle and fuel storage facilities
- * Advise and submit recommendation on policy related to nuclear energy to Thai AEC

TINT Safety Sub-Committee

A group of External Experts and Ex-Reactor Managers Empowered by Board of Directors to:

- * Scrutinizes 3S Policy and Plans for Board Approval***
- * Revises board regulations covering 3S***
- * Supervise 3S Operation/Activities***
- * Report to the Board of Directors***

Safety Sub-Committee

- * **Board Regulation on Security 2012**
 - * **Regulation on security for premises**
 - * **Regulation on security for personal**
 - * **Regulation on security for document**
 - * **Regulation on security for nuclear facility**
 - * **Fire extinguishing and prevention plan**
- * **Board Regulation on Nuclear & Radiation Safety 2013**
 - * **Radiation Protection Program**
 - * **Radiation Emergency Plan**
- * **Board Regulation on Safeguards 2014**
 - * **Nuclear materials safeguard guide**

**Reactor Safety Advisory Group
of
TRR-1/M1**

Reactor Safety Advisory Group of TRR-1/M1

A group of External & Internal Experts Assigned by TINT Director for 2 years to Technical Advise the Reactor Manager in the fields of

Design and Safety Analysis

Reactor Operation and Maintenance

Reactor Physics

Reactor Experiments and Reactor Utilization

Reactor I&C system

Radiation Protection

Quality Management System

Administrative, Regulations and Laws

Roles of the RSAG

- * **Safety Review:**

- * *Proposed changes in the operating limits and conditions (OLCs) in the reactor license.*
- * *Proposed modifications of engineering structure, system and equipments with significant to the reactor safety.*
- * *Proposed new or modifications of tests, experiments, and procedures with significant to the reactor safety*

Roles of the RSAG

- * **Safety Review (Continue):**
 - * *Physical and chemical changing of the nuclear fuel elements and the reactivity control elements*
 - * *Events that are required to be reported or that have been reported to the Regulatory Body (OAP)*
 - * *Periodic review of the operational and safety performance of the facility*

Roles of RSAG

** Safety Review (Continued):*

- * Reports violations of the OLCs, of the license and of procedures that are significant to reactor safety.*
- * Reports on radiation doses to the personnel at the facility and on any doses to the public.*
- * Reports on routine releases of radioactive material to the environment.*
- * Other reactor safety related issues*
- * Meeting Schedule every 6 months*



RSAG Activities

RSAG Activities of TRR-1/M1

@ 2011

- * Review of SAR update for New license**
- * Review of changing to a new core loading**
- * Review of personnel exposure record**
- * Review of reactor pool maintenance plan**
- * Providing advice for neutron beam inspection procedure**

Activities of RSAG of TRR-1/M1

@ 2012

- * Review of annual maintenance activities**
- * Review of pool maintenance activities**
- * Providing advice on SAR changes according to regulatory body**
- * Review of changing to a new core loading**
- * Review of emergency preparedness training activities**

Activities of RSAG of TRR-1/M1

@ 2013

- * Review of reactor operation**
- * Review of annual maintenance activities**
- * Review and Providing advice on the radiation incident during unloading of radioisotope**
- * Providing advice on list of materials that are allowed to be loaded in the reactor (Approved list)**

Activities of RSAG of TRR-1/M1

@2014

- * Review on list of materials that are allowed to be loaded in the reactor (Approved list)
- * Providing advice on modification of Neutron Radiography System
- * Providing advice on a comment and question request in I&C Upgrading Console Project from Regulator (OAP)
- * Review of annual maintenance activities
- * Review on worker dose record and environmental release
- * Present the suggestions from the RASCAP meeting

Recommendations of the RSAG.

Approved list

- * Review about restrictions such as Example 1; Neutron flux: $<5 \times 10^{13} \text{ n / cm}^2\text{-s}$ (thermal) for Aluminum $^{27}\text{Al} (n, \alpha) ^{24}\text{Na}$ (fast neutron flux measurement).
- * Review about Compliance control documents By examining the number of documents to be controlled
eg. SD, WI and PM.
- * Determine the exposure and the type of capsule or container. From the log book of the reactor.

Recommendations of the RSAG.

Approved list (Continued):

- * Check with the calculation of the change in reactivity must not exceed ± 0.3 and compared with the results calculated with the MCNP program which changes the reactivity OLC must be based on the Limiting Condition for Operation 4.1.5 Reactivity Limitation.
- * Review and expected reactivity of the cooling period is taken as an example.

Advices on Modification of Neutron Radiography System

- * Concrete shielding originally should have planned for handle it by Radioactive Waste Management Center.
- * The concrete shielding and shutter, offering a large and heavy. Should have a management plan and to take extra care in moving and installation.
- * The new shutter design with regard to Fail safe in cast of electrical failure, should have done job analysis or risk analysis in system design stage
- * Check the weight of both of the shutter and the shielding walls of the old and the new to have much weight. And weight per square meter of the floor of the reactor building areas will receive as much

Advices on I&C Upgrading Console Project

- * Proposed on Probabilistic Safety Assessment (PSA) or Deterministic approach for measurement system and control device is more appropriate for research reactor analysis.
- * For Request of Additional Information (RAI) from OAP should described in classification of the project is based on the accident, it's possible for the TRR-1/M1.
- * About PSAR, The committee proposes to answer in a way that makes the system more secure, comparison of the new measurement and control system that is not less than the original capability, improve the man-machine interface better, reducing the burden on the staff running and can more easily find replacement parts.

Upcoming activities

- * RSAG Meeting scheduled regularly at every 6 months
- * Next RSAG meeting: 2015
- * Assign new RSAG

Conclusions

- * The roles of RSAG at Thai Research Reactor conform to NS-R-4 and independent of Reactor Management Group.
- * RSAG has been effectively functioning successfully on providing advice and review an important matters concerning the safety of the Thai Research Reactor .
- * Cooperation with Regional and Global RSC will increase the technical capability of the RSAG.
- * Feedback from the RASCAP meeting can be applied.

THANK YOU

