



The Application of Minimum Regulation to Research and Test Reactors at the U.S. Nuclear Regulatory Commission

September 21, 2017

Research and Test Reactors Licensing and
Oversight Branches

Overview

- Introduction
- Atomic Energy Act
- Examples of minimum regulation in the oversight of RTRs
- Current activities consistent with minimum regulation
- Future minimum regulation activities



Minimum Regulation



The NRC staff is dedicated to the application of minimum regulation in the oversight of RTRs

We welcome opportunities to work with the licensees in this area

Minimum Regulation

Amount of regulation required to carry out legal responsibility of the Atomic Energy Act

Protection of public health and safety is paramount

Developed over many years of research and test reactor regulation

All aspects of research and test reactor regulation consider minimum regulation

Equates the degree of scrutiny in the regulatory process to the safety significance of the reactor design

As risk increases the regulatory process that represents minimum regulation becomes more stringent

Ensure that adequate safety margins are maintained



Atomic Energy Act

Commission is directed to impose only such minimum amount of regulation of the licensee as the Commission finds will permit the Commission to fulfill its obligations under this Act to promote the common defense and security and to protect the health and safety of the public and will permit the conduct of widespread and diverse research and development

Minimum Regulation in the Licensing Process

Staff developed interim staff guidance where low power RTRs were subject to a streamlined license renewal



- 2 MW and greater or facilities seeking a power increase undergo full review using NUREG-1537
- Less than 2 MW undergo streamlined review than focuses on reactor, radiation protection, accidents and technical specifications

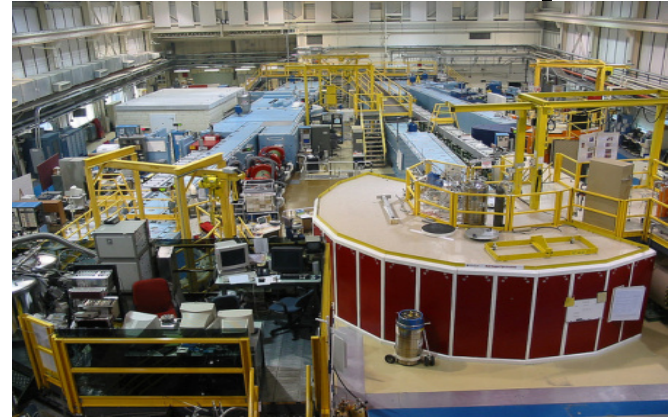
Minimum Regulation in Technical Requirements

Minimum regulation is applied in these areas:

- Design criteria
- Bounding fission product release
- Emergency planning
- Reactor siting
- Environmental requirements

Minimum Regulation in Security

Regulatory approach based
on type and amount of
material possessed



Self-protection considered when determining
security requirements

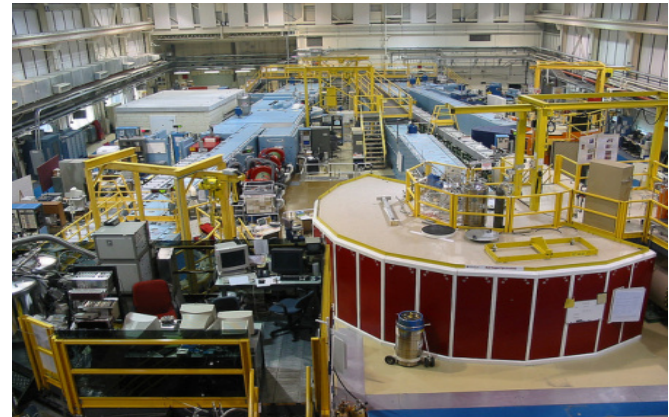
Regulations for protection of digital assets not
applicable

Sabotage considered for 2 MW(t) or greater power

Minimum Regulation in Inspection

Inspection program is
minimum to insure safety

No resident inspectors



Inspection program is based on reactor power
level and for security, amount of special
nuclear material

Current Activities Reflect Minimum Regulation

Proposed rule

- Non-expiring license for non-commercial research reactors (SAR update every five years)
- Accident dose criteria proposed for research reactors

Proposal to define test reactor based on accident dose criteria

I&C workshop

Future Activities Support Minimum Regulation

Definition of initial startup

Licensed power level and power level scrams

Participation in working group for ANS standard
on structures, systems and components

Conclusions

Minimum regulation starts
with the Atomic Energy Act

Minimum regulation has been
used from the earliest days of reactor
regulation

Minimum regulation applies to all aspects of
NRC regulation

Minimum regulation is consistent with proposed license
renewal rulemaking

Minimum regulation will guide the NRC staff in future actions

NRC staff willing to discuss ideas for application of minimum regulation

