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Interpretation of Senior Reactor Operator Requirements for Non-Power Reactors

TRTR 2012 Meeting

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Goal of Presentation

To present a proposed NRC staff interpretation of 10 CFR 50.54(m)(1) when a senior reactor operator is required to be present at the facility.

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Overview of Presentation

- Review of regulatory requirements for operators at non-power reactors (NPRs).
- Review of ANS 15.1 Guidance.
- NRC staff proposed interpretation.
- Next Steps.

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10 CFR 50.54 (m)(1)

A senior operator licensed pursuant to part 55 of this chapter shall be present at the facility or readily available on call at all times during its operation, and shall be present at the facility during

- initial start-up and approach to power,
- recovery from an unplanned or unscheduled shut-down or significant reduction in power,
- and refueling,
- or as otherwise prescribed in the facility license.

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ANS 15.1

Events requiring the presence at the facility of the senior reactor operator are:

a. initial startup and approach to power,

b. all fuel or control-rod relocations within the reactor core region,

c. relocation of any experiment with reactivity worth greater than one dollar;

d recovery from unplanned or unscheduled shutdown or significant power reduction.

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Technical Specification (TS) Requirements

TS generally follow the guidance of ANS 15.1.

TS contain additional requirements under the “or as otherwise prescribed in the facility license” part of 50.54(m)(1).

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Public Meeting

- Public meeting about this subject on March 12, 2012.
- NRC proposed interpretation follows ideas discussed at meeting.
- NRC staff has considered significant comments from discussion at meeting.

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Public Meeting Comments

Comment

NRC's concern should be on events with the potential for consequence greater than the maximum hypothetical accident.

Reply

Not consistent with defense in depth. Operator actions should prevent events from occurring in addition to limiting consequences.

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Public Meeting Comments

Comment

Higher powered facilities favored a graded approach to when a SRO needed to be present.

Reply

A graded approach dependent on reactor power or complexity is consistent with the existing graded approach of NPR regulation.

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Public Meeting Comments

Comment

If a SRO oversaw an activity then there was no need for the SRO to oversee the first start up after the activity.

Reply

Some safety significant errors become apparent during the reactor start up following an activity (e.g., fuel movement).

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Initial Startup and Approach to Power

Initial start-up and approach to power is the first start-up and approach to power after:

1. Any fuel relocation within the reactor core, or
2. Any control-rod relocation within the reactor core region, or
3. Any relocation of an experiment within the reactor core region with reactivity worth greater than one dollar.
4. The reactor was placed into a secure status as defined in facility technical specifications.

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Initial Startup and Approach to Power

- Startup and approach to power considered the same activity.
- Startup begins when the first control rod leaves the fully inserted position (withdrawn for AGN).
- Startup ends when the reactor is stable at its planned power level.

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Initial Startup and Approach to Power

Any fuel relocation within the reactor core.

- Any fuel movement into or out of the reactor core (or reactor core vessel).
- Fuel removed from and then placed back in the same core position is considered fuel relocation.
- Movement between fuel storage locations is not fuel relocation.

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Initial Startup and Approach to Power

Any control-rod relocation within the reactor core region.

- Control rod is as defined in ANS 15.1.
- Any control rod movement into or out of the reactor core region.
- Use of core region accounts for rods not strictly in the core that control reactivity.
- A control rod removed from and then placed back in the same position is considered relocation.

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Initial Startup and Approach to Power

Any relocation of an experiment within the reactor core region with reactivity worth greater than one dollar.

- Applies to any experiment in any location if worth is greater than one dollar.
- An experiment removed from and then placed back in the same position is considered relocation.

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Initial Startup and Approach to Power

First start-up after the reactor was placed into a secure status as defined in facility technical specifications.

- NRC staff believes this is more important as power level and facility complexity increase.
- Under consideration by NRC staff on how to achieve.

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Some Other Terms Open to Interpretation

Facility.

Significant reduction in power.

Refueling.

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Facility

A SRO needs to be present at the facility…

- As defined in the technical specifications (TSs).
- If not defined in the TSs then the facility is areas directly related to reactor operation. For example:
  - Control room
  - Containment or confinement
  - Support areas (e.g., pump rooms or equipment rooms).
- Generally not classrooms or office space unless in the TSs as part of the facility.

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Significant Reduction in Power

Any actuation of rod run-ins, reverses or run backs.

Decrease in power of 10 percent or more not in control of the operator.

Normal operation of automatic power control systems is not included.

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Refueling

Same as fuel relocation as discussed in initial start up.

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Next Steps

We will publish the interpretation for formal comments.

We will consider formal comments received.

Will finalize interpretation in written document (e.g., ISG to NUREG-1537).

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Thank you

Questions??