

# ANSI - N15.8 {REG. Guide 5.29}

## “NUCLEAR MATERIAL CONTROL SYSTEMS FOR NUCLEAR POWER REACTORS”

Activity	NMMSS Users Meeting
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# OBJECTIVES

- **Initiate the NMMSS community to ANSI N15.8 revision campaign**
- **Realize the bases & boundaries surrounding the expected revision**
- **Gain a pulse from the NMMSS community on what the revision team should consider**

# Definitions

- **ANSI- American National Standard**
- **SFP- Spent Fuel Pool (Wet storage)**
- **ISFSI- Independent Spent Fuel Storage Installation (Dry Storage)**
- **ALARA- As Low As Reasonably Achievable (Dose)**
- **10 CFR– Code of Federal Regulations (Energy Section)**
- **SNM– Special Nuclear Material (U-235, Plutonium)**
- **“Production” Facility– Primary purpose is to produce plutonium (Pu) or U-233, or to separate isotopes of Pu**
- **“Utilization” Facility– Primary purpose to use SNM but not separate or produce other than byproducts**
- **MC&A– Material Control and Accounting**
- **ICA– Item Control Area**

# ANSI - N15.8 STATUS

- **Developed & last revised in 1974**
- **No longer active**
- **Regulatory Guide 5.29 – withdrawn {Reg. Guide 5.29 was just a preface & pointer to the ANSI - N15.8 standard / guidelines**
- **Currently a team has been assembled to resurrect & revise the standard {Chaired by the NRC, supported by power reactor - representatives}**

# ANSI - N15.8 – 1974 Version

The ANSI met the need for conditions understood in 1974 ...

What was believed then...

Facilities would send spent fuel to a re-processing plant and not maintain large inventories on-site...

...Under these conditions, performing a semi-annual physical inventory including serial number verifications would have been a lesser undertaking...

# Changes & Considerations Since 1974

- **Power Reactors are now maintaining many hundreds or thousands of spent fuel components on-site {Wet storage (SFP) / dry storage (ISFSI)}**
- **Performing physical inventories is a much larger undertaking**
- **“ALARA” – Awareness & expectations are high**
- **Expectations for safeguards are higher {Events of 9/11}**
- **Business & operating concerns - deregulation impacts, capital costs of maintaining large inventories, O&M costs for monitoring & performing inventories, & operating schedule adherence**

# Why Was ANSI N15.8 Generated?

- 10 CFR requires licensees to control & account for SNM in possession under license
- 10CFR provides detailed instructions & expectations to “production” type facilities
- However, 10CFR provides minimal instructions to “utilization” type facilities {Power reactors licensed under 10CFR Part 50, SNM license under Part 70)
- ANSI N15.8 {Reg. Guide 5.29} was a method of providing guidance to power reactor licensees outside of the 10CFR

# Regulatory Guide 5.29

- Reg. Guide 5.29 is just a preface and pointer to the ANSI-N15.8 guidelines
- The preface eludes to the fact that detailed requirements are not in the 10CFR for power reactors
- Reg. Guide 5.29 would need to be updated to compliment the current 10CFR & ANSI revisions

# 10CFR – APPLICABILITY

- **10CFR 74.13 & 74.15**  
{Submit material balance & transfer reports}

**Very detailed instructions**  
{NUREG/BR-0006 & 0007, & D-24, & formal NMMSS training}

- **10CFR 74.19 a,b,c,d,**  
{Records, procedures, & physical inventory requirements}

**Minimal details** {NRC Inspection Manual 85102, is a reverse form of instructions, training NMMSS user meeting & operating experience}

# 10CFR 74.19b - Procedures

## Example 1

### Requirement / Instruction:

Licensee...shall establish, maintain, & follow MC&A procedures that are sufficient to enable the licensee to account for SNM in its possession under license...

The word “sufficient” is the instruction - this opens the door to interpretation & variance in the industry to control & account for SNM {Some facilities would argue this looseness is a good thing... Others who have had the hammer fall may take a different view...}

# 10CFR 74.19c – Physical Inventory

## Example 2

### Requirement / Instruction:

Licensee...shall conduct a physical inventory of all SNM in its possession under license at intervals not to exceed 12 months... Results need not be reported to the commission but the Licensee shall retain the records...

Again, no details on how or what constitutes a “physical inventory” therefore opening the door for additional interpretation and variance among Power Rx Facilities

# Why Minimal Instructions For 10CFR Part 50 / 70 Licensees ?

➤ MC&A of material in a sealed source configuration is normally less complex (controlled on an item bases)

Type of fuel - “Low Strategic” {< 5% enriched}

➤ Highly irradiated spent fuel is typically self securing

➤ 10 CFR requires site security protection plans

➤ License limited to usage of SNM only (No intentional separation of materials or production except byproducts)

➤ Other...

# Brainstorming Guidelines

- ANSI N15.8 updates & changes must compliment the NRC Regulations & not contradict the regulations
- Assume NRC regulations will not change
- Do not labor on obvious changes needed but do document all revision ideas
- Thinking outside the box is accepted
- NRC absent option???

# Teams / ANSI Sections

1. **Scope – Overall applicability of MC&A {1.0}**
2. **Definitions {2.0}**
3. **Organizational responsibilities - Titles / Functions{3.0}**
4. **Material control manual (Procedures) {4.0}**
5. **Input control – Receipt of SNM / Audits of supplier {5.0}**
6. **A) Control – Physical areas / Transfers / ICAs {6.0}**  
**B) Physical Inventories – Methods applied / IDs {6.4}**
7. **Isotopic calculations {7.0}**
8. **Storage & shipment controls {8.0}**
9. **Records & reports {9.0}**
10. **System reviews & audits {10.0}**
11. **Physical security {11.0 Reserved - Qualified Only}**

