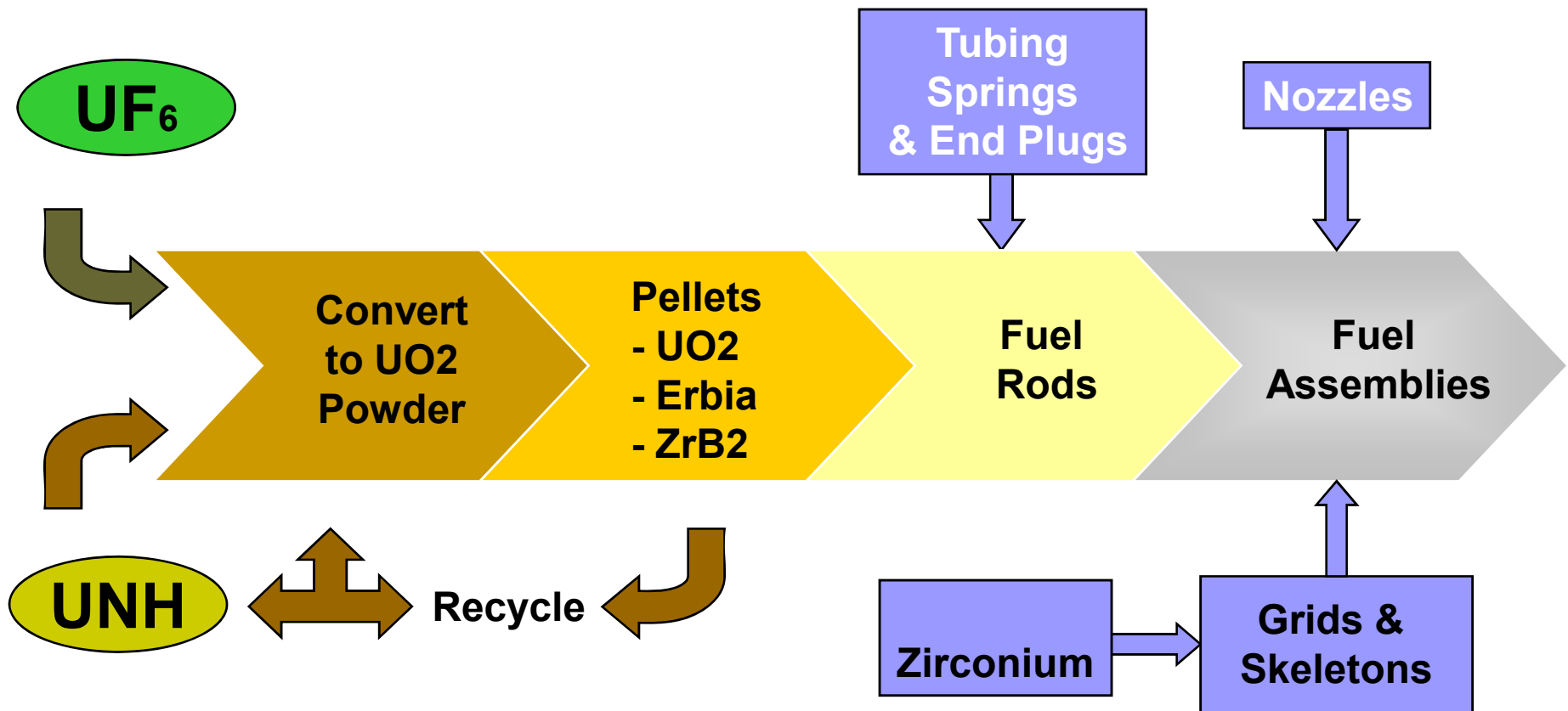


Westinghouse Electric Company LLC Columbia Fuel Fabrication Facility

Material Control and Accountability (MC&A)
2012 Fuel Cycle Information Exchange
Gerard Couture

Columbia Plant Fuel Fabrication Process



MC&A Performance Objectives

Protect & Control nuclear material to prevent diversion, loss, theft or improper use

Confirm the Presence of Special Nuclear Material (SNM)

- Programs, processes and information systems to collect, track, and report timely, accurate, reliable information about the quantity and location of nuclear material possessed

Resolve Indications of Missing Uranium

- Programs, processes for timely detection of anomalies and investigation to determine a loss or theft has not occurred

Export License Compliance

- Authorized material amounts and obligations

Nuclear Materials Control & Accountability

How do we do it ?

Use of MC&A to track material in process, storage and transport.

Safeguards Program Components

- Physical Security
- Item Control
- Measurement Control
- Accountability Records
- Physical Inventory



Nuclear Materials Control & Accountability

Nuclear Material Receipt Verification

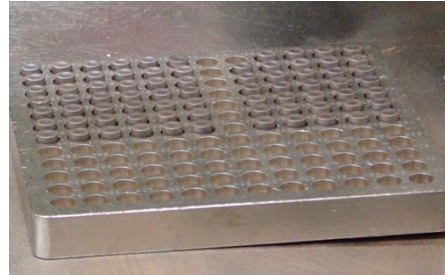
- Items are entered into item monitoring system and quantities entered into uranium accountability ledger
- Items are unloaded and weighed to confirm Gross weight and determine net weight
- Representative samples are analyzed for uranium percent and U-235 percent



Nuclear Materials Control & Accountability

Material Transfers

- SNM is transferred in processing by direct movement from equipment to equipment or in discrete containers
- Measurements of SNM quantity are performed on items
 - Samples are analysed
 - Items are weighed



Nuclear Materials Control & Accountability

Measurements & Measurement Control

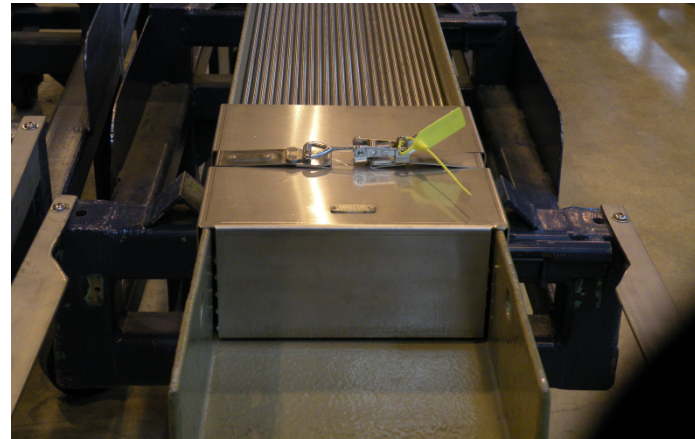
- SNM Measurements Systems are calibrated using traceable standards
- Standards and replicate measurements are performed on specific frequencies to maintain statistical control
- Measurements are evaluated statistically for trends and to identify and quantify bias



Nuclear Materials Control & Accountability

Material Controls

- Items in process are consolidated into containers
- Items in storage or being shipped are tamper sealed

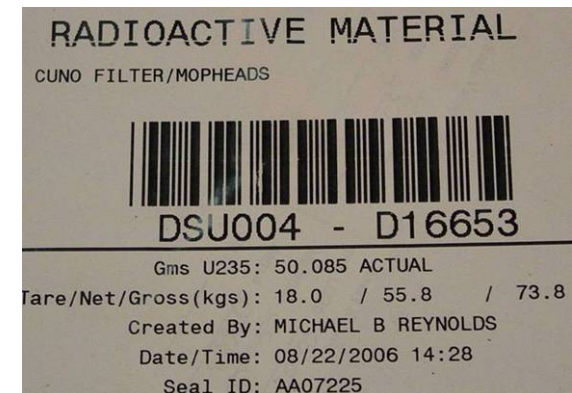


Nuclear Materials Control & Accountability

Item Control

Control of items is maintained by recording and tracking:

1. **Identification** = ID on bar code label
2. **Location** = Item Control Location or Market
3. **Material Form** = UO₂ Powder, UO₂ Pellets, U₃O₈
4. **Quantity** = net weight, uranium (% U) & U-235 (% U-235) based on measured values
5. **Create Date/Time**
6. **Consume Date/time**

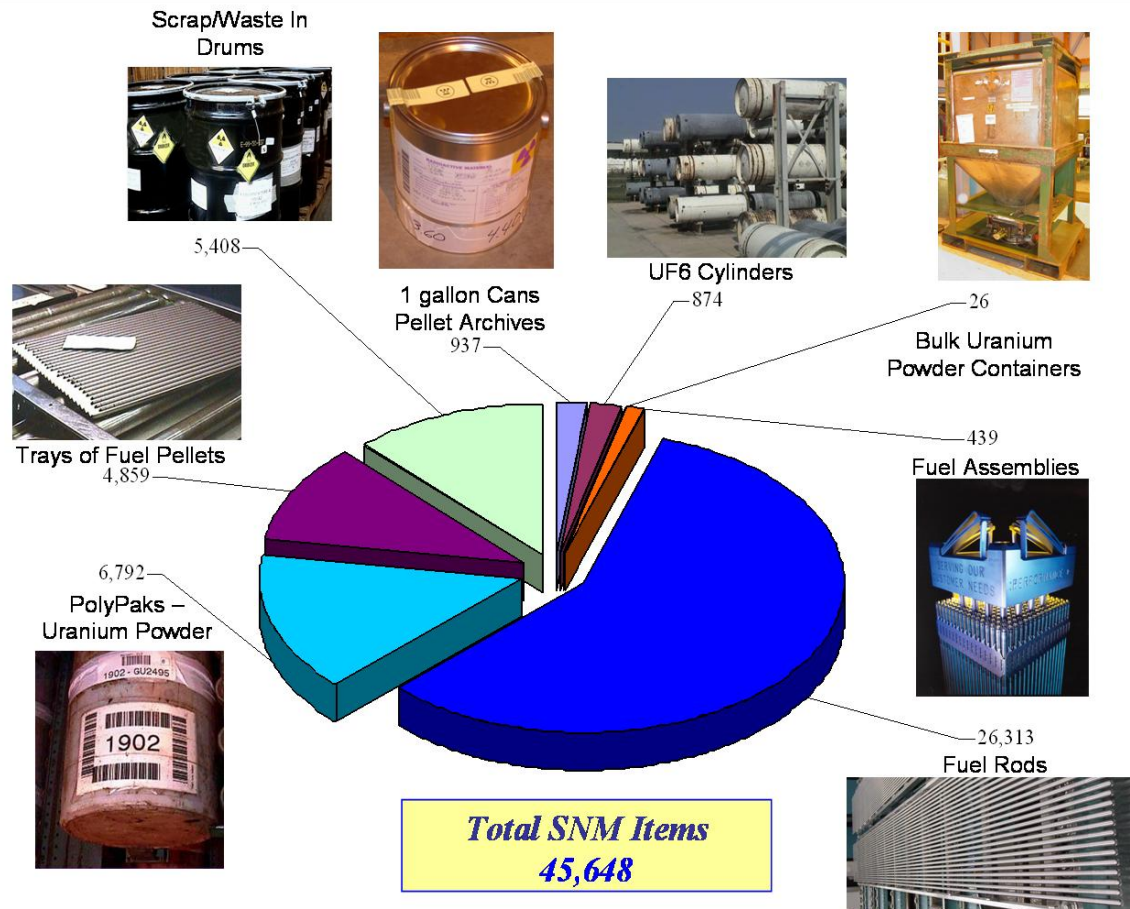


Nuclear Materials Control & Accountability

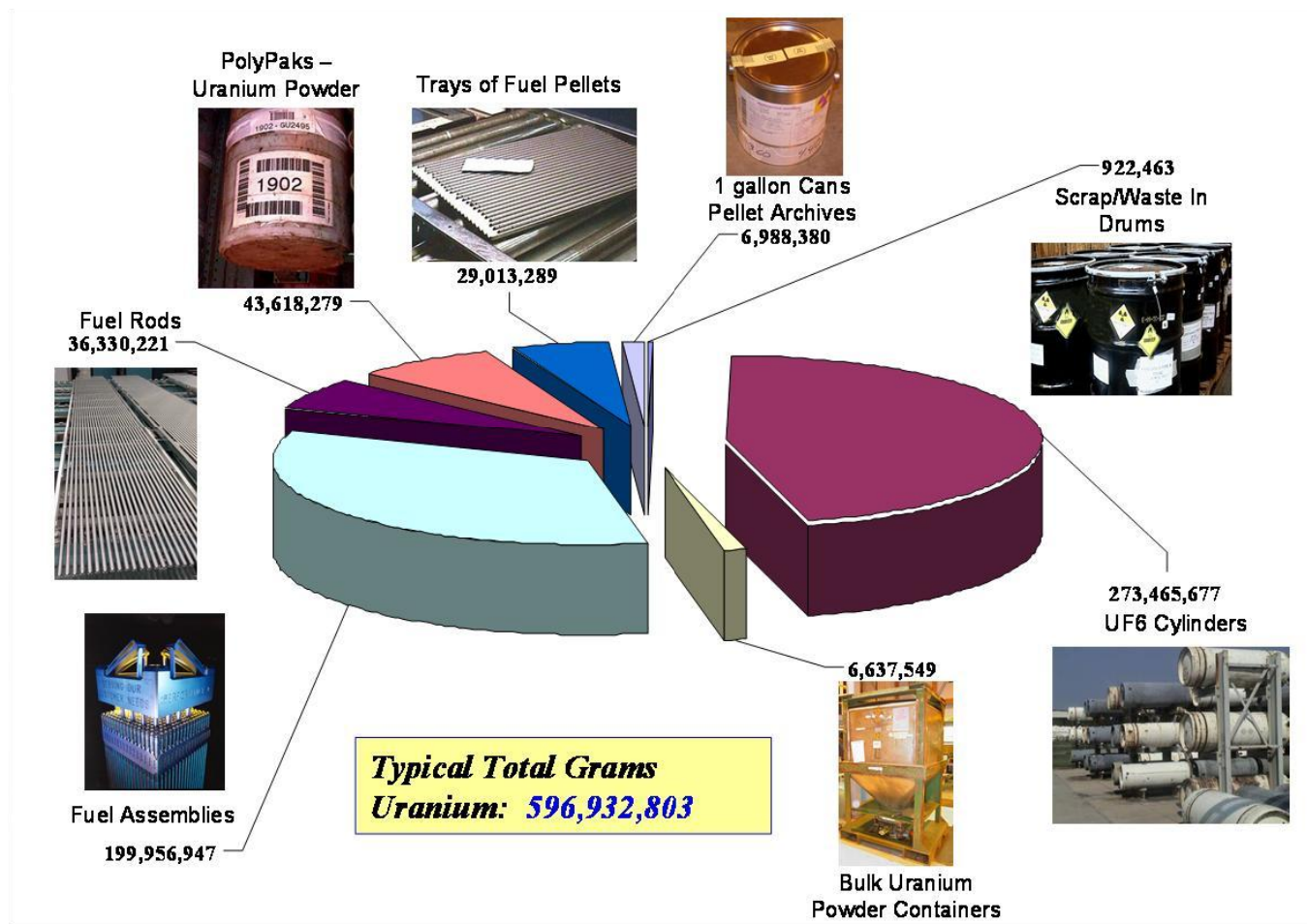
- SNM is removed from process or storage as authorized discards under measurement control or discreet containers under item control
 - Measured discards such as discharges to the river and air
 - Product such as Fuel Assemblies
 - Low Level Radioactive Waste
- Measurements of SNM quantity are made
- Confirm License Compliance (amounts & obligations)
- Measured values entered into (NRC 741 Form) Accountability System and reported to NRC



Nuclear Materials Control & Accountability



Nuclear Materials Control & Accountability



MC&A Summary

Existing regulations and implementation in the plants provide robust protection & control of nuclear material

- Proposed drastic regulatory changes to Part 74 lack a clear safety or security regulatory basis
- NRC significantly underestimated the impact
 - (Initial 20 M, 2-Person rule impact recurring up to 5 M)
- Alternatives (i.e., recognizing enhanced security measures in place, employee security clearances and process monitoring) have not been adequately explored

MC&A Summary

Implementation Issues

- Industry believes the back fit provisions of 10CFR Part 70 apply to the Part 74 proposed rule due to the extensive changes required at a Part 70 licensed facility
- Proposed Part 74 rule changes should be aligned with the Part 73 rulemaking underway to re-categorize SNM
- Additional stakeholder discussions are required as Part 74 rulemaking progresses