Evolution of the 10 CFR Part 70

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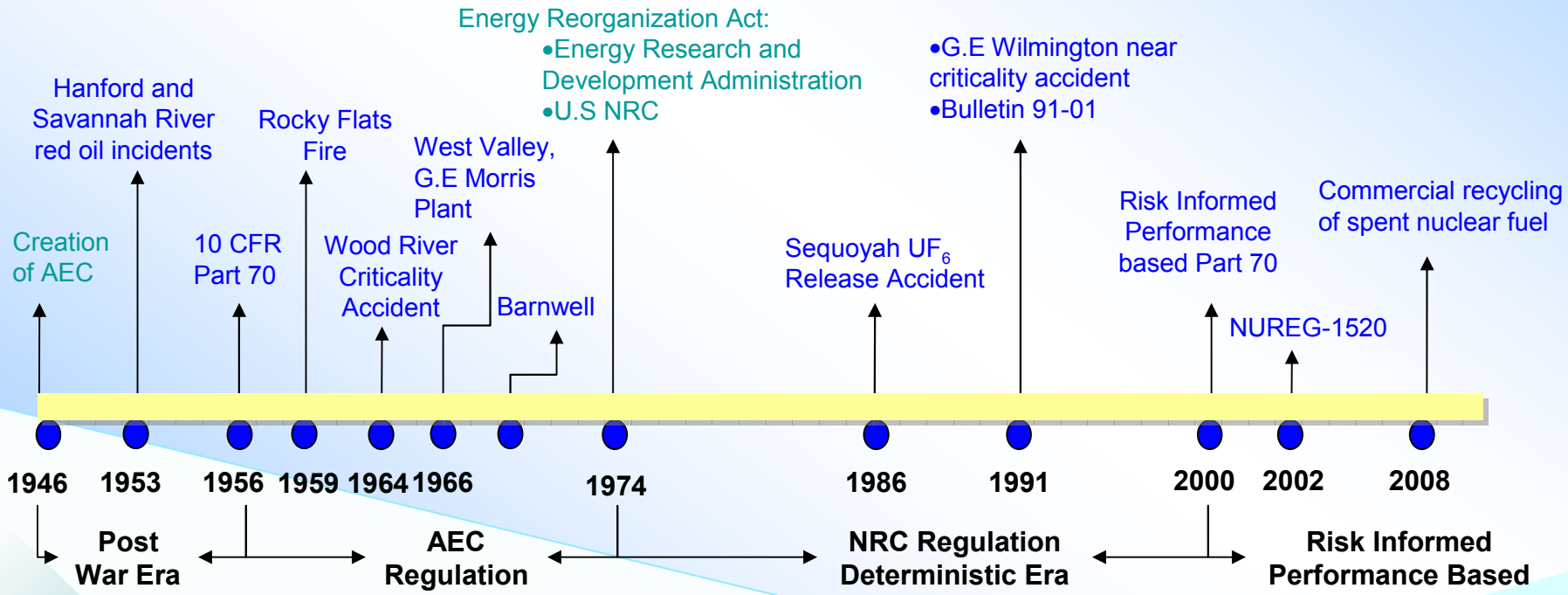
Timeline of Significant Occurrences Affecting Regulation of Fuel Cycle Facilities



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Post War Era (1946-1955)

Historical Context

- Atomic Energy Act of 1946
- Primary focus was the support of the weapons program
- Paducah Gaseous Diffusion Plant (1952) and Portsmouth Gaseous Diffusion Plant (1954) went into operations.
- President Eisenhower's Atoms for Peace speech (1953)

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Post War Era (1946-1955)

Significant Events

- Red oil incidents associated with PUREX processing at Hanford and Savannah River Sites (1953)
- Two criticality accidents at Los Alamos Scientific Laboratory resulted in two fatalities (1945 and 1946)

Regulatory Environment

- AEC regulation
- Atomic Energy Act

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AEC Regulation (1956-1973)

Historical Context

- 10 CFR Part 70 promulgated (1956)
- Emergence of commercial nuclear power industry
  - Shippingport Atomic Power Station (1957)
- Plutonium fabrication and processing facilities (1970s)
- Reprocessing of spent nuclear fuel

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AEC Regulation (1956-1973)

Significant Events

- Oak Ridge Y-12 Plant Criticality (1958)
- Los Alamos Scientific Lab Criticality (1958)
- Rocky Flats Fire (1959)
- Idaho Chemical Processing Plant Criticality events (1959 and 1961)
- Wood River Junction (1964)

Regulatory Environment

- Task Force established by the Director of Regulation to review Part 70

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Early NRC Regulation(1974-1999)

Historical Context

- AEC divided into NRC and ERDA
- Fuel cycle industry consolidation and globalization.

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Early NRC Regulation(1974-1999)

Significant Events

- Sequoyah UF_6 Release accident (1986)
- G.E near criticality incident (1991)

Regulatory Environment

- Early NRC regulations were carried over from AEC
  - Deterministic
  - Prescriptive
- Materials Safety Regulation Study Group (MSRSG)
- Materials Regulatory Review Task Force (MRRTF)
  - NUREG 1324

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Risk informed Performance Based Regulation (2000-Present)

Regulatory Environment

- Modification of Part 70 to provide increased confidence in the margin of safety
- Requirement of performing an Integrated Safety Analysis (ISA).
- Risk-informed and performance-based regulatory approach
- Subpart H added
- Standard Review Plan (NUREG-1520)

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Future

- Commercial recycling of spent nuclear fuel?
  - Regulations would need to be revised to ensure that a stable regulatory process exists to license and oversee recycling facilities.
  - Staff is considering options to efficiently develop regulatory infrastructure

Conclusions

- Historically, revisions to 10 CFR 70 have been largely in *response* to significant events
- ISA process provides for a more comprehensive approach for ensuring safety
- Future changes to Part 70 could be proactive, rather than reactive.

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Questions?

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