
Using Integrated Safety Analyses to Identify Critical Infrastructure Needing Aging Management

Dr. April Smith
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Overview

- Premise
- Integrated Safety Analysis (ISA)—Overview
- Basic Aging Management Program (AMP) Models
- Integrating Aging Management into ISA to Identify Critical Infrastructure

Premise

- AMP can fit within an existing risk analysis framework
- AMP augments the existing framework
- ISA as an example
- Issues for another day

ISA Overview

U.S. Nuclear Regulatory Commission Definition:
“ISA means a **systematic** analysis to identify facility and external **hazards** and their potential for initiating **accident sequences**, the potential accident sequences, their **likelihood** and **consequences**, and the items relied on for safety (IROFS)...”

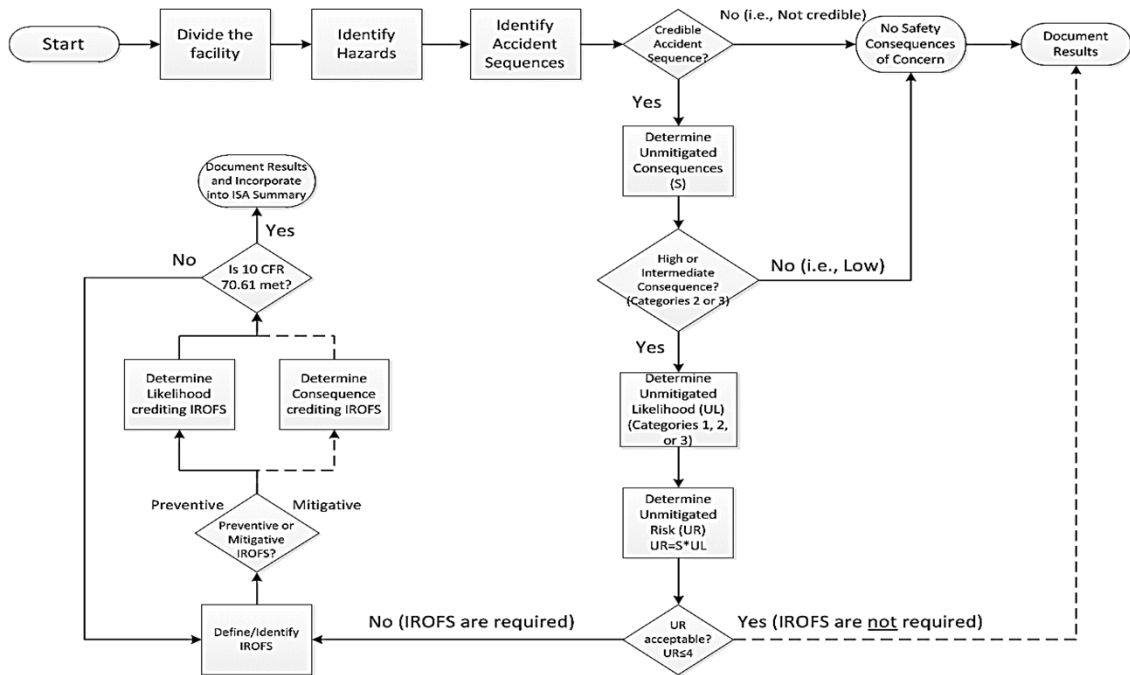
ISA Overview (continued)

- Risk-informed (i.e., based on risk determination)
 - Internal/external hazards and associated accident sequences
 - Consequences
 - Likelihoods
- Performance based
 - Radiological limits
 - Chemical standards

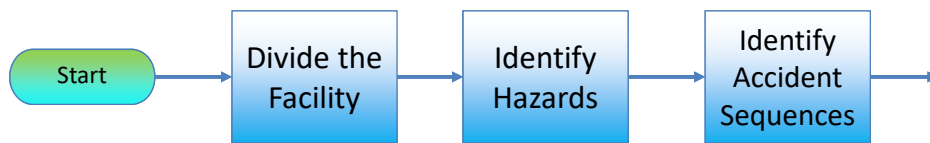
ISA Overview (continued)

- Method of identifying risks to safe operation
- Part of the overall facility safety basis
- Quantitative, semiquantitative, or qualitative and based on operating experience and facility design and processes

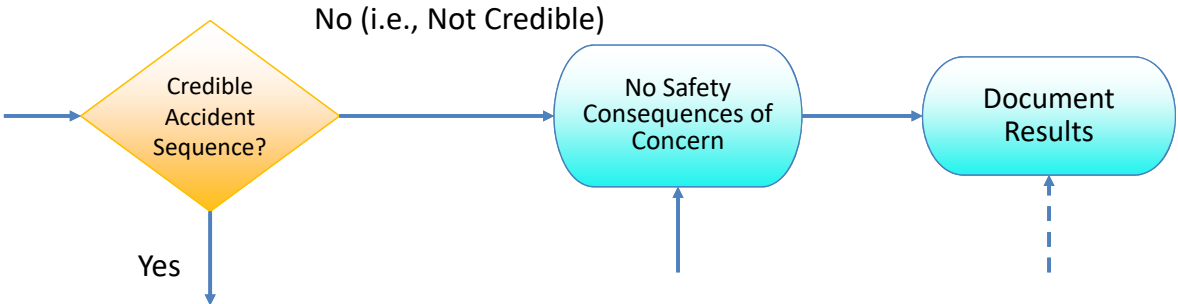
ISA Overview (continued)



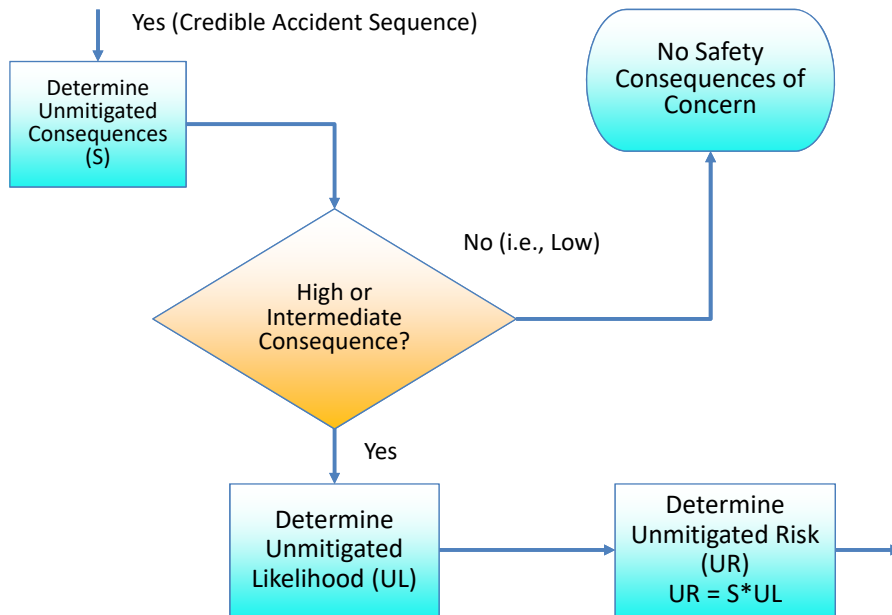
ISA Overview (continued)



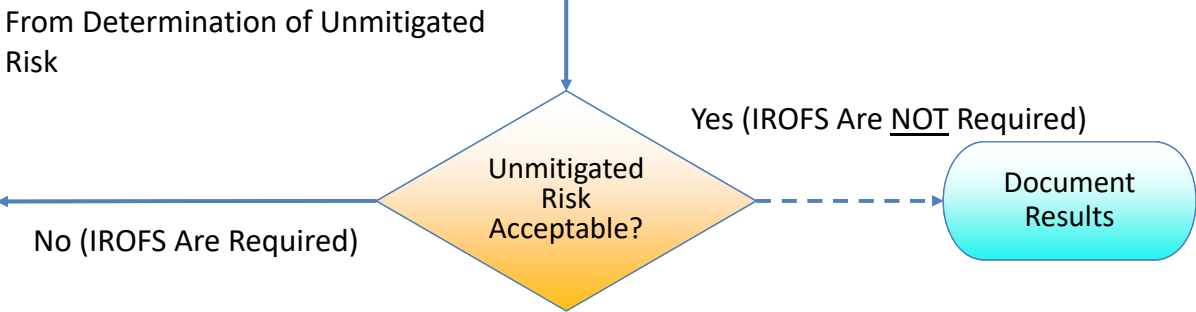
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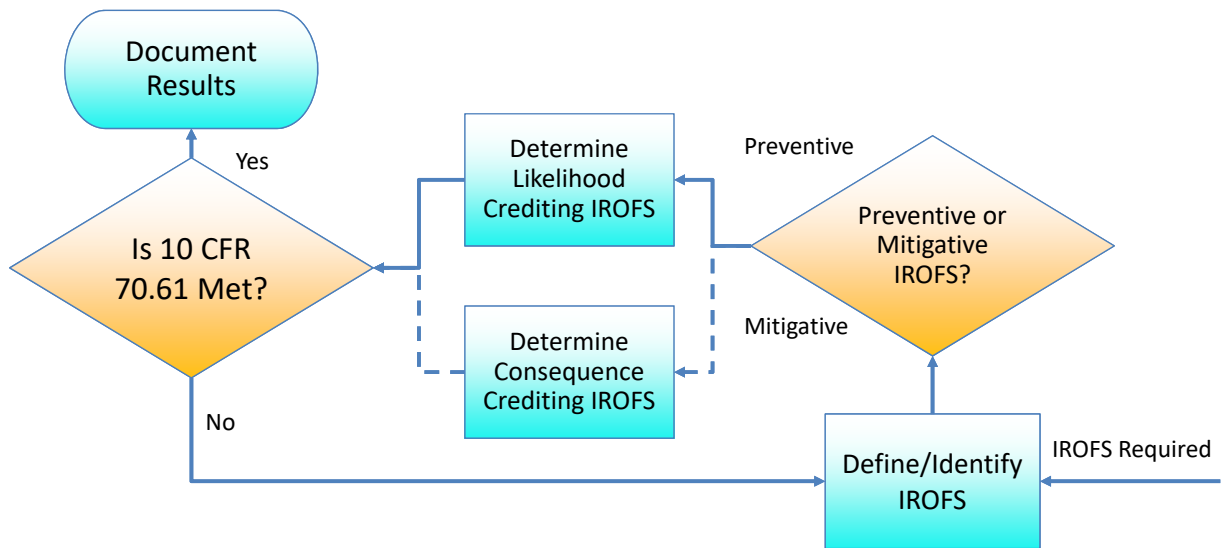
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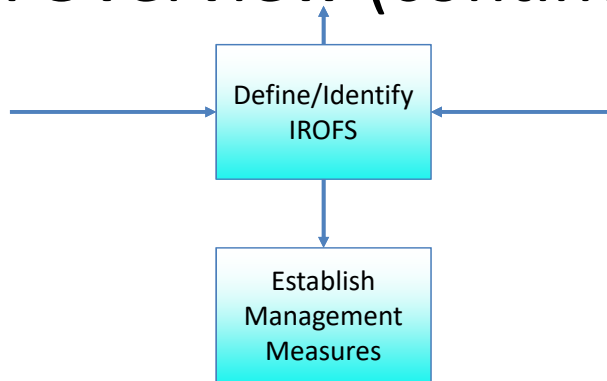
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ISA Overview (continued)

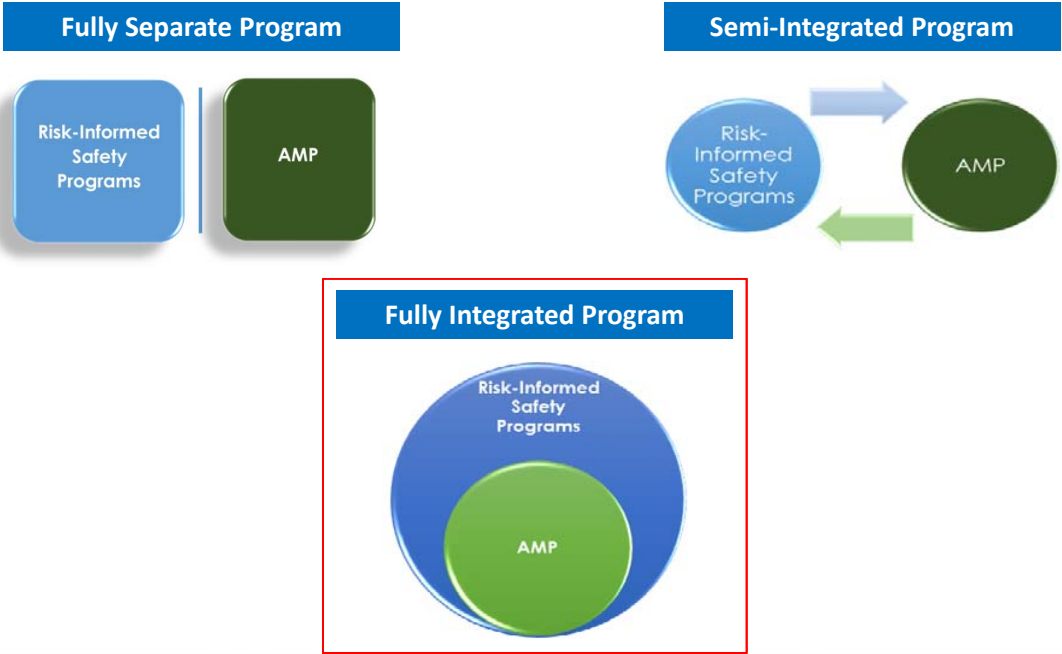


ISA Overview (continued)



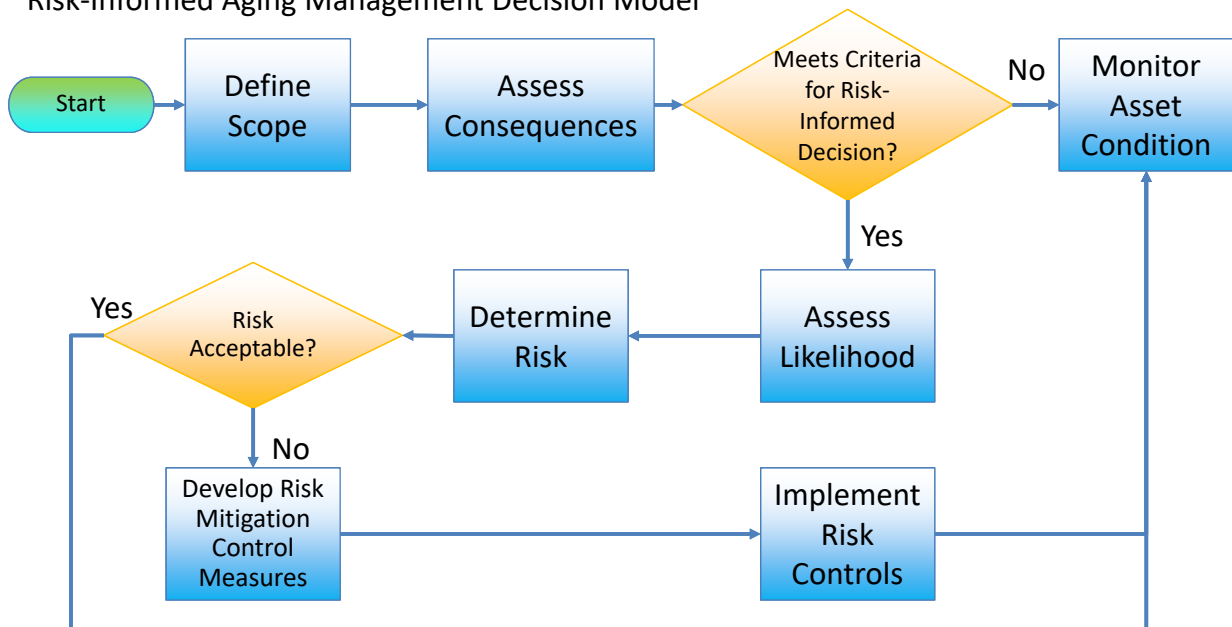
Management Measures: Functions performed by the licensee, generally on a continuing basis, that are applied to IROFS, to ensure the items are **available** and **reliable** to perform their functions when needed. Management measures include configuration management, maintenance, training and qualifications, procedures, audits and assessments, incident investigations, records management, and other **quality assurance (QA) elements**.

Basic AMP Models



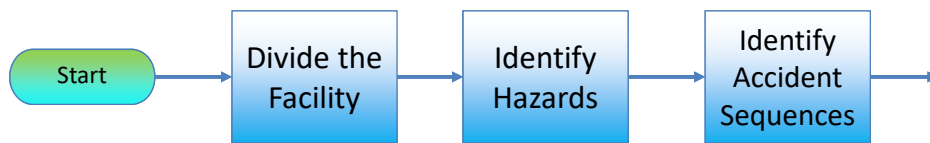
Basic AMP Models

Risk-Informed Aging Management Decision Model¹

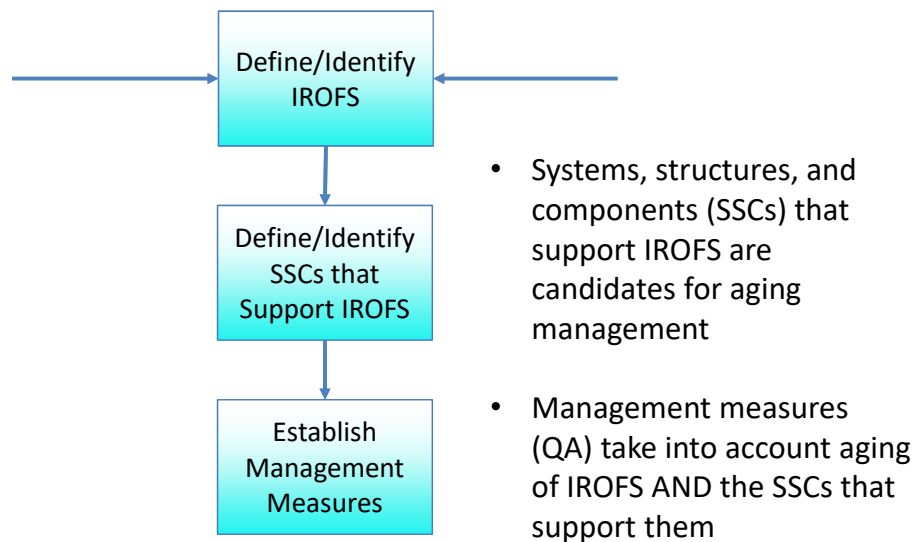


¹Model based on Figure 4.3-1, "Aging Asset Risk Based Decision Logic Diagram," in Center for Chemical Process Safety (CCPS), "Dealing with Aging Process Facilities and Infrastructure," 2018.

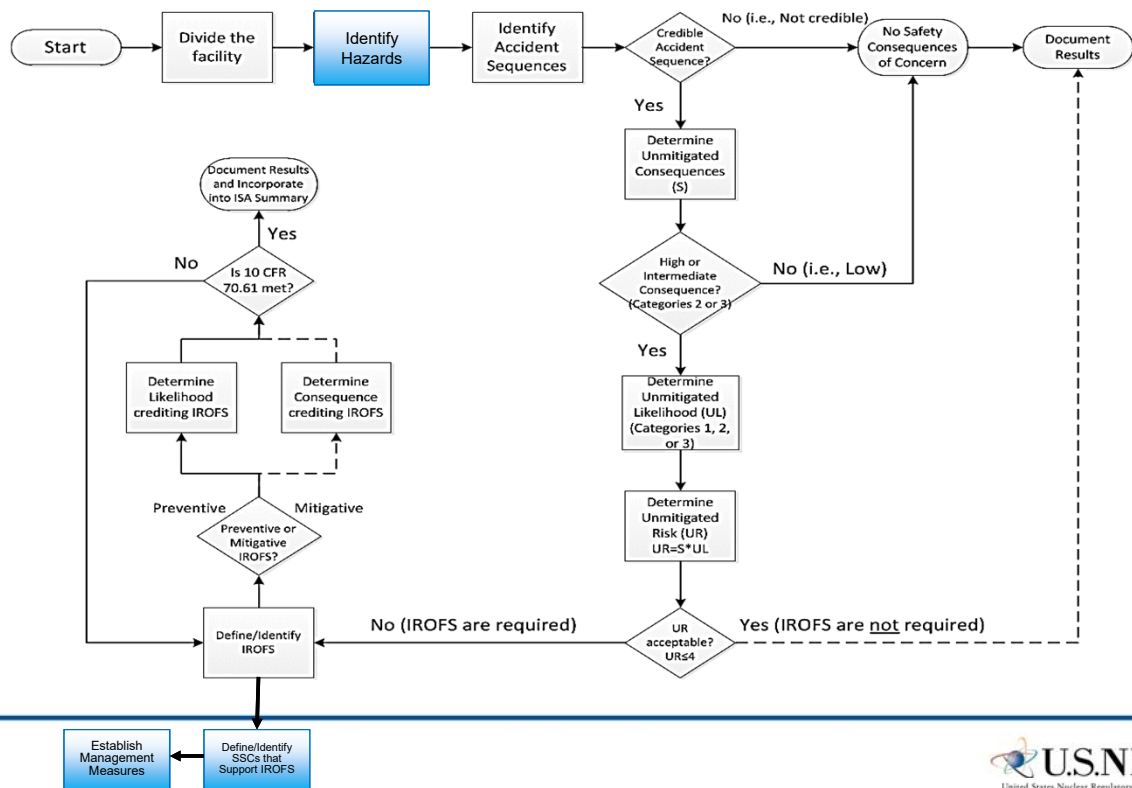
Integrating Aging Management into ISA to Identify Critical Infrastructure



Integrating Aging Management (continued)



Integrating Aging Management (continued)



Summary

- An AMP can fit within an existing risk analysis framework
- ISA is an example with the use of quality assurance measures
- Critical infrastructure elements are the IROFS, the SSCs that support them, and the systems that rely on those IROFS and SSCs