

Strawman for Enhancing the NRC Enforcement Policy for Fuel Cycle Facilities

Zeon PDF Driver Trial
www.zeon.com.tw

Assumptions

10 CFR Part 70 ISA Program
Implemented

Comprehensive Problem Identification,
Resolution and Correction Program (or
CAP) in Place

- Security/Safeguards not addressed herein,
however, similar philosophy can and
should be applied

The Focuses of Oversight

Regulation & License

ISA

Integrated Safety
Analysis

Primary Focus of Risk-Informed Oversight

Basis: *The ISA, conducted and implemented properly, meets the performance standard of Part 70, thus assuring adequate facility safety-based risk with regard to NRC licensed material. This category would include the IROFS (equipment or procedures) and the underlying analyses (consequence evaluations, PHAs, NCSEs, set-point determinations).*

License

CAP/MM

Problem Identification,
Resolution and
Correction /
Management Measures

Secondary Focus of Risk-Informed Oversight

Basis: *No system is perfect, and a healthy program to make timely identification of problems, and work to prevent recurrence of them, is a key to on-going plant safety. While not routinely the source of violations (although this is possible), its proper application (identification and/or CA aspects) is looked at for determining the severity of a violation. Other non-CAP management measures are included here as well. This category would include the formal programs to identify, communicate, investigate and take corrective actions to prevent problems and the other management measures needed to assure reliability of IROFS.*

License

Good Practices

Tertiary Focus of Risk-Informed Oversight

Basis: *By definition, the significant risks are addressed in the ISA (for credible high and intermediate consequence accidents), however, good practices are expected, and are important in maintaining doses ALARA. This category would include low-consequence accidents, Part 20 (radiological surveillance, contamination control, dosimetry, etc.) safety audits/inspections (except those that are considered IROFS management measures), Part 70.24 CAAS equipment and associated programs, etc.*

Key Factors in Violation Severity / Disposition Determination

Accident with
Significant
Consequences

Event in which 70.61 Performance
Requirements No Longer Achieved and with
Special Regulatory Significance (willfulness,
deliberate non-reporting, etc.)

Event in which 70.61 Performance Requirements
No Longer Achieved, but No Special Regulatory Significance

ISA Shortcoming, Programmatic Management Measures Failures,
Programmatic CAP Failure

Event in which 70.61 Performance Maintained, Poor Practices, Non-programmatic Management
Measures or CAP Failure

Key Factors in Violation Severity / Disposition Determination

Physical Aspect – *The safety margin expressed as the difference between two physical conditions (first being the expected or optimal, the second being a performance-limiting condition) and the potential consequence being avoided (high, intermediate). IROFS Example: One of two IROFS for a given high-consequence accident sequence becomes disabled. MM Example: A required monthly combustible materials inspection is missed, but incident is considered isolated and no program deficiencies are identified.*

- Temporal Aspect – *The safety margin expressed as the time available to identify a problem and to take restorative actions (repairing equipment, implementing a comp. measure or safe shut-down, etc.). Example: Disabled IROFS discovered during a weekly inspection.*

Key Factors in Violation Severity / Disposition Determination

Corrective Action Program (CAP)

- Identification – *Credit given if item is not self-revealing (e.g., an explosion) and identified in CAP by the licensee prior to identification by the inspector*
- Corrective Action – *Credit given for timely and adequate actions taken to prevent recurrence by the licensee*

● Regulatory Process / Willfulness Impact

- Regulatory Process Impact – *Action or inactions by the licensee that negatively impact the NRC's ability to carry out its statutory mission*
- Willfulness Impact – *A spectrum of issues ranging from deliberate intent to violate or falsify to and including careless disregard for requirements*

Example (Administrative IROFS)

Administrative IROFS Implemented by Procedures
License Applications Require Procedural
Compliance at All Times

NUREG 1520, Appendix A, Table A-9, assumes
Failure Every 1-3 Years (Index = 0)

- Possible Consequence of Failure (Procedural Violation)
 - Sufficient Protection Remains to Meet 70.61 (generally the case due to assumed lack of robustness)
 - Insufficient protection remains to Meet 70.61

Example (Passive Engineered IROFS)

License Applications Do Not Specifically
Require Equipment Not Fail

NUREG 1520, Appendix A, Table A-9,
Assumes No Failure in 30 Years
(Index = -2)

● Possible Consequence of Failure (Hardware Failure)

- Sufficient Protection Remains to Meet 70.61
(generally not the case due to assumed
robustness)
- Insufficient protection remains to Meet 70.61

Regulatory Experience

Administrative IROFS Failure

Assumed Failure Every 1-3 Years
(Index = 0)

Typically 70.61 Still Met

Severity Level IV Cited or Non-Cited Violation Frequently Issued Due to Procedure Violation and Application Requirement Regardless of Scenario Assumptions or 70.61 Requirements

Passive Engineered IROFS Failure

Assumed No Failure in 30 Years
(Index = -2)

Typically 70.61 Not Still Met

Severity Level IV Cited or Non-Cited Violation Infrequently Issued Regardless of Scenario Assumptions or 70.61 Requirements
("Nothing Done Wrong Approach")

Regulatory Experience

Administrative IROFS Failure

Assumed Failure Every 1-3 Years
(Index = 0)

Typically 70.61 Still Met

Severity Level IV Cited or Non-Cited Violation Frequently Issued

Due to Procedure Violation and Application Requirement

Regardless of Scenario Assumptions or 70.61 Requirements

Passive Engineered IROFS Failure

Assumed No Failure in 30 Years
(Index = -2)

Typically 70.61 Not Still Met

Severity Level IV Cited or Non-Cited Violation Infrequently Issued

Regardless of Scenario Assumptions or 70.61 Requirements

(“Nothing Done Wrong Approach”)

Risk Informed ?????

Proposed Philosophy

Administrative IROFS Failure

Assumed Failure Every 1-3 Years
(Index = 0)

Review Specific Scenario for
Assumptions and 70.61 Outcome

Unpredictable enforcement action
that does not appear to consider
the ISA or circumstances

Passive Engineered IROFS Failure

Assumed No Failure in 30 Years
(Index = -2)

Review Specific Scenario for
Assumptions and 70.61 Outcome

More predictable process that
appears to be more analytical and
give more consideration to ISA

Proposed Philosophy

Administrative IROFS Failure

Assumed Failure Every 1-3 Years
(Index = 0)

Review Specific Scenario for
Assumptions and 70.61 Outcome

Minor Violation If:

Failure Within Assumed ISA
Frequency

70.61 Requirements Still Met

Other Factors Not Present

Passive Engineered IROFS Failure

Assumed No Failure in 30 Years
(Index = -2)

Review Specific Scenario for
Assumptions and 70.61 Outcome

Minor Violation If:

Failure Within Assumed ISA
Frequency

70.61 Requirements Still Met

Other Factors Not Present

Consistent and Risk Informed

Benefits

Capitalizes on New ISA Work for More Risk-Focused Oversight

Places High-Value (and scrutiny) on the CAP

More Predictable, Consistent and Meaningful Enforcement Regime

Better Starting Point Data for LPR

- Provides Incentive for Licensee's Continued Efforts to Maintain Comprehensive, High-Quality ISAs and Develop and/or Maintain Industry-Standard Management Measures (such as audit/surveillance programs, and CAPs-related reporting and investigation programs)