

Louisiana Energy Services Meeting on Integrated Safety Analysis

Date: February 26, 2004

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National Enrichment Facility Integrated Safety Analysis Meeting

February 26, 2004

Agenda

- Introduction
- Integrated Safety Analysis (ISA) Team Approach
- ISA Development Process
- ISA Documentation
- ISA Update Process
- Conclusions

Introduction

- Uranium Enrichment Plant
 - Three Million SWU/Year
 - Urenco Gas Centrifuge Technology
- Location
 - Southeastern New Mexico in Lea County
 - Near Eunice, New Mexico

Introduction (continued)

- National Enrichment Facility (NEF) License Application
 - Submitted December 12, 2003
- NEF License Application Requests
 - 30 Year License Period
 - 5 w/o Maximum Uranium-235 Enrichment
- Integrated Safety Analysis (ISA) Summary
 - Safety Analysis Report (SAR) Chapter 3
 - Consistent with NUREG-1520, Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility

ISA Team Approach

- NEF ISA Conducted with Two ISA Teams
 - Classified ISA Team
 - Non-Classified ISA Team
- Qualifications of each NEF ISA Team
 - Safety Specialists
 - Design Specialists
 - Operational Specialists

ISA Team Approach (continued)

- Classified ISA Team Scope
 - Centrifuge Cascades
 - Centrifuge Post Mortem
 - Centrifuge Test
 - Contingency Dump System
- Non-Classified ISA Team Scope
 - Remaining Systems
 - Examples – Tails Takeoff, UF₆ Feed

ISA Development Process

- ISA Inputs and Outputs
 - In Accordance with Applicable Quality Assurance Requirements
- Hazard Identification Utilized HAZOP Methodology
 - Considered Internal and External Events

ISA Development Process

- **HAZOP PROCESS GUIDEWORDS - Examples**
 - Less/More Heat
 - Less/More Pressure
 - High/Low Level
 - High/Low/No/Reverse Flow
 - Corrosion
 - Maintenance
 - Criticality
 - External Events
 - Construction on Site
 - Hurricane
 - Seismic

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ISA Development Process (continued)

Risk Matrix - Used to Establish Acceptable Risk

Severity of Consequences	Likelihood of Occurrence		
	Likelihood Category 1 Highly Unlikely (1)	Likelihood Category 2 Unlikely (2)	Likelihood Category 3 Not Unlikely (3)
Consequence Category 3 High (3)	Acceptable Risk 3	Unacceptable Risk 6	Unacceptable Risk 9
Consequence Category 2 Intermediate (2)	Acceptable Risk 2	Acceptable Risk 4	Unacceptable Risk 6
Consequence Category 1 Low (1)	Acceptable Risk 1	Acceptable Risk 2	Acceptable Risk 3

ISA Development Process (continued)

- For Each NEF Process or System
 - Identified Hazards Resulting in Consequences of Concern
 - Generated Accident Sequences
 - Identified Initiating Event Frequency
 - Determined Consequences of Potential Hazards
 - Developed Risk Index Tables

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Text removed under 10 CFR 2.390.

ISA Development Process (continued)

- Sole IROFS
 - In Some Cases, Application of Risk Index Methodology Has Shown That Only a Single IROFS is Required To Satisfy Performance Requirements of 10CFR70.61
 - Even for High Consequence Events

ISA Development Process (continued)

- Performed System Integration Assessment for Systems IROFS Interactions
 - Evaluated Effects of Fire, Internal Flooding and External Events on a Facility Basis
 - Evaluated IROFS for Negative Impacts on Other Systems or IROFS

ISA Documentation

- ISA Summary
 - Consistent with NUREG-1520
 - Includes All High and Intermediate Risk Accident Sequences
 - Includes Results of Classified and Non-Classified ISAs
 - ISA Summary, ISA Documentation, and NEF Design Maintained Consistent

ISA Documentation (continued)

- ISA Documentation Includes
 - Process Safety Information
 - ISA Team Meeting Results
 - Action Items and Resolutions
 - Calculations
 - ISA Technical Reports
 - Design Documentation
 - IROFS Information
- Maintained in Project Files

ISA Update Process

- Ensures NEF Design, ISA Summary, and ISA Documentation Maintained Consistent
- Includes All NEF Design Changes to any Process, Facility or Site Characteristic
- Process
 - Identify Potentially Risk Significant Changes
 - Review and Evaluate Potentially Risk Significant Changes
 - Update ISA Summary and ISA Documentation
- ISA Update Process Applied Through Entire Facility Life Cycle

Conclusions

- ISA
 - Consistent With NUREG-1520 and NUREG-1513
 - Consistent with NEF Design Bases
 - Demonstrates Design Meets 10 CFR 70.61, Performance requirements
 - Results Documented in ISA Summary
 - Maintained Through ISA Update Process