



## ENCLOSURE 5

### Format of the Atomic Alchemy Inc. SAR

#### Introduction

The Standard Formats of R.G. 1.70 and NUREG-1537 represent formats for PSARs and FSARs that are acceptable to the NRC staff. Conformance with these Standard Formats, however, are not required. Safety Analysis Reports with different formats will be acceptable to the staff if they provide an adequate basis for the findings requisite to the issuance of a license or permit.

The Atomic Alchemy SAR has integrated the safety analysis contents for its VIPRs and Radioisotope Production Process Facility into a single SAR. This safety analysis report will therefore be a hybrid based on the formats outlined in Regulatory Guide 1.70 with additional sections added as necessary to address specific NUREG-1537 elements. The overall format will follow the guidance contained in Regulatory Guide 1.70 and NUREG-0800.

#### Overview of the Atomic Alchemy SAR Chapters

##### **Chapter 1 Introduction and General Description of the Plant**

- Appendix A – Regulatory Guide Conformance
- Appendix B – Standard Review Plan Compliance
- Appendix C – Compliance with 10CFR50.34(f)
- Appendix D – Compliance with NUREG-0933
- Appendix E – Safety System Design Interfaces
- Appendix F – Non-Power Reactors on a Multi-Unit Site

##### **Chapter 2 Site Characteristics**

##### **Chapter 3 Design of Structures, Components and Systems**

- Appendix A – Seismic HVAC Equipment, Ducts and Supports
- Appendix B – Seismic Cable Trays and Cable Tray Supports
- Appendix C – Aging Evaluation Program
- Appendix D – Structures Monitoring Program
- Appendix E – Methodology for Qualifying Safety Related Electrical and Mechanical Equipment
- Appendix F – Principal Design Criteria - Conformance with 10 CFR 50 Appendix A General Design Criteria
- Appendix G – Atomic Alchemy Nuclear Island Seismic Analysis

##### **Chapter 4a Reactor Design Description**

##### **Chapter 4b Radioisotope Process Design Description**

##### **Chapter 5 Reactor Coolant System and Connected Systems**

##### **Chapter 6 Engineered Safety Features**



Appendix A – Uranium, SNM and Fission Products Distribution in the Atomic Alchemy Facility Post-Design Basis Accident

**Chapter 7 Instruments and Controls**

Appendix A – Common Qualified Platform I&C Architecture

**Chapter 8 Electric Power**

**Chapter 9 Auxiliary Systems**

Appendix A – The Fire Protection Plan

**Chapter 10 Experimental Facilities and Utilization**

**Chapter 11 Radioactive Waste Management**

**Chapter 12 Radiation Protection**

**Chapter 13 Conduct of Operations**

Appendix A – Operational Programs

Appendix B – The Emergency Plan

Appendix C – The Security Plan

Appendix D – The Licensed Operator & Requalification Plan

Appendix E – The Fitness for Duty Plan

Appendix F – Construction Related Organization

**Chapter 14 Initial Test Program and Start-Up Plan**

**Chapter 15 Accident Analysis**

Appendix A – Evaluation Models and Parameters for Analysis of Radiological Consequences of Accidents

Appendix B – Removal of Airborne Activity from the Reactor Confinement Module Atmosphere Following Design Basis Accident

Appendix C – Removal of Airborne Activity from the Radioisotope Process Production Module Atmosphere Following Design Basis Accident

Appendix D – Accidents Caused by Malevolent Aircraft Impact

**Chapter 16 Technical Specifications**

Appendix A – Technical Specifications and Bases

Appendix B – Technical Requirements Manual

Appendix C – Offsite Dose Calculation Manual

**Chapter 17 Quality Assurance**

Appendix A – Quality Assurance Plan Document (QADP)

Appendix B – Material Control & Accounting Program

**Chapter 18 Human Factors Engineering**



**Chapter 19 Severe Accident Management**

Appendix A – Loss of Large Area Analysis

Appendix B – Aircraft Impact Analysis

**Chapter 20 Environmental Report**

**Chapter 21 HEU to LEU Conversions**