

List of Tables and Figures

List of Abbreviations and Acronyms

EXECUTIVE SUMMARY

PART 1 – PLANT DESIGN INFORMATION

- 1. Advanced Boiling Water Reactor**
- 2. AP1000**
- 3. Gas Turbine – Modular Helium Reactor**
- 4. International Reactor Innovative and Secure**
- 5. Pebble Bed Modular Reactor**
- 6. Bounding Plant Design**

PART 2 – EVALUATION OF THE INEEL, PORTSMOUTH, AND SAVANNAH RIVER SITES

1. Site Descriptions

- 1.1 INEEL Site
- 1.2 Portsmouth Site
- 1.3 Savannah River Site

2. Economic Criteria

- 2.1 Electricity and Service Market Projections
- 2.2 Transmission System
- 2.3 Stakeholder Support
- 2.4 Site Development Costs

3. Engineering Criteria

- 3.1 Site Size
- 3.2 Site Topography
- 3.3 Environmentally Sensitive Areas
- 3.4 Emergency Planning/Population Density
- 3.5 Labor Supply
- 3.6 Transportation Access

- 3.7 Security
- 3.8 Collocated or Nearby Hazardous Land Uses
- 3.9 Ease of Decommissioning
- 3.10 Water Rights and Air Permits
- 3.11 Regulatory
- 3.12 Schedule
- 3.13 Geologic Hazards
- 3.14 Site-Specific Safe Shutdown Earthquake
- 3.15 Capable Faults
- 3.16 Liquefaction Potential
- 3.17 Bearing Material
- 3.18 Near-Surface Material
- 3.19 Groundwater
- 3.20 Flooding Potential
- 3.21 Ice Formation
- 3.22 Cooling Water Source
- 3.23 Temperature and Moisture Content
- 3.24 Winds
- 3.25 Rainfall
- 3.26 Snow
- 3.27 Atmospheric Dispersion

4. Environmental Criteria

- 4.1 Terrestrial Habitat
- 4.2 Terrestrial Vegetation
- 4.3 Aquatic Habitat/Organisms
- 4.4 Groundwater
- 4.5 Surface Water
- 4.6 Population

5. Sociological Criteria

- 5.1 Land Use
- 5.2 Demography
- 5.3 Socioeconomic Benefits
- 5.4 Agricultural/Industrial
- 5.5 Aesthetics
- 5.6 Historic and Archaeological Sites
- 5.7 Transportation Network
- 5.8 Environmental Justice

6. Ranking and Selection of Preferred DOE Site

7. ESP Estimate for the Preferred DOE Site

PART 3 – EVALUATION OF THE SURRY AND NORTH ANNA SITES

1. Site Descriptions

- 1.1 Surry Site
- 1.2 North Anna Site

2. Economic Criteria

- 2.1 Electricity and Service Market Projections
- 2.2 Transmission System
- 2.3 Stakeholder Support
- 2.4 Site Development Costs

3. Engineering Criteria

- 3.1 Site Size
- 3.2 Site Topography
- 3.3 Environmentally Sensitive Areas
- 3.4 Emergency Planning/Population Density
- 3.5 Labor Supply
- 3.6 Transportation Access
- 3.7 Security

- 3.8 Collocated or Nearby Hazardous Land Uses
- 3.9 Ease of Decommissioning
- 3.10 Water Rights and Air Permits
- 3.11 Regulatory
- 3.12 Schedule
- 3.13 Geologic Hazards
- 3.14 Site-Specific Safe Shutdown Earthquake
- 3.15 Capable Faults
- 3.16 Liquefaction Potential
- 3.17 Bearing Material
- 3.18 Near-Surface Material
- 3.19 Groundwater
- 3.20 Flooding Potential
- 3.21 Ice Formation
- 3.22 Cooling Water Source
- 3.23 Temperature and Moisture Content
- 3.24 Winds
- 3.25 Rainfall
- 3.26 Snow
- 3.27 Atmospheric Dispersion

4. Environmental Criteria

- 4.1 Terrestrial Habitat
- 4.2 Terrestrial Vegetation
- 4.3 Aquatic Habitat/Organisms
- 4.4 Groundwater
- 4.5 Surface Water
- 4.6 Population

5. Sociological Criteria

- 5.1 Land Use
- 5.2 Demography
- 5.3 Socioeconomic Benefits
- 5.4 Agricultural/Industrial

- 5.5 Aesthetics
- 5.6 Historic and Archaeological Sites
- 5.7 Transportation Network
- 5.8 Environmental Justice

- 6. **Ranking and Selection of Preferred Dominion Site**
- 7. **ESP Estimate for the North Anna Site**

PART 4 – LESSONS LEARNED

- 1. **Recommended Changes to Industry Guidelines**
- 2. **Influence Factors**

PART 5 – COMBINED LICENSE OUTLINE

- 1. **COL Table of Contents**
- 2. **COL Resource Estimate Approach**

APPENDIX A – SUMMARY OF SITE EVALUATION PROCESS

- A.1 **Overview**
- A.2 **Siting Criteria**
- A.3 **Process Description**

APPENDIX B – POWER MARKET ASSESSMENT FOR NEW NUCLEAR GENERATION