National Academy of Science Report on Uranium Mining in Virginia

By

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Fuel for America
Jobs for Southside
Coles Hill Uranium
Deposit Location – Pittsylvania County, Virginia

• Discovered in 1978 by Marline Corp.
  • Project taken to Feasibility stage in 1980’s
  • ~$40 million investment (in 1980’s $)
  • Legislative moratorium established in 1982
  • Project abandoned in late 1980’s due to declining market conditions

• Virginia Uranium, Inc. formed in 2007

• 119 Million lbs of defined U3O8 resources
  • NI 43-101 compliant resource estimate
  • Scoping study completed
  • ~$20 million invested to date

• Critical Path Forward
  • Develop regulatory framework
  • Legislative approval of regulatory framework
Uranium Mining Moratorium

- Per Virginia Code §45.1-274, Uranium exploration is permitted
- Per Virginia Code § 45.1-283 (1982)

“Notwithstanding any other provision of law, permit applications for uranium mining shall not be accepted by any agency of the Commonwealth prior to July 1, 1984, and until a program for permitting uranium mining is established by statute.”
Virginia’s Uranium Studies

1981: Virginia General Assembly approved House Joint Resolution No. 324 Requesting Virginia Coal & Energy Commission (“CEC”) to evaluate uranium

1983: Uranium Administrative Group (“UAG”) established in SB-155 that finds that a preliminary study

“...has not identified any environmental or public health concern that could preclude uranium development in Virginia.”

1984: Recommendation by 16 of 18 (89%) UAG members “We conclude that the moratorium on uranium development can be lifted…”

2008: CEC creates uranium mining sub-committee to evaluate uranium development

2010: CEC engaged National Academy of Sciences (“NAS”) for evaluation study

2011: Socio-Economic and NAS studies released
State-sponsored socio-economic study

- **Highlights:**
  - **Construction Phase**
    - 3 years
    - 323 jobs per year
    - $35 million per year net economic impact
    - $2.5 million per year state and local taxes
  - **Operational Phase**
    - 1,052 jobs (direct, indirect, induced)
    - $135 million per year net economic benefits
    - State and local taxes
      - County: $1.1 million per year
      - State: $2.0 million per year
    - $5 billion in revenue for Virginia firms (over life of project)

“In the opinion of Chmura, the mining and milling operations would bring substantial and much needed economic benefits to Pittsylvania County, the immediately surrounding areas, and the state.”
Key Findings:

- Provides clear “Road Map” on how Virginia could proceed with developing regulations
- Industry Best Practices can mitigate majority of environmental concerns (p. 15)
- Modern tailings disposal cells have been effective at isolating tailings from environment (p. 15)
- With U ore grades in VA, many technical aspects of mining U would be essentially the same as other hard rock mining operations (p101)
- Coles Hill has low risk of Acid Mine Drainage (p. 147)
- Coles Hill is only economically viable deposit in Virginia (p. 78)
- Many impacts discussed were from mining facilities that operated at standards of practice that are generally not acceptable today (p. 104)
National Academy of Sciences “Uranium Mining in Virginia”
Released December 2011

• Key Findings:
  • The concept of ALARA is one way of enhancing regulatory standards (p.19 exec summary)
  • In the 0.05 to 0.5% uranium grade range there is limited requirement for special precautions – beyond standard engineering practice (p. 92)
  • Contamination of ore deposits with selected toxic metals, in particular arsenic, is not expected in Virginia (p.92)
  • Radon from tailings can be controlled by use of a water cover (p. 98)
  • Reclamation and closure are planned during the earliest stages of the project (p. 100)
  • If facility is built and operated based on modern BMP’s near- to moderate-term environmental effects should be reduced (p. 177)
  • Reasonable timeframe (5-8 years) before mining would begin (p. 212)
• National Academy of Sciences findings
• 1990’s EPA survey found the average concentration of radon in VA homes was 2.7 \text{ pCi/L} (p. 121)
  
  \begin{itemize}
    \item 2.7 \text{ pCi/L radon} = 0.702 \text{ WLM/year}
  \end{itemize}

Therefore: Modern uranium miners are exposed to less radon than the average Virginian in their home.
• **Our Assessment of the NAS Study:**
  • **POSITIVE**
    • Comprehensive report
    • Provides clear “Roadmap” for Virginia to proceed
    • Chapter 8 identifies Best Management Practices, and mitigation techniques
      • Many BMP’s are already codified
      • BMP’s have been widely used by industry for past 30 years
      • BMP’s have proven effective
  • **NEGATIVE**
    • Report poorly organized
      • Chapters 5 and 6 discuss real risks
        • Do not discuss how risks are managed
        • Little risk assessment or comparative risk
    • Examples of unnecessary criticism
      • ALARA concept should be included in regulations
      • Virginia has no experience regulating uranium mining
      • 4WLM is not protective enough
Action by Governor Robert F. McDonnell
January 19, 2012

• Executive Directive
  • Establish: Uranium Working Group
    • Department of Mines, Minerals and Energy
    • Department of Environmental Quality
    • Department of Health
  • Charged with: Establishing draft statutory and conceptual regulatory framework
  • Comprehensive 18 point directive
    • Work with NRC to determine necessary standards
    • Define parameters of EIS process
  • Report findings periodically to public and legislature
  • Complete work by December 1, 2012
  • Allows draft regulations to be developed over next 11 months
  • Draft regulations could be considered during 2013 Legislative Session
Conclusions

• Every major state-sanctioned study has suggested the need for a uranium mining regulatory framework in Virginia

• Virginia has a long history of mining
  • Produces over 30 different minerals annually
  • Only operating Kyanite mine in North America
  • DMME has 99.9% effectiveness at ensuring no off-site environmental contamination

• No other state with uranium mining has specific statues for uranium mining
  • General “mineral mining” regulations employed
  • Virginia’s “mineral mining” regulations should serve as strong foundation

• Vast nuclear experience in Virginia
  • Commercial reactors, fuel fabrication, naval nuclear program
  • VDH Radiological Protection Division can assist
Uranium Resources in Virginia
World-Class Deposit

www.VirginiaUranium.com
Fuel for America
FIGURE 8.1 Schematic showing possible stages and timing for development of a conceptual uranium mine as well as the stages and timing for development of a regulatory infrastructure specific for uranium mining and processing.
Summary of Doses

Receptor/Characteristics | Annual Whole Body Dose
---|---
NRC limit for general population (excluding background exposure and release from mines) | 500 mrem *Current limit: 100 mrem*
Exposure to local residents from natural background radiation in vicinity of project prior to mining activity (dose equivalent due to external radiation & inhaled radon daughters) | 210 mrem
Coles Hill property (on mining site) | 16.4 mrem
Hypothetical off-site receptor with the largest potential exposure | 7.8 mrem
Hypothetical receptor nearest occupied dwelling | 3.5 mrem
Hypothetical receptor living in Halifax | 0.15 mrem
Dose to hypothetical average receptor of the population currently living w/in 50 miles of project. | 0.04 mrem

*Dental x-ray ~ 1 mrem; Living in brick house ~ 7 mrem*
Engine of Economic Growth

- Potentially ~$140 million/year in revenue
  - 1,300 Pittsylvania County Farms have $63 million/year in revenue
  - Billions of dollars in revenue

- Capital Expenditures
  - $173 million – Initial
  - $350-400 million – Total
  - 250-350 construction jobs to build facility

- 325 Direct Employees
  - Average salary ~ $65,000
  - 30-35 year mine life
  - Unemployment ~15% in Southside

- Potentially $6 MM/yr in (4%) excise/severance taxes
  - Stay in surrounding localities for:
    Agriculture, conservation, economic development, education

- New business start-up: 1:6 spin off
  - Direct and indirect annual economic benefit
    $240 - $300 million
This Agreement does not provide for discontinuance of any authority and the Commission shall retain authority and responsibility with respect to the following:

- The regulation of byproduct materials as defined in Section 11e.(2) of the Act;