URANIUM MINING
A Historical Perspective for Virginia

Introduction

The issue of exploration and mining of uranium became a legislative concern during the 1981 Session with the passage of House Joint Resolution No. 324 in response to the anticipated leasing of uranium rights on approximately 50,000 acres in the Chatham area of Pittsylvania County, and the Culpeper-Madison-Orange County area. The resolution asked the Coal and Energy Commission to evaluate the environmental effects of uranium exploration, mining, and milling, and any possible impacts to the health, safety, and welfare of Virginia citizens that may result from such activities. The Commission, after holding several public hearings, then appointed a special uranium subcommittee to examine the issue in greater detail. As a result of information received at the public hearings; information gathered from visits to uranium mine, milling, operational, and land reclamation sites in the western United States; and interviews with Texas regulatory authorities, the special Uranium Subcommittee of the Coal and Energy Commission made several recommendations, among them:

- That permits be issued by the Chief of the Division of Mines and Quarries prior to the beginning of any "exploratory activity."
- That abandoned drill holes be plugged in an appropriate manner and the Chief be notified that they have been plugged.
- That the Chief be empowered to inspect any area for which an applicant has sought or received a permit.
- That no mining permit application be accepted prior to July 1, 1983.

1980s

During the 1982 Session, legislation was enacted that reflected the Coal and Energy Commission's and its Uranium Subcommittee's recommendations authorizing the exploration for uranium ore but placed a temporary prohibition on the acceptance of permit applications for uranium mining until July 1, 1983. In July 1982, Marline Uranium Corporation announced that it had discovered 110 million pounds of uranium in what became known as the Swanson/Coles Hill site on land it had leased in Pittsylvania County. During this period, the Commission continued its work and decided to hire a number of outside technical experts/consultants to answer such concerns as:

- The applicability of existing uranium mining and milling technologies to Virginia's environment.
- The appropriate legislative framework for the regulation of this industry if it is determined that it could operate safely in Virginia.
- The necessary performance standards that should be imposed on the industry.

The Commission received several reports both from its Uranium Subcommittee and outside consultants throughout the year. On the basis of these studies the Commission recommended that legislation be enacted that (i) would extend the prohibition on state agencies' accepting applications for or granting of, uranium mining permits and (ii) specify statutory criteria for site-specific feasibility studies. Such legislation (Senate Bill 155) was introduced and

enacted during the 1983 Session. It established the Uranium Advisory Group (UAG) and charged it with examining the issue of uranium development "at specific sites in Pittsylania County." The new law began with the General Assembly finding:

> that while uranium mining and milling activity can generate substantial benefits, it also raises a wide range of environmental and other local concerns; and (ii) that a preliminary study, identifying many potential environmental and other effects of uranium development and describing procedures and responsibilities that the Commonwealth and a proponent would be obligated to accept if development were to proceed, has not identified any environmental or public health concerns that could preclude uranium development in Virginia.
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> The General Assembly further finds, however, that a possibility exists that certain impacts of uranium development activity may reduce or potentially limit certain uses of Virginia environment and resources, and that therefore additional evaluation of the costs and benefits of such activity is necessary before a final decision can be made regarding its acceptability in the Commonwealth.

The new law also extended the prohibition on accepting any permit application for uranium mining until July 1, 1984, and added the provision that kept the prohibition in place "until a program for permitting uranium mining is established by statute."

In October of 1983, the UAG was furnished with site-specific studies as called for in the statute. The UAG consultants reported back one month later with a written analysis of the studies. The evaluations suggested that further studies were needed prior to enactment of uranium mining legislation. Specifically, two areas of consensus surfaced from a review of the critiques: first, the industry documentation did not adequately support the conclusion that the benefits of the project outweigh the costs; and second, the data provided did not demonstrate that hazards and costs exist to warrant a permanent prohibition on uranium development. Of primary concern were the health, safety, and environmental hazards of uranium mining. The UAG found that these impacts should be evaluated from the Commonwealth's and public's perspective and "given primacy in further evaluations." Based on these findings, the Coal and Energy Commission recommended that the uranium study should be continued under the direction of the Uranium Subcommittee and the UAG.

During 1984, the Uranium Subcommittee was combined with the UAG. The Coal and Energy Commission also established an interagency task force of the directors of state agencies to assist these two bodies in completing their work. In October 1984, the interagency task force submitted its report, which specified state performance standards that would be necessary for uranium mining and milling. The report also proposed a state regulatory framework and state performance standards that it believed were necessary if uranium operations were to occur in Virginia. The Uranium Subcommittee reviewed the report and concluded that the moratorium on uranium development could be lifted if "essential specific recommendations" of the interagency task force were enacted into law. Those task force recommendations were included in draft legislation offered by the Uranium Subcommittee to the full Commission. In addition to the provisions suggested by the task force, the Uranium Subcommittee inserted language into the legislation that required a uranium licensee to develop a closure and postclosure plan, provide financial assurances for closure and postclosure care, and pay into a Uranium Response Fund,

which would guarantee $1 million was available upfront before any uranium production occurred. The full Commission reviewed the draft legislation and recommended that the "draft legislation be passed on, without endorsement, for consideration by the 1985 Session of the General Assembly." The legislation (House Bill 1129), was introduced by its chief patron Delegate Paul Councill and co-patroned by a number of the members of the Coal and Energy Commission. It was referred to the House Committee on Mining and Mineral Resources and was reported out of the Committee with amendments by a favorable vote of 9-5-1 vote. It was taken up by the House of Delegates at which time Delegate Councill moved that the bill be re-referred to the Mining and Mineral Resources Committee. It was sent back to the Committee where no action was taken on the legislation.

Early in 1984 Union Carbine, which had become a partner in the project with Marline, dropped its option on the various properties due to the decline in uranium prices. However, Marline stayed involved in the venture until 1990 when it terminated the remaining mineral leases and closed its local office.

2000s

In the fall of 2007, Mr. Water Coles, who owned the land previously referred to as the Swanson site, now known as the Coles Hill deposit, announced he and other landowners had formed Virginia Uranium, for the purpose of mining the deposit, if it could be done safely. Soon thereafter, in November 2007, the state issued an exploration permit to Virginia Uranium, allowing it to drill test holes. Legislation (Senate Bill 525) was proposed during the 2008 Session that would have established the Virginia Uranium Mining Commission as a legislative branch advisory commission to assess the risks and benefits of developing uranium resources in Virginia. The bill passed the Senate but failed to be reported out by the House Rules Committee.

Subsequent to the failure of Senate Bill 525, the Coal and Energy Commission, on November 6, 2008, created a new Uranium Mining Subcommittee to:

- Oversee any study that might be entered into between the Virginia Center for Coal and Energy Research at VPI-SU and the National Academy.
- Review and provide comments on all aspects of the proposed study prior to the execution of any agreement.
- Determine if the proposed study is acceptable.
- Undertake the study of other issues including economic, environmental, public health, and social factors.
- Hold public hearings to assist the full Commission in its determination and recommendations of the appropriate state uranium policy.

Current Studies of Uranium Mining in the Commonwealth

The subcommittee met numerous times to develop and finalize a scope of work for the study to be included in the contract with the National Academy of Sciences' National Research Council (NRC). After receiving public comment, the scope of the study was finalized and adopted at the Uranium Mining Subcommittee's meeting on May 21, 2009. The scope requested that the NRC determine whether uranium mining, milling, and processing can be undertaken safely, by examining the scientific, technical, environmental, human health and safety, and

regulatory aspects of uranium development. The scope included 12 points of emphasis, some of which were:

- Assessment of potential occupational and public health and safety considerations, including the potential human health risks from exposure to "daughter" products of radioactive decay of uranium.
- Analysis of the impact of uranium mining, milling, processing, and reclamation operations on public health, safety, and the environment at sites with comparable geologic, hydrologic, climatic, and population characteristics to those found in Virginia.
- Review of the geologic, environmental, geographic, climatic, and cultural settings and exploration status of uranium resources in the Commonwealth of Virginia.
- Review of the primary technical options and best practices approaches for uranium mining, milling, processing, and reclamation that might be applicable within Virginia.
- Review of the state and federal regulatory framework for uranium mining, milling, processing, and reclamation.
- Identify the issues that may need to be considered regarding the quality and quantity of groundwater and surface water, and the quality of soil and air from uranium mining, milling, processing, and reclamation.

The Governing Board Executive Committee met on November 11, 2009, to review the scope and determine whether the study would be accepted. After clarification on several issues, agreement was reached with the NRC in February 2010 on the conduct of the study and a completion date of December 2011 was established. The study was funded by The VPI-SU's Virginia Center for Coal and Energy Research through a grant provided by Virginia Uranium. While the study would provide independent, expert advice that will enable legislators to make informed decisions regarding the future of uranium mining in Virginia, it will not include any recommendation as to whether or not uranium mining should be permitted nor will the study include site-specific assessments.

The Uranium Mining Subcommittee envisioned a two-pronged approach to determining the feasibility of uranium mining in Virginia. The first component would be the NRC study of health, safety and environmental impacts. The second aspect would be an analysis of the socioeconomic impacts of such a project. Discussions of study of the socioeconomic factors began at the Uranium Subcommittee's March 24, 2009, meeting and continued with more detailed discussion of a proposed scope of work at a meeting in Chatham on June 22, 2010. At that meeting, the public was invited to comment and recommend changes and additions to the preliminary scope. The suggestions of the public were incorporated into the final study plan. The plan included examination of four major factors: economic development, government services and regulations, public health and the environment, and social impacts. The study plan was to include various indicators or measures of each of the factors. These indicators/measures were developed by the Uranium Mining Subcommittee taking into account the public's suggestions. These indicators included the following:

I. Economic Development

- The number and types of jobs created directly by the mining and milling.
- Operation and the associated payrolls. The number, types, and geographic locations of jobs created indirectly by the mining and milling operation in all sectors including retail and wholesale trades, the construction industry, and government.
- The number and types of all such jobs likely to be filled by current residents and those likely to be filled by outside workers.
- The number and types of jobs that might be lost due to contraction or closure of existing businesses.
- Revenue generated from spending and capital investment made directly and indirectly by the uranium mining and milling operation.
- The impact on local and state tax revenues.
- The impact on real estate values, land use potential, the housing market, and the construction industry, including any loss of value to those properties downstream or downwind from the mining operation.
- The impact on both direct and indirect employment levels and revenue generation after the cessation of active mining and milling operations.

II. Government Services and Regulation

- The local and state government costs for regulation and monitoring of mining, milling, tailings management, closure and aftercare, and any associated liabilities.
- The impact of increased use and costs for any infrastructure and services upgrade.
- The impact on public schools including funding and educational opportunities.
- The local and state government costs for contingency planning and disaster preparedness.
- A review of the potential costs to upstream and downstream localities resulting from the mining and milling operation.
- A review of the potential costs and determination of the parties responsible for remediating any potential environmental damage.
- A review of potential sources of funding to offset the costs identified above.

III. Public Health and Environment

- The costs of health care and illness due to potential negative impacts from the uranium mining and milling operation.
- A review of the quality of life impacts from health risks attributable to the mining and milling operation for employees and residents.
- The impact on quality of life from detrimental environmental consequences.
- The impact on natural landscapes, scenic appeal, recreation, and tourism, including wildlife and hunting, fishing, boating, and places of historical interest.
- A review of any environmental justice impacts.
- A review of postclosure procedures to ensure public health and safety.

IV. Social Impacts

- The effects on internal and external image of the region, i.e., belief that area remains a safe place to live, work, and invest.

- Public confidence in the company to control adverse effects and the ability of government to properly regulate such effects.
- The impacts on private schools and local institutions.
- The impact on aesthetics and overall quality of life issues.

Members of the Uranium Mining Subcommittee decided to solicit proposals from organizations that had demonstrated competence and experience in socioeconomic analysis. A Request for Proposal was advertised and three consulting firms and two universities were selected to discuss their proposals with the Uranium Mining Subcommittee at its December 8, 2010, meeting. At that meeting, Chmura Economics and Analytics was selected to conduct the study. According to its proposal, Chmura will deliver an analysis of the economic, fiscal, and social benefits and impacts, the revenues generated, and the costs (economic, societal, and environmental) to remove the ore. The costs to shut down the operations at the end of the milling and mining cycle will also be estimated. It will submit its report to the Uranium Mining Subcommittee by December 1, 2011, which is also the date that the NRC is expected to provide its study results to the Uranium Mining Subcommittee. Once the Uranium Mining Subcommittee has the opportunity to review both reports, it is anticipated that a meeting will be held where the principal investigators from NRC and Chmura Economics and Analytics will brief the members of the Uranium Mining Subcommittee and respond to questions from the members on the specific findings of the two studies.

For more information on the deliberations of the Uranium Mining Subcommittee go to: http://dls.virginia.gov/groups/cec/Uranium/info.htm.