This appeal presents a significant question of first impression in Virginia, to-wit: Where a surface owner of a tract of land, or his predecessor-in-title, has conveyed all the coal in and under his land, has title to the coal bed methane (CBM) passed to the coal owner along with the coal?

I

Harrison-Wyatt, LLC (the Coal Owner), is the successor grantee under three coal severance deeds from the 19th century. Donald Ratliff and others (the Plaintiffs) own the surface land and all minerals upon and within it, except the coal. The Plaintiffs filed a declaratory judgment action, pursuant to Code § 8.01-184, seeking, inter alia, a determination that they own the CBM produced from the coal seams. The Coal Owner denied that the Plaintiffs own the CBM and alleged, to the contrary, that it, as the owner of the coal estate, owns the CBM.
Following a bench trial, the trial court ruled in favor of the Plaintiffs, holding that the grant of the coal did not include the CBM. The Coal Owner appeals.

II

A

The land involved in this case is located in Buchanan County, Virginia, and is designated as Mineral Tracts 18, 19, and 56. The severance deeds for Tracts 18 and 19 were recorded on August 2, 1887, and convey "all the coal in, upon, and underlying" the tracts. The severance deed for Tract 56, executed on October 13, 1887, contains similar language.

B

Scientific evidence revealed how coal and CBM are formed. Coal is formed over millions of years from decaying plant material that settles on the bottom of swamps. By a microbiological process, this plant material is first converted into peat. Over time, the peat sinks deeper into the earth and, ultimately, as a result of a chemical reaction that increases its carbon content, is transformed into coal. This process of transforming peat into coal is known as "coalification."

CBM, sometimes referred to as "marsh gas," is produced during coalification. Coal is porous, and the CBM is held to the porous surface of the coal by weak forces known as van der Waals forces. When the pressure on the coal is reduced, the
forces that hold the CBM to the coal are reduced, and the CBM is released from the surface of the coal. Such a release may occur through natural geological shifts or when coal is fractured during the mining process.

There are three methods for fracturing coal in order to capture CBM as an economic resource. One method is by drilling wells from the surface into the coal seam. A second method is by the use of horizontal degasification wells from inside the coal mine. The third way is by employing what are called "gob" wells relating to long-wall mining.

CBM, like any form of methane, is an extremely explosive gas. At the time the severance deeds were executed in the present case and for about a century thereafter, CBM was known as the "miner's curse." Indeed, during these years, a great many mine explosions occurred, killing or maiming thousands of miners.

Also during this time, coal owners were required to ventilate the CBM from mines as a safety measure. This ventilation was accomplished by using very large fans and wells to discharge the CBM into the atmosphere.

During the 1970's, however, it became apparent that CBM could be a valuable energy source. Consequently, in 1990, the General Assembly enacted The Virginia Gas and Oil Act, Code
§ 45.1-361.1 et seq. (the 1990 Gas Act), whereby CBM could be captured for commercial use rather than merely discharged into the atmosphere.\(^1\) The General Assembly, however, left for future judicial determination the question of CBM's ownership, except when there was "an agreement among all claimants," and mandated that the royalties from the production of CBM be held in escrow.\(^2\)

D

The Coal Owner sought to establish the meaning of the severance deeds with the following 19th-century descriptions of coal. The *American Cyclopaedia* described coal, in part, as

>a term now commonly used to denote all kinds of mineral fuel . . . . [A]t the present time, when wood and charcoal are fast giving place to the mineral varieties of fuel, the term coal is applied to that class of this fuel in general use. . . . Under the term coal we may therefore embrace all classes of mineral fuel that will ignite and burn with flame or incandescent heat. . . . The combinations of carbon, hydrogen, oxygen, and nitrogen with earthy impurities, to which the term mineral fuel may be properly applied, are infinite, ranging through all the grades of coal, from the hard, dense anthracite to the asphaltic varieties, and from the solidified petroleum to the gaseous naphtha.

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\(^1\) The 1990 Gas Act defines CBM as "occluded natural gas produced from coalbeds and rock strata associated therewith." Code § 45.1-361.1.

\(^2\) In this declaratory judgment action, Plaintiffs sought distribution to them of all escrowed amounts held by the Virginia Gas and Oil Board pursuant to Code § 45.1-361.22.
IV THE AMERICAN CYCLOPAEDIA: A POPULAR DICTIONARY OF GENERAL KNOWLEDGE 726 (Ripley and Dana eds., 1873). In addition, the same reference stated the following:

All kinds of coal vary considerably both in mechanical structure and chemical composition . . . . The gradations of carbon, hydrogen, and oxygen compounds, from the almost pure fixed carbon in anthracite, through the more volatile bituminous varieties of coal, to the free carbon and hydrogen of naphtha, are infinite; and no formula can truly express the relative proportions which limit these compounds to the various classes of coals, or as mineral fuel.

Id. at 728. The Encyclopaedia Britannica described coal, in part, as follows:

Coal is an amorphous substance of variable composition, and therefore cannot be as strictly defined as a crystallized or definite mineral can. . . .

Coal is perfectly amorphous . . . .

. . . Gases, consisting principally of light carburetted hydrogen or marsh gas, are often present in considerable quantity in coal, in a dissolved or occluded state, and the evolution of these upon exposure to the air, especially when a sudden diminution of atmospheric pressure takes place, constitutes one of the most formidable dangers that the coal miner has to encounter.

VI ENCYCLOPAEDIA BRITANNICA 45 (9th ed. 1877).

III

After examining the plain language of the severance deeds, the trial court concluded that the term "coal" was not ambiguous. The court noted that, "[w]hile encyclopedia definitions of the time cited by the coal owners make it clear
that it was common knowledge that CBM was contained within the coal, . . . CBM was not considered a chemical constituent of the coal itself." The court found significant the lack of chemical bond between coal and CBM and ruled that CBM "is simply a by-product" of coal and a severable estate. The court stated, therefore, that "[t]he grant of coal rights does not include rights to CBM absent an express grant of coalbed methane, natural gases, or minerals in general." Consequently, the court held that "the surface owners retain the CBM."

IV

Although the issue before us is one of first impression in Virginia, other state courts and the Supreme Court of the United States have ruled on it. A review of these cases reveals a split of authority.

A

In 1983, the Supreme Court of Pennsylvania decided United States Steel Corp. v. Hoge, 468 A.2d 1380 (Pa. 1983). In that case, the fee owners, in a 1920 deed, had conveyed to United States Steel Corporation "[a]ll the coal" and specifically reserved the right "to drill and operate through said coal for oil and gas without being held liable for any damages." Id. at 1382. Relying upon the characteristics and origins of gas and its history of development, the court held that "such gas as is present in coal must necessarily belong to the owner of the
coal, so long as it remains within his property and subject to his exclusive dominion and control." \textit{Id.} at 1383. The court further held that the surface owner "has title to the property surrounding the coal, and owns such of the coalbed gas as migrates into the surrounding property." \textit{Id.}

The Supreme Court of Alabama considered the issue in \textit{NCNB Texas Nat. Bank, N.A. v. West}, 631 So.2d 212 (Ala. 1993). In that case, the original owner, in virtually identical 1953 and 1954 deeds, had conveyed "all the coal," but had reserved "all of the oil, gas, petroleum and sulphur" and the exclusive right to drill for and produce them. \textit{Id.} at 219-20. All of the parties agreed that coal and CBM were separate, severable interests in real property. \textit{Id.} at 221. The court found, however, that the reservation of "all . . . gas" could not impair the coal owner's incidental right to ventilate CBM for mine safety. Recognizing the migratory nature of CBM, the court held that the coal owner had the right to recover the CBM found within the coal seam and that the owner of the gas estate had the right to the possession of the CBM that escapes into the surrounding strata. \textit{Id.} at 228-29.

The Supreme Court of Montana also considered the issue in \textit{Carbon County v. Union Reserve Coal Co.}, 898 P.2d 680 (Mont. 1995). In that case, the deed in question had conveyed "all coal and coal rights," but had made no mention with respect to
CBM, natural gas, or minerals. Id. at 682. The court concluded that "coal seam methane gas is not a constituent part of coal and, thus, it may be severed from the coal estate." Id. at 687. The court then held that the deed had not conveyed the CBM to the coal owner. Id. at 688. After noting that Montana is an "ownership-in-place state," the court ruled that the owners of the gas estate had the right to drill for and produce CBM within the coal seam. Id. at 688-89. The court further held, however, that the coal owner had a "mutual, simultaneous right to extract and to capture such gas for safety purposes, incident to its actual coal mining operations." Id. at 689. The court then left "to the agreement of the parties or to some future case the issue of whether, and if so, to what extent, the gas estate owner . . . is entitled to be compensated by the coal owner for gas extracted and captured incident to the coal owner's mining operations." Id.

In Newman v. RAG Wyoming Land Co., 53 P.3d 540, 542 (Wyo. 2002), the Supreme Court of Wyoming considered a deed that had conveyed "all coal and minerals commingled with coal," but had reserved to the landowners "all oil, gas and other minerals." From the unambiguous language of the deed and the facts and circumstances surrounding its execution, the court held that the CBM was not conveyed to the coal owner but, instead, was reserved to the landowners. Id. at 549-50. The court explained
that "coalbed methane, being a gas, remained the landowners' property." Id. at 550.

Finally, we consider Energy Dev. Corp. v. Moss, ___ S.E.2d ___ (WV 2003), a case decided by the Supreme Court of Appeals of West Virginia involving two virtually identical standard oil and gas leases of "all of the oil and gas and all of the constituents of either in and under the land." Id. at ___. The leases made no mention of coal bed methane. The issue before the court was whether the leases conveyed the right to develop CBM, absent any specific language to that effect. Id. at ___. The court held that the lessor did not intend to convey to the lessee the right to drill into the lessor's coal seam for CBM. Id. at ___.

B

In Amoco Prod. Co. v. Southern Ute Indian Tribe, 526 U.S. 865 (1999), the Supreme Court of the United States considered land patents that had been issued to western settlers, pursuant to the Coal Land Acts of 1909 and 1910, 30 U.S.C. §§ 81, 83-85 (the Federal Acts), conveying the land and everything in it, except "all coal," which had been reserved to the Federal Government. These patented lands included reservation lands previously ceded by the Southern Ute Indian Tribe (the Tribe) to the United States. In 1938, the United States restored to the Tribe, in trust, title to the ceded reservation lands still
owned by the Federal Government, including the reserved coal lands. These lands contain large quantities of CBM within the coal formations. The Tribe brought an action, claiming the right to the CBM. Id. at 870-71.

The Supreme Court rejected the Tribe's claim, holding that the term "coal," as used in the Federal Acts, does not encompass CBM. Id. at 880. The Court explained, inter alia, that it was "persuaded that the common conception of coal at the time Congress passed the 1909 and 1910 Acts was the solid rock substance that was the country's primary energy resource." Id. at 874. The Court further stated that coal would not have encompassed CBM "both because it is a gas rather than a solid mineral and because it was understood as a distinct substance that escaped from coal as the coal was mined, rather than as a part of the coal itself." Id. at 874-75.

V

In the present case, the trial court relied, in part, upon the Amoco opinion and the various definitions of "coal" set forth therein. The Coal Owner contends that, in doing so, the trial court erred because it considered evidence outside the record on the meaning of the term "coal." The Coal Owner further contends that the trial court should have limited its consideration to the evidence it offered, as set forth in Part II, D, of this opinion. We do not agree. Courts routinely
resort to various reference materials for the definitions of terms contained in documents. In doing so, they are not limited to definitions, if any, that may be offered into evidence by a litigant. Although Amoco is not controlling in the present case, the trial court did not err in relying upon the definitions cited therein.

VI

Even though Amoco is not controlling in the present case, we find it to be very persuasive, as did the trial court. We do not believe the term "coal," as it was used in the late 19th century, is ambiguous. As commonly understood at the time, the term "coal" meant a solid rock substance used as fuel, and nothing in the record indicates that CBM is a part of coal itself. On the other hand, although CBM has a weak physical attraction to coal and escapes from coal when coal is mined, it is a gas that exists freely in the coal seam and is a distinct mineral estate. Accord Newman and Carbon County, supra. Moreover, the parties could not have contemplated at the time the severance deeds were executed that CBM would become a very valuable energy source. We hold, therefore, that title to the CBM did not pass to the Coal Owner, and the trial court did not err in holding that the CBM is owned by the Plaintiffs and that the Plaintiffs are entitled to distribution of the royalties held in escrow.
VII

We have considered all of the Coal Owner's assignments of error and find no error. Accordingly, the judgment of the trial court will be affirmed. 3

Affirmed.

3 The trial court also made the following finding: "The surface owners' rights to the CBM only extend to that which has separated from the coal. The surface owner does not have the right to frac[ture] the coal in order to retrieve the CBM." This finding was not in response to an issue brought by either party at trial or on appeal, and, therefore, we express no opinion regarding this finding.