REPORT OF THE
JOINT SUBCOMMITTEE STUDYING

Oil And Gas Drilling Under The Chesapeake Bay

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

HOUSE DOCUMENT NO. 55

COMMONWEALTH OF VIRGINIA
RICHMOND
1992

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REPORT OF THE JOINT SUBCOMMITTEE STUDYING OIL AND GAS DRILLING UNDER THE CHESAPEAKE BAY

To

The Governor and the General Assembly of Virginia
Richmond, Virginia
January 1992

TO: The Honorable L. Douglas Wilder, Governor,
and
the General Assembly of Virginia

I. AUTHORITY FOR STUDY

The 1990 Session of the General Assembly passed House Joint Resolution No. 251 (see Appendix A) which established a joint subcommittee to study the environmental impact of oil and gas drilling under the Chesapeake Bay and its tributaries and in Tidewater Virginia. The joint subcommittee was directed to assess the economic benefits that might be derived from oil and gas production and the risks to the natural environment, and the marine industries it sustains, which may result from drilling under the Bay and in or under shore areas of Tidewater. The subcommittee was directed to complete its work and submit its findings and recommendations to the 1992 Session of the General Assembly.

II. BACKGROUND

A. Environmental Characteristics of the Bay

The Chesapeake Bay is the largest estuary in the United States and one of the largest in the world. Approximately 10,000 years ago, melting glacial ice caused sea levels to rise, thereby submerging coastal areas and forming the Chesapeake Bay and its tidal tributaries. The Bay proper is approximately 200 miles long, stretching from the Susquehanna River at Havre De Grace, Maryland, south to Norfolk, Virginia. Its width ranges from about four miles near Annapolis, Maryland, to 30 miles at its widest point, near the mouth of the Potomac. The water surface of the Bay encompasses more than 2,200 square miles, and, if the tributaries are included, the figure doubles. On the average, the Bay holds 18 trillion gallons of water. While the length and width are expansive, the depth averages only about 22 feet. The Bay has been characterized as a shallow tray with a few deep troughs which provide a channel along much of the length of the Bay.[1] These qualities result in a limited "flushing" ability.

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[1] Chesapeake Bay: Introduction to an Ecosystem, U.S. E.P.A., January 1982, p.7.

The Bay draws water from a 64,000 square mile drainage basin. The drainage basin of the Susquehanna River represents 43 percent of the Bay's total drainage basin and encompasses parts of New York, Pennsylvania, and Maryland. Land use in the basin is predominantly agriculture and forest with no major urban area. The Potomac River basin contributes almost 22 percent of the Bay's drainage basin. It includes portions of Maryland, Virginia, and West Virginia and is characterized by one major urban area (Washington, D.C.) and considerable coal mining activity in the West Virginia portion of the basin. The remainder of this basin is agricultural and forest land. The James River basin, which accounts for 16 percent of the Bay's drainage area, has a major urban area (Richmond) and considerable industry located along the banks of the tidal portion of the river. Together, the Susquehanna, Potomac, and James Rivers account for 81 percent of the Bay's total drainage area.[2]

The Bay is influenced by the Atlantic Coastal Plain, the Piedmont, the Blue Ridge, the Valley of Virginia and part of the Cumberland Plateau. The Plain is relatively flat and is supported by crystalline rock, covered by sand, clay, and gravel. It extends from the edge of the continental shelf westward to the fall line, which is characterized by waterfalls and rapids. The Piedmont, the area from the fall line westerly to the Blue Ridge, is comprised of dense, crystalline rock (i.e., slate, marble, and granite) and the Valley and the Plateau by sedimentary rocks.

Several events led to the geological formations found in Virginia. The initial event occurred with the collision of Africa with North America, forming the Appalachian Mountains. The basins formed as the two continents pulled apart and the area opened now known as the Atlantic Ocean (extensional event). As the earth cooled, the eastern edge of North America subsided and received much of the sedimentary material (hydrocarbons) which was deposited in the basins (subsidence event).

B. Value of the Bay

The Bay, as well as its uniquely sensitive natural resource features, has a great economic impact on the states which border it. A recent study endeavored to calculate the value of the Chesapeake Bay. The Maryland Department of Economic and Employment Development, in March 1989, conducted a study which estimated the present value of the Chesapeake Bay to the economies of Maryland and Virginia as "conservatively" $678 billion.[3] The study arrived at this figure by estimating the value, in 1987 dollars, of those activities which would not take place without the existence of the Bay and adding to that figure the land values people

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[2] "A Brief Physical Description of the Chesapeake Bay," Containment Problems and Management of Living Chesapeake Bay Resources, J.R. Schubel and D.W. Pritchard, 1987, p. 3.

[3] Economic Importance of the Chesapeake Bay, Executive Summary, Office of Research, Maryland Department of Economic and Employment Development, March 14, 1989, p. 1.

will pay for waterfront, waterview or water access residences. The researchers looked at four areas of economic activity: (i) commercial fishing, (ii) shipbuilding, boat building and repair, (iii) tourism, and (iv) port activities. Calculations of the value of the commercial fishing industry were based on two elements: harvesting and processing. The total economic value of commercial fishing in Maryland and Virginia is estimated to be $520 million per year. The category of shipbuilding and repair was dominated by two operations, Newport News Shipbuilding and Drydock with its 29,000 employees and the Portsmouth Naval Shipyard with 25,700 employees. The total economic impact of this industry was estimated at $17.3 billion per year. The Bay also represents an important recreational resource for both residents and visitors to the region. Such activities as recreational fishing, boating, sightseeing and "regional cuisine," according to the study, bring $8.4 billion into the Bay area economy.

In 1987, the major ports in the region (Baltimore, Norfolk and Newport News) handled a total of 74 million tons of cargo valued at over $28 billion. The study also analyzed the economic activity generated by this traffic by looking at five distinct sectors: surface transportation (i.e., railroad and trucking), maritime service (i.e., cargo handling, vessel operators), port administration shippers/consignees using the ports, and the banking and insurance sector serving the ports. The total economic impact in 1987 of the three major ports in the region was estimated at $5.3 billion.

The Chesapeake Bay provides a unique opportunity to those wishing to live along its 8,000 miles of shoreline. In calculating land values, the study proposed that the price for which a residence on or near the Bay will sell is higher than the price of an identical residence located further inland. The difference in price was the site-value premium attributed to the Bay. It was assumed that 50 percent of the land would be converted in the future to residential use. Taking into account a density factor, the study concluded that there will be 924,000 sites developed, each with an average site value premium, due to its proximity to the Bay, of $50,000. This yields a total site-value premium of $46.2 billion. It is estimated that the 1987 income generated from the commercial fishing, shipbuilding, tourism and port activity totals $31.6 billion. If these commercial enterprises remain stable, the study concludes that the present value of such an income stream is $632 billion. The $632 billion figure together with the $46.2 billion in land values results in the estimate that the Chesapeake Bay is worth $678 billion to the local economy.

The Chesapeake Bay also has significant value as a commercial waterway. Two of the country's five major North Atlantic ports are located within the Bay. While the Port of Hampton Roads and the Port of Baltimore are the two largest Bay ports in terms of tonnage handled, there are hundreds of public and private facilities within the waterways of the Bay. In 1987, there were 481 total movements of bulk cargo vessels which entered and left these two ports. These vessels carried approximately 11.9 million short tons of petroleum products according to the U.S. Army Corps of Engineers. In 1988, the Port of Hampton Roads was the largest exporting port in the United States.[4] That same year, there were 5,755 commercial vessel sailings in the Bay.

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[4] Description of Commercial Transportation Activity in Virginia's Navigable Waterways, Virginia Port Authority, June 1989, p. 1.

C. Regulation of Oil and Gas Drilling

As a result of a legislative study of oil and gas development, Virginia's first oil and gas laws were enacted in 1948. These laws focused on the regulation of well work and required operators to conduct drilling and production operations so as not to waste oil or gas resources. Well-casing requirements ensured that the integrity of coal, oil, and gas resources were preserved when wells were drilled close to or through different resources and that no leakage of oil or gas could pollute ground water. Although not enacted expressly for environmental purposes, these laws functioned to protect the environment in a limited manner.

Not until the decade of the 1950s did Virginia law require well operators to obtain a permit before drilling a well. Consequently, the Commonwealth had no means of maintaining accurate records as to the location and ownership of wells drilled prior to 1950 and no way of requiring that these wells be properly plugged before abandonment. As a result, a number of oil wells were abandoned without being properly plugged. In recent years, over 30 improperly plugged, pre-1950 wellsites have been discovered. Oil is seeping to the surface at a few of these sites, thereby presenting surface and ground water contamination concerns.

In 1982, the oil and gas laws were revised and took the form of the Virginia Oil and Gas Act. The new Act, which established two regulatory boards (the Oil and Gas Conservation Board and the Well Review Board), specified six major purposes, one of which was to "ensure that the water resources of the Commonwealth are protected" (§ 45.1-28). The provisions of the Act were not to be construed to limit the jurisdiction of the State Water Control Board or to supersede any requirements or liabilities arising under the State Water Control Law. This represented a change from the previous "material damage" standard by mandating that all such drilling operations meet the state water quality standards and regulations. The Act continued the requirement that all operators were to submit a drainage and stabilization plan.

In 1989, the Virginia Coal and Energy Commission undertook a study of the Virginia Oil and Gas Act to determine if any changes in the Act were desirable or necessary. The Commission concluded that there were many organizational and substantive changes which should be made to the Act. Therefore, the Commission recommended that the 1982 Act be repealed in its entirety and replaced with a new act. The General Assembly and Governor agreed, and the new Virginia Gas and Oil Act became law on July 1, 1990.

While the 1990 Act retained a substantial part of the 1982 Act, it removed many of the technical requirements from statute and directed the Department of Mines, Minerals and Energy (DMME) to promulgate regulations covering the substance of the deleted language. Section 45.1-361.27 of the new Act requires the Director of DMME to promulgate and enforce rules, regulations and orders necessary to ensure the safe and efficient development and production of gas and oil resources in the Commonwealth. Specifically, the statute requires that rules, regulations and orders should:

- Prevent pollution of state waters and require compliance with the Water Quality Standards adopted by the State Water Control Board;
- Protect against off-site disturbances from gas, oil or geophysical operations;
- Ensure the restoration of all sites disturbed by gas, oil or geophysical operations;
- Prevent the escape of the Commonwealth's oil or gas resources;
- Control wastes from gas, oil, or geophysical operations; and
- Protect the public safety and general welfare.

The Gas and Oil Act specifically provides that its provisions are not to be construed to limit or supersede the jurisdiction and requirements of other state agencies. Accordingly, operators may be required to obtain one or more of the following, depending on the specific circumstances:

- Local land use, zoning, wetlands board, and Chesapeake Bay Preservation Area use approvals;
- Road entrance permits or approval of pipelines in rights-of-way by the Department of Transportation;
- National Pollutant Discharge Elimination System (NPDES), water protection (404/401 certification), or ground water withdrawal permits issued by the State Water Control Board;
- Permits from Virginia Marine Resources Commission (VMRC) for activity in state bottomlands;
- Permits from the Department of Air Pollution Control;
- Well water or septic system permits issued by the Department of Health;
- Underground injection control permits issued by the United States Environmental Protection Agency; and
- Pipeline safety program permits issued by the U.S. Department of Transportation.

An overview of the DMME regulations is included in Appendix B.

In response to inquiries concerning the possibility of conducting mineral surveys, explorations, and leasing and extraction on state-owned land, legislation was enacted in 1982 which required DMME to develop a State Minerals Management Plan (SMMP). The Plan provides guidelines whereby proposals for such activities, whether initiated by state agencies or by outside companies or individuals, could be received and acted upon, in accordance with the objectives of the land controlling agency and in the public interest. The Virginia Marine Resources Commission (VMRC) is charged with regulating submerged lands under

§§ 62.1-3 and 62.1-4 and with developing a subaqueous minerals management plan to supplement the State Minerals Management Plan required by § 2.1-512.1. The Plan establishes uniform procedures for leasing state-owned submerged lands and includes provisions for holding a public hearing and for advertising for competitive bids in proposals for mineral leasing and extraction activities. A joint permit application must be submitted to the VMRC. The DMME is the mining regulatory authority; the VMRC exercises the prerogatives of the land-controlling agency. All ground-disturbing activity must go through the process. The plan specifies that a lease or easement is required to obtain oil, gas, minerals or other substances. The required lease application must be submitted to VMRC and copies provided to the DMME, the Department of General Services, the Council on the Environment and other water-related agencies for review. If VMRC then recommends approval of a five-year lease for the particular site location, competitive bids are then accepted. The successful bidder is required to prepare and submit an Environmental Impact Statement (EIS) to the Council on the Environment. The EIS includes such things as a description of the site, expected impact of the activity, mitigation measures, and any irreversible changes that will occur as a result of the proposed activities. If the Council determines, based on the EIS, the public hearing and recommendations of the reviewing agencies, that the proposed activity is environmentally acceptable, the VMRC with the approval of the Governor may then execute the lease. The entire Plan is non-regulatory, providing the Executive Branch with exclusive control over the leasing of state owned lands.

III. DRILLING OPERATIONS

A. Oil and Gas Drilling in Virginia

During the last decade, Virginia has experienced two major periods of drilling activity. From 1981 through 1983, over 100 new wells were drilled in the Commonwealth. Experts primarily attribute this increase in drilling to crude oil's higher prices during those years. A second dramatic increase occurred in 1986, when 147 new wells were drilled. A majority of these wells were drilled to produce natural gas. In 1989, only 40 wells were drilled in Virginia; of these, 12 were drilled for purposes of producing coalbed methane gas.

The production of natural gas in Virginia steadily increased during the last decade, reaching its peak in 1987. Since 1987, natural gas production in the Commonwealth has averaged 18.3 billion cubic feet (BCF) annually. However, during the first quarter of 1990, natural gas production was down approximately 20 percent from 1989's first quarter production total. Production of Virginia's crude oil during the first quarter of 1990 was down approximately 38 percent from 1989's first quarter production total. Since 1983, when the price of crude oil was $27 per barrel, the production of oil in the Commonwealth has steadily declined. During 1989, Virginia wells produced a total of 21,200 barrels of crude oil.

While most drilling for oil or gas in the Commonwealth has been conducted in Southwest Virginia, a number of wells were drilled in central and eastern Virginia during the mid to late 1980s. In 1985, a wildcat well was drilled in Chesterfield County. In 1986, two wells each were drilled in the Counties of Caroline, Essex, and Westmoreland for purposes of obtaining core samples. A year later, a well was drilled in Louisa County in hopes of finding oil or gas. No oil or gas was produced at any of these locations.

In 1989, Texaco's #1 Wilkens well was drilled in Westmoreland County. With a depth of 10,000 feet, at the time it was the deepest commercial well drilled in the coastal plain section of Virginia. There were environmental protection requirements under the permit issued for that well many of which Texaco proposed and DMME incorporated into permit. Texaco was required to submit an operations plan as well as comply with all laws, regulations, policies, and procedures which pertain to oil and gas operations in Virginia. The operations plan submitted by Texaco and approved by the DMME as with all such plans, also had to be followed as part of the permit conditions. Many of the permit requirements were designed to protect water resources and to control erosion. Specifically, Texaco was required to:

- Control nonpoint source water pollution;
- Protect groundwater;
- Dispose of drilling fluids properly; and
- Provide blow-out prevention measures.

The Texaco #1 Wilkins well permit standards were recognized as exceeding the minimums set by the then current DMME regulations.

B. Directional and Horizontal Drilling

Almost no oil or gas well is drilled along a true vertical path. In most wells planned as vertical holes, some deviation from vertical is tolerated. In fact, attempting to keep the hole straight, in most instances, slows the drilling rate and increases the costs of the well.[5] However, this deviation does not equate directional drilling with vertical drillings. In directional drilling, the drill bit's ability to move laterally is exploited to curve the hole along a desired path. In a normal directional drilling operation, a well is drilled vertically to a certain depth and then angled along a prescribed curved path. The earliest application of this technology in the petroleum industry was in the 1920s when directional drilling was initially used for preventive and corrective purposes (e.g., restoring well bores to a vertical position). The most common application of the directional drilling technique is in offshore drilling where an optimum number of wells can be drilled from a single platform or rig. Other applications or objectives include: (i) fault control where the borehole is deflected across or parallel to a fault in order to increase efficient production; (ii) drilling wells under surface locations where it is impossible or undesirable to place a drilling rig; (iii) returning crooked holes to a vertical course; (iv) to sidetrack obstructions such as lost tools; (v) redrilling old wells for new production; and (vi) killing blowouts by intersecting a "wild" well near its source so that mud and water can be pumped in. Drilling a well horizontally is one and one-half to three times as expensive as drilling a conventional oil hole and for that reason directionally drilled wells are rarely used in exploration activities. Horizontal drilling is used predominantly in proven oil fields.

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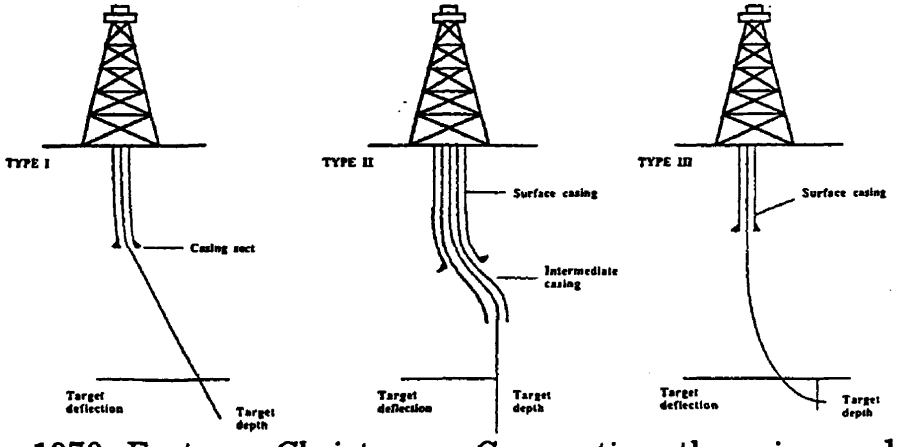
[5] Fundamentals of Drilling, John L. Kennedy, Penn Well Books, p. 135.

The desired angle for directional drilling depends on several factors. The first step in directional drilling is selection of a directional pattern and calculation of the desired angle. There are three types of directional patterns (see chart on p. 8). The choice of what type to use depends on such factors as geology, drilling mud, casing program and spacing. In the Type I pattern (see three types on p.8) the initial deflection angle begins at a relatively shallow depth. The angle is then maintained to the target. The surface casing is in the deviated section where it has been cemented. This pattern is primarily used in moderate depth drilling and for deep wells requiring large lateral coverage. In Type II patterns, called S-curves, the borehole is also deflected at a shallow depth. It is used where intermediate casing is needed to control possible formation problems. The deflection in the Type III pattern is started far below the surface. The angle is higher, the lateral distance is small, and the deflected part of the borehole is seldom cased. This pattern is typically used when drilling through faults or around salt dome areas, and in redrilling or repositioning the bottom part of the borehole.



Since 1979, Eastman Christensen Corporation, the primary developer of horizontal drilling technology, has planned and supervised more than 500 horizontal well bores. Only approximately 1 percent of the wells currently being drilled are horizontal, however there were approximately 200 horizontal wells drilled in 1988 and 300 drilled in 1989. It is estimated that between 400 and 600 will be drilled in 1990.[6] The highest level of activity in the United States occurs in established fields such as the Austin Chalk Field in Texas, the Williston Basin of North Dakota, and the Devonian shales of the eastern states. According to Eastman Christensen, as of July 2, 1990, there were 1,020 active rigs in the United States, compared to 817 the year before.

While directional drilling techniques are normally used to drill multiple wells from a single surface location or to reach bottomhole targets which can only be reached from a particular surface location, horizontal drilling has as its primary purpose to increase the amount of reservoir open to the well bore. Eastman Christensen's experience has shown that there is no single optimum way to drill horizontal wells. The choice of drilling radius and drilling system is based on the type of geological formation, drilling conditions and a company's objectives. There are three horizontal drilling techniques (pictured on p. 9): long radius, medium radius, and short radius. Long radius is typically used in offshore platform drilling where extended reach is an objective. Medium radius, the most popular of the horizontal techniques, is

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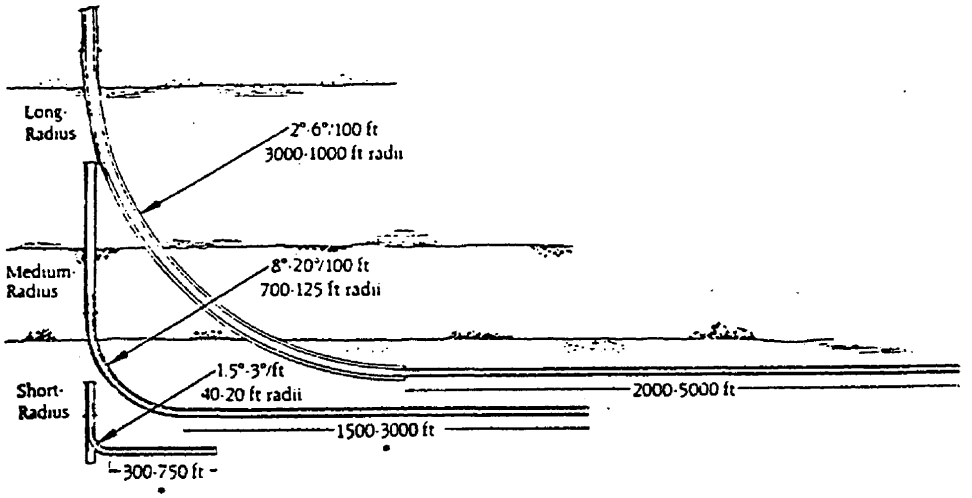
[6] "Age Old Technology Finds New Applications," On Target, Volume 3, No. 1, Spring 1990, p. 2.

used to produce oil and gas from naturally fractured and thinly bedded formations. The short radius technique is ideal for small leases and shallow reservoirs. The greatest advantage to horizontal drilling is that it gives the driller better odds of intersecting one or more rock fractures where oil and gas may be trapped.

LATERAL COMPLETION COMPARISONS



*Depends on formation type

IV. OTHER STATES' REGULATION OF DRILLING IN SENSITIVE AREAS

Generally, other states determine where drilling for oil or gas is allowed by establishing a statutory setback from environmentally sensitive areas. The regulation of drilling operations and site-specific standards are left to the expertise of the regulatory agencies. These agencies may be either mining agencies, natural resources/environmental agencies or both. Guidance is provided by the legislature in terms of criteria specific to sensitive areas. Some states allow activity within the area covered by the setback based on the results of an environmental impact statement or assessment or only upon the showing of a high standard of proof. Some never allow activity within the setback.

- Pennsylvania

No wellsite may be prepared, nor well drilled, within 100 feet of any stream, spring or body of water or within 100 feet of wetlands which are greater than one acre in size. These distance requirements may be waived if a plan is submitted which identifies additional measures, facilities, or practices which would be utilized to protect state waters.

- Washington

Surface drilling for oil is prohibited in the waters of Puget Sound, north to the Canadian boundary and the Strait of Juan de Fuca, seaward from the ordinary highwater mark, and on all lands within 1,000 feet landward from the highwater mark.

In the state of Washington, interagency coordination regarding the oil and gas drilling permit process is accomplished through the requirements of the Oil and Gas Conservation Act. The Commissioner of Public Lands may reject any or all applications for lease when he determines rejection to be in the best interest of the State. Should a lease be awarded, a lessee is required to submit a plan of operations prior to conducting drilling operations. The plan must include the location and method of drilling, equipment to be used, timing of activity, and spill contingency and drilling fluids disposal provisions. A determination of significance is made by an administrative officer for all drilling activities, and this determination triggers the requirement for submission of an EIS; slant drilling under waters of the State is, by statute, "significant." A finding of "non-significant" triggers a site examination and submission of a plan which addresses specific site features, rather than a complete EIS. Based on the EIS or site examination and plan, as well as public comment, a permit is granted or denied. Both the proprietary arm and technical arm of the Department of Natural Resources, in effect, make a determination regarding drilling on state lands.

■ Florida:

By statute, Florida prohibits the location of structures for the drilling for or production of petroleum products or gas:

> (i) on any submerged land within any bay or estuary;
>
> (ii) within one mile seaward of the coastline of the State;
>
> (iii) within one mile of the seaward boundary of any state, local or federal park or aquatic or wildlife preserve or on the surface of a freshwater lake, river or stream; or
>
> (iv) within one mile inland from the shoreline of the Gulf of Mexico, the Atlantic Ocean, or any bay or estuary or within one mile of any freshwater lake, river or stream unless the Department of Natural Resources is "satisfied that the natural resources of such bodies of water and shore areas of the state will be adequately protected in the event of an accident or blowout."

■ New York

New York distinguishes between drilling for oil and drilling for gas. The State is prohibited from leasing state-owned property for the exploration for and development and production of gas in state parks and the lands under Lake Ontario or along its shoreline. For any gas lease granted for drilling under Lake Erie, New York requires that no well be permitted nearer than one-half mile from shore, two miles from public water intake areas and 1,000 feet from any other structure on Lake Erie. If evidence of liquid hydrocarbons exists, drilling operations must cease immediately.

The State may not lease property for the exploration, development and production of oil in state parks and the lands under the waters of Lakes Erie and Ontario or along their shorelines.

■ Maryland

In 1988, the Maryland General Assembly enacted a ban on drilling in the Chesapeake Bay. Along with the ban, the legislature also directed the Critical Area Commission to develop regulations to protect water quality and natural habitat from both exploration and production activities associated with the oil and gas industry. The regulations cover not only well drilling but all associated types of activities including geophysical or seismic surveys and the transportation of hydrocarbons. Drilling is not permitted in the critical area unless there is a demonstrated public need and no other alternative location exists outside of this area. "Critical Area" is defined as the waters of the Chesapeake Bay and its tributaries to the head of tide, the land under these waters, and all the lands and waters within 1,000 feet of mean high water or from the edge of tidal wetlands. An environmental assessment is required for directional drilling under the critical area from a surface location outside it.

There are federal regulations which govern drilling in federal waters. The Minerals Management Service (MMS) of the Department of the Interior uses a two-stage review process for proposed drilling programs. The first step requires submission of an exploration plan, including well locations, timing, geologic objectives, potential geologic hazards, proposed discharges, special environmental considerations specific to the site, and contingency plans. Upon approval of the exploration plan, the operator may apply for a drilling permit. The application must include: detailed information on the drilling and well control equipment, directional survey plans, casing and cementing programs, drilling fluid treatment and reserve component inventory, proposed blowout testing plan, and plans for coring, testing or otherwise evaluating the well.

The MMS also has inspection and training requirements. The frequency of inspection depends on the nature of the operation and environmental features. For example, "typical" drilling operations are inspected monthly with more frequent inspections in environmentally sensitive areas. The MMS has several enforcement options available to it: warnings, component and facility "shut-ins," and civil and criminal penalties. As regards training MMS requires personnel involved in drilling operations to be certified by approved training schools.

Other than set-backs, most states provide additional drilling safeguards by regulation rather than statute. In Pennsylvania, a well operator is also required to: (i) institute and maintain erosion and sediment control measures; (ii) develop a plan for the control and disposal of fluids, residual waste and drilled cuttings (e.g., brines and drilling muds); (iii) provide for the use of safety devices such as sufficient well casings and blowout prevention equipment; and (iv) plug the well so as to stop the vertical flow of fluids or gas within the well bore.

Maryland addresses wellsite location, activities within critical areas and habitat protection areas (HPAs), and transportation of hydrocarbons by regulation. Wellsites must be located, at a minimum, 500 feet from mean high water or tidal wetlands, 250 feet from nontidal wetlands and the top of streambanks and 100 feet from the 100-year floodplain. All HPAs in the vicinity of oil/gas activity must be identified, including: 100-foot buffer from tidal waters or tidal wetlands, nontidal wetlands, endangered and threatened

species, colonial waterbird nesting sites, forest interior-dwelling bird habitats, waterfowl concentration areas, and anadromous fish spawning streams. No well may be located within a HPA, and an "appropriate" buffer must be established around HPAs where oil/gas activities are not allowed. Temporal limitations may also be established (e.g., no drilling from March to July within a one-fourth mile radius of a colonial waterbird nesting site). However, none of this can occur absent a demonstration of "public need" and "no-alternative" location.

In Virginia, the DMME's regulations govern drilling operations statewide, but none are specific to Tidewater Virginia. However, depending on the particular circumstances, an operator may be required to comply with local zoning ordinances, the wetlands board requirements, and Chesapeake Bay Preservation Area use restrictions. An environmental impact assessment is also required when applying for a permit to drill in areas of eastern Virginia where drilling is not prohibited. Questions have been raised by opponents as to whether the current regulations adequately protect the sensitive areas specific to Tidewater. Current regulations would not have required the imposition of all the environmental safeguards use by Texaco at the #1 Wilkens well.

V. SUBCOMMITTEE DELIBERATIONS

During the course of its two year study, the subcommittee held six meetings and a work session. The members began their work by acquainting themselves with the distinctive features of the Bay, current regulation of oil and gas resources and background information on drilling technology. They received testimony from the Virginia Institute of Marine Science, the Department of Mines, Minerals and Energy, experts on directional drilling and the Virginia Marine Resources Commission. The subcommittee also considered remarks by the state geologist with the Division of Mineral Resources of DMME, who outlined the geology of the area and the potential for the existence of hydrocarbons. Proponents of utilizing directional drilling, including representatives from Texaco and the Virginia Oil and Gas Association, spoke at a public hearing which followed the background presentations.

The subcommittee then turned its attention to how other states regulate drilling activities in sensitive areas and received testimony from the Maryland Geological Survey, the Maryland Water Resources Administration (Oil and Gas Division) and the Maryland Critical Area Commission. The members also were able to consider findings on the economic importance of the Bay as presented by the Maryland Department of Economic and Employment Development.

Having heard from opponents and proponents of drilling, the subcommittee formulated alternatives, including expanding the moratorium throughout eastern Virginia, making the provisions of the current moratorium permanent, or modifying the scope of the present moratorium.

Proponents of oil and gas drilling advocated allowing the moratorium to sunset. According to them, the present regulatory framework provides a comprehensive system which includes the subaqueous minerals plan, a permit

system and the requirement for an environmental impact assessment. Moreover, DMME has the authority to shut down "inappropriate or unsafe operations," or not to issue a permit if the proposed operation does not meet established standards.

Opponents of drilling urged that the provisions of the moratorium be made permanent. If the provisions of the moratorium were made permanent, the regulations would still be in place for operations in areas not subject to a moratorium, just as they would if the geographical area subject to the moratorium was increased. Short of a permanent moratorium, modification of the scope of the moratorium necessitated a discussion of measures for further environmental protection of the Bay. Generally, the opponents favored strict setbacks, pointing out that even by prohibiting drilling in RPAs, drilling could occur as close to the Bay as 25 or 100 feet, depending on the specific RPA. The Commonwealth "would be remiss in its responsibilities" if the prohibition stopped at the edge of the RPA. If a conservative approach short of a ban is desired, such a prohibition does not provide adequate protection and would be inappropriate. The setbacks used in Washington (1,000 feet) and Florida (one mile) are better protection for natural resources. Also, oil and gas drilling operations should be treated differently, as in New York which allows drilling for gas in certain waters but requires capping if liquid hydrocarbons are encountered.

One question raised by the subcommittee was the frequency, risk and cause of blowout. An essential element of well control strategy is continued monitoring of the density of fluid in the hole. As it is drilled deeper the pressure increases, requiring an increase in the weight of the mud so as to stabilize the pressure in the hole. If this is not done, it could result in a "kick," which is the entry of gas, water, oil or other formation fluid in the wellbore. When a kick occurs the well is shut with blowout preventors. In addition to blowout preventors, there are other types of valves which provide extra seal protection to ensure that the well is closed. New mud fluid density is adjusted at the surface and then pumped down the drill pipe. Once this is completed and the mud is circulated, the kick has presumably been killed. If nothing is done to control the kick or close the well, a blowout will result.

A blowout is an uncontrolled flow of fluid to the surface. Testimony indicated that if a blowout does occur, it is usually the result of equipment malfunction. Between 1971 and 1989, on the outer continental shelf, there were 79 natural gas blowouts; the rate for blowouts being 1 in 254 wells. To date there have been two oil blowouts; Santa Barbara in 1969 and the Gulf of Mexico in 1965. Testimony further indicated that proper well planning is imperative in preventing blowouts and that the "number one" factor in blowouts is the presence of shallow gas.

The subcommittee received information on the risks of accidents and spills. According to Coast Guards records, approximately 120 reported spills occurred in Virginia waters between 1987 and 1988. The members also received testimony that waste would be produced at a great rate and that wastes from oil and gas operations have endangered human health and caused environmental damage.

Discussions of drilling safeguards focus on two aspects of drilling: where drilling is appropriate and in what manner drilling is done so that risks can be minimized. Generally, other states address where drilling may occur by establishing a statutory setback from environmentally sensitive areas. Drilling

operations and standards are left to the expertise of the regulatory agency, with guidance by the legislature in terms of criteria specific to sensitive areas. The issue is to what extent the legislature wants to give direction to the regulatory agency.

In order to address where and how drilling should be allowed, with minimal adverse impact on natural resources, there were several broad policy questions considered by the joint subcommittee. How can land disturbance be minimized and is a setback the appropriate measure to ensure protection? Should there be more stringent requirements for a production well as opposed to an exploratory well, and, if so, what level of legislative guidance is appropriate? Should drilling for oil and for gas be treated differently based on the risks each presents?

There was discussion as to what areas are appropriate or inappropriate for drilling operations. Testimony indicated that there are "legitimate areas" wherein the well head can be sited and that guidance should be given by the General Assembly regarding the determination as to where drilling operations can take place. The subcommittee heard evidence that the "point of puncture" is the risk point and through directional drilling the well head can be sited far from a sensitive area, directional drilling is the appropriate technology for accessing the resource under state waters. Such evidence supported the removal of the prohibition on directional drilling under the waters of the Bay. While the possibility of blowout or accidental release is remote under proper well operations, because of the nature of the Bay and the significant damage which could occur in the event of a release, drilling the Resource Protection Areas (RPAs) presents an unacceptable level of risk. Under current law, wells may be sited outside those sensitive nearshore areas or five hundred feet from the shoreline, whichever is greater.

VI. CONCLUSIONS AND RECOMMENDATIONS

The 1989 General Assembly, recognizing the potential risks associated with the development of oil and gas resources in the Chesapeake Bay and the need to safeguard its resources, prohibited oil and gas drilling in the Bay and its tributaries. The 1990 General Assembly enacted a limited two-year moratorium on drilling, precluding it in Chesapeake Bay Preservation Areas designated as "Resource Protection Areas" and areas within 500 feet of the shoreline, whichever is greater, as well as prohibiting directional drilling under these areas, state waters, and the Bay. That legislation also required the preparation and review of environmental impact assessments for any oil and gas well drilling activities proposed in Tidewater Virginia.

These actions were taken in view of the fact that the Chesapeake Bay is a vital asset to Virginia and supports a wide variety of economic, recreational, and social activities. There is clearly a potential for oil or gas development in Tidewater Virginia. Texaco has announced an exploratory well drilling program that so far includes five wells, four in Virginia and one in Maryland. The subcommittee recognizes the potential economic benefits and costs of oil or gas development in Tidewater; however, Development of this resource should occur only if the long-term environmental health and economic viability of the Chesapeake Bay, its tributaries, and the near-shore environment is adequately protected. Each well placed in Tidewater Virginia could have impacts on the living resources and water quality of the Chesapeake Bay if not properly sited

and operated. Because of the uniqueness of the Bay and the tendency of any spills in it to remain within it, there is general agreement that a large spill could be disastrous. Therefore, there must be adequate safeguard against any spills which would reach the Bay.

The joint subcommittee concluded that the unique natural resource features of the Bay, its tributaries and near-shore areas merit safeguards beyond what is currently provided in law. Directional drilling is an acceptable technology for accessing the resources because the wellsite can be located a specified distance away from sensitive areas. Wells previously drilled in Tidewater provided safeguards beyond what was required by regulation. Safeguards such as setbacks and certain acceptable drilling practices are necessary for natural resource preservation but will still allow exploration for and development of hydrocarbons.

Based on the testimony it received, the joint subcommittee further concluded that a discharge of oil to the waters of the Chesapeake Bay could have very significant impacts on the Bay itself and its sensitive near-shore areas. Affected too would be all economic and recreational activities supported by the Bay. A contingency plan, approved by appropriate state agencies, which contains provisions for containment, cleanup and financial responsibility could minimize the impact of an accidental release of hydrocarbons.

The joint subcommittee received extensive testimony regarding the technology of directional drilling, how other states address drilling in law and regulation, and what safeguards were used on exploratory wells in the region. However, because production of liquid hydrocarbons could present risks not fully considered, the joint subcommittee concluded that further study be made of production oil in the Tidewater area.

Based on the foregoing conclusions, the joint subcommittee made the following recommendations:

Recommendation 1

Permitted sites for exploratory oil or gas wells or gas production wells, including all associated facilities and activities necessary to implement a spill contingency plan, may be located in Tidewater Virginia if they are located more than 500 feet from the shoreline at mean low tide of the Chesapeake Bay or its tributaries, or outside the resource protection area, whichever is the greater distance from the Bay or tributary. With the permission of the owners, directional drilling may be used for these sites. All applicable laws and regulations must be met at these sites. (See Appendix C for draft legislation.)

Recommendation 2

The acceptable drilling practices for any future wells drilled in Tidewater should be no less stringent than the drilling practices in use on wells previously drilled in Tidewater. The practices which can be applied uniformly throughout Tidewater should be adopted as standards in regulations promulgated by the Department of Mines, Minerals and Energy. (See Appendix C.)

Recommendation 3

A contingency plan must be approved by the Department of Mines, Minerals and Energy and the State Water Control Board prior to the approval of a permit to drill an exploratory gas or oil well or a gas production well in Tidewater Virginia. The plan shall address containment and cleanup of accidental releases of any hydrocarbons or associated materials. The contingency plan shall also include demonstration of financial responsibility. (See Appendix C.)

Recommendation 4

Further study is needed to determine the environmental safeguards necessary if oil production is allowed in Tidewater Virginia. Therefore, conversion of exploratory wells to oil production wells and drilling of oil production wells is suspended in Tidewater Virginia until July 1, 1993, in order that the necessary study be made. A report of findings and recommendations should be made to the Governor and the General Assembly by December 1, 1992. (See Appendix D.)

Respectfully submitted,

Delegate W. Tayloe Murphy, Jr., Chairman
Senator Joseph V. Gartlan, Jr., Vice Chairman
Delegate Robert S. Bloxom
Delegate S. Wallace Stieffen
Senator Elmo G. Cross, Jr.
The Honorable Elizabeth H. Haskell
The Honorable Lawrence H. Framme
Dr. H. Grant Goodell
Mr. Roy A. Hoagland*
Mr. Michael D. Ward
Dr. James A. Wesson

*See Statement of the Chesapeake Bay Foundation

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Chesapeake Bay Foundation

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TO: Members of the Joint Subcommittee Studying Oil and Gas Drilling Under the Chesapeake Bay (c/o Legislative Services)

FROM: Roy A. Hoagland

DATE: February 29, 1992

RE: STATEMENT OF THE CHESAPEAKE BAY FOUNDATION ON HJR 251 REPORT

As discussed at the final meeting of the Joint Subcommittee, the Chesapeake Bay Foundation disagrees with portions of the Report to the Governor and the General Assembly of Virginia. I am therefore respectfully filing this supplemental commentary for inclusion with the Report.

The major disagreement with the Report focuses on "Section VI. Conclusions and Recommendations." This section fails to adequately address our concerns and contains numerous conclusions and recommendations which we do not share.

The Chesapeake Bay Foundation remains convinced that the introduction of petrochemical exploration and production in the same region where the Commonwealth is engaged in a major initiative to protect and restore the Bay's environmental and economic resources is an unwise action. We have seen no evidence during the subcommittee's deliberations which alters our vigorous opposition to any drilling in the Chesapeake Bay region. Thus, we cannot endorse the "Conclusions and Recommendations" as contained in the Report.

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Maryland Office: 14 Market Space • Annapolis, Maryland 21401 • (301) 268-8833
Pennsylvania Office: 214 State Street • Harrisburg, Pennsylvania 17101 • (717) 234-5550

Appendix A
1990 SESSION

LD4245310

HOUSE JOINT RESOLUTION NO. 251

Offered January 31, 1990

Establishing a joint subcommittee to study the environmental impact of oil and gas drilling under the Chesapeake Bay and its tributaries and in Tidewater Virginia.

Patrons--Murphy, Copeland, Byrne, Maxwell, Forehand, Bloxom, Stieffen, Morgan, Eck and Jones, J.C.

Introduced at the Request of the Governor

Referred to the Committee on Rules

WHEREAS, the Chesapeake Bay is the largest and most productive estuary in the nation, recently valued at $678 billion to the economies of Virginia and Maryland; and

WHEREAS, the Commonwealth of Virginia and the federal government have invested upwards of $140 million in Virginia alone since 1983 to improve the water quality and living resources of the Chesapeake Bay and its tributaries; and

WHEREAS, the first exploratory well for oil and gas in Tidewater Virginia has been drilled recently in the Taylorsville Basin, which includes portions of the Middle Peninsula and the Northern Neck; and

WHEREAS, the 1989 Session of the General Assembly, recognizing the potential risk of exploration in the Chesapeake Bay and the need to safeguard the living resources of the Bay, prohibited oil and gas drilling in the Chesapeake Bay and its tributaries; and

WHEREAS, the discovery and development of oil or gas in the coastal plain of Virginia will require policy makers and regulators to consider further the economic benefits of oil and gas production and the risks to the natural environment and the marine industries that can survive only if the state protects the health of the Chesapeake Bay and its tributaries and the sensitive areas adjacent to them; and

WHEREAS, the General Assembly has not studied the economic and environmental impacts of a permanent ban on oil and gas drilling in or under sensitive shoreline areas or under the Chesapeake Bay and its tributaries; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That a joint subcommittee be established to study the economic benefits that might be derived from oil and gas production in Tidewater Virginia and the risks to the natural environment and the marine industries it sustains which may result from oil or gas drilling under the Chesapeake Bay, and in or under near shore areas of Tidewater Virginia. The study should include a balanced assessment of the short- and long-term environmental and economic impacts associated with the drilling and production of oil and gas in such locations.

The joint subcommittee shall be composed of eleven members as follows: three members from the House of Delegates, one of whom shall be a member of the Committee on the Chesapeake and Its Tributaries, to be appointed by the Speaker of the House; two members of the Senate, one of whom shall be a member of the Committee on Agriculture, Conservation and Natural Resources, to be appointed by the Senate Committee on Privileges and Elections; four citizen members, one of whom shall represent the oil and gas industry and one of whom shall be a member of an organization associated with the effort to clean up the Chesapeake Bay, to be appointed by the Govenor; the Secretary of Economic Development; and the Secretary of Natural Resources.

All agencies of the Commonwealth shall provide assistance upon request as the joint subcommittee may deem appropriate.

The joint subcommittee shall complete its study in time to submit its findings and recommendations to the 1992 Session of the General Assembly, as provided in the procedures of the Division of Legislative Automated Systems for processing legislative documents.

The indirect costs of this study are estimated to be $26,930; the direct costs of this

study shall not exceed $12,200.

Official Use By Clerks	
Agreed to By The House of Delegates	**Agreed to By The Senate**
without amendment ☐	without amendment ☐
with amendment ☐	with amendment ☐
substitute ☐	substitute ☐
substitute w/amdt ☐	substitute w/amdt ☐
Date: _____	Date: _____
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Clerk of the House of Delegates	Clerk of the Senate

Appendix B

OVERVIEW OF THE GAS AND OIL REGULATION (VR 480-05-22.1)

The Gas and Oil Act of 1990 authorized the development of two regulations governing gas and oil development in the Commonwealth. The Gas and Oil Board issues regulations to ensure that all mineral owners are fairly compensated for their gas or oil. The Department of Mines, Minerals and Energy (DMME) is authorized to develop regulations to protect the citizens and the environment of the Commonwealth from the public safety and environmental risks associated with the development and production of gas and oil. Exploration and production wells, gathering pipelines, coreholes and other ground disturbing geophysical operations are governed by the regulations.

The Act required the DMME to develop regulations meeting seven requirements. Many of the regulatory standards fulfill more than one criteria. The requirement and the subsequent standards are summarized below.

Prevent pollution of state waters and require compliance with the Water Quality Standards adopted by the State Water Control Board

Standards include:

- -- Casing and cementing requirements to prevent cross-contamination of aquifers and groundwater pollution.
- -- Drilling fluid standards to ensure water meeting the SWCB's Water Quality Standards is used prior to casing being installed.
- -- Prohibition on disposing of fluids without DMME's approval.
- -- Criteria for on-site disposal of fluids consistent with the SWCB's Water Quality Standards.
- -- Criteria for off-site disposal includes verification that receiving facility is properly permitted and agrees to accept the fluid.
- -- Waste-tracking system is required for transporting fluids for off-site disposal.
- -- Plugging standards prevent groundwater pollution from abandoned wells and bonds ensure there are funds to complete the work.
- -- Shut-in wells' pressure must be monitored.

Protect against off-site disturbances (soil erosion, water pollution, escape of gas, oil or waste) from gas, oil, or geophysical operations

Standards include:

- -- Erosion and sediment control standards consistent with the requirements of the Division of Soil and Water Conservation.
- -- Stormwater management requirements designed to prevent flooding and erosion from increased amounts of run-off.
- -- Requirements for on-site disposal of rock cuttings in lined pits.
- -- Requirements that the site be designed to prevent spills and contain any accident.

-- Standards for designing and maintaining the temporary pit which contains fluids from the well produced during drilling.

Ensure the restoration of all sites disturbed by gas, oil or geophysical operations

Standards include:

-- Bonds required to ensure proper plugging of well and reclamation of disturbed surface.
-- Reclamation standards for permanent vegetative cover.
-- Required waiting period before bond release to ensure seeded areas are well established.
-- Requirements for plugging and marking completed wells.

Prevent the escape of the Commonwealth's gas and oil resources

Standards include:

-- Operations are required to be designed to prevent spills and if an accident occurs, the operation's design must be able to contain any liquid.
-- Blow-out preventers are required.
-- On-site tanks must be designed specifically for how they are used.
-- Periodic inspections of pipelines and tanks are required to be documented by the operator.
-- Flaring and venting is controlled.

Provide for coal and mineral mining safety

Standards include:

-- Accurate identification of the surface location of the well and the vertical and horizontal location of the well bore is required.
-- Notice to coal operator and the Division of Mines required prior to drilling a coalbed methane well within 200 feet of or into an underground mine.
-- Application requires confirmation of statutorily required notices and consent of coal operators.
-- Special casing procedures established for wells penetrating coal seams.

Overview of the Gas and Oil Regulation

Provide for the accurate measurement of gas and oil production and delivery to the first point of sale

Standards include:

-- Accurate measurement of gas and oil using acceptable techniques is required .
-- The Director may require the use of meters at designated places to obtain accurate records.
-- Monthly and annual reports required.

Protect the public safety and general welfare

Standards include:

-- Blasting is regulated consistent with state requirements for other types of blasting operations.
-- Blasting must be conducted by a certified blaster.
-- Specific operational requirements imposed when Hydrogen Sulfide might be present.
-- Wells and pipelines must be set back from occupied buildings.
-- Operations can be ordered closed when imminent danger to environment or public safety exists.

ADMINISTRATIVE PROVISIONS

Permit applications must be accompanied by application fees and a bond. The DMME reviews the application and the accompanying operations plan to ensure its compliance with the Act and the regulations. If the plan is inadequate or incomplete, it is returned to the applicant for revision.

Applicants are required to notify parties directly affected by the proposed operation, including surface owners, coal owners, and mineral owners. The Act specifies that these parties have standing to object to the application on specific grounds. Also, the applicant must publish a notice of the application in the local newspaper and inform the local governing body.

DMME staff regularly inspects all sites. The DMME procedure requires frequent state inspections while the site is being developed, drilled, or plugged. All complaints are inspected promptly and enforcement action taken if violations occur.

Operators are required to notify the DMME in the event of an accident or hazard. In cases of imminent danger to the environment or public safety, immediate action to abate the danger and reporting is required. Less serious incidents on the site must be reported within 24 hours.

Enforcement actions are taken when there is a violation of the Act or regulations. Notices of Violation (N.O.V.s) cite the specific violation and

prescribe a schedule and plan for abating the violation. Closure Orders (C.O.s) provide for the immediate cessation of all or part of an operation due to imminent danger, failure to comply with the terms of a N.O.V., repeated N.O.V.s, or operating without a permit. Failure to comply with the terms of a C.O. can result in revocation of the permit.

The regulations govern exploration and production wells, gathering pipelines, coreholes and ground disturbing geophysical operations.

Appendix C

1992 SESSION

HP0402376 **ENGROSSED**

HOUSE BILL NO. 793

House Amendments in [ ] - February 9, 1992

A BILL to amend and reenact § 62.1-195.1 of the Code of Virginia, relating to drilling in Tidewater Virginia.

Patrons—Murphy and Stieffen; Senator: Calhoun

Referred to the Committee on Conservation and Natural Resources

Be it enacted by the General Assembly of Virginia:

1. That § 62.1-195.1 of the Code of Virginia is amended and reenacted as follows:

§ 62.1-195.1. Chesapeake Bay; drilling for oil or gas prohibited.—A. Notwithstanding any other law, a person shall not drill for oil or gas in ~~or under~~ the waters of the Chesapeake Bay or any of its tributaries. In Tidewater Virginia, as defined in § 10.1-2101, a person shall not drill for oil or gas in ~~or under~~ , whichever is the greater distance, as measured landward of the shoreline:

1. Those Chesapeake Bay Preservation Areas, as defined in § 10.1-2101, which a local government designates as "Resource Protection Areas" and incorporates into its local comprehensive plan. "Resource Protection Areas" shall be defined according to the criteria developed by the Chesapeake Bay Local Assistance Board pursuant to § 10.1-2107; or

2. Five hundred feet from the shoreline of the waters of the Chesapeake Bay or any of its tributaries.

~~B. The provisions of subsection A of this section which (i) prohibit oil and gas drilling under the waters of the Chesapeake Bay or any of its tributaries and (ii) prohibit the drilling of oil and gas in and under those areas of Tidewater Virginia specified in subdivision 1 or 2, shall expire on July 1, 1992.~~

B. Notwithstanding any other law, a person shall not drill an oil well or produce from an oil well in Tidewater Virginia as defined in § 10.1-2101. The provisions of this subsection shall expire on July 1, 1993.

C. In the event that any person desires to drill for ~~oil or~~ gas in any area of Tidewater Virginia ~~not described in~~ *where drilling is not prohibited by the provisions of* subsection A of this section, he shall submit to the Department of Mines, Minerals and Energy as part of his application for permit to drill an environmental impact assessment. The environmental impact assessment shall include:

1. The probabilities and consequences of accidental discharge of oil or gas into the environment during drilling, production, and transportation on:

a. Finfish, shellfish, and other marine or freshwater organisms;

b. Birds and other wildlife that use the air and water resources;

c. Air and water quality; and

d. Land and water resources;

2. Recommendations for minimizing any adverse economic, fiscal, or environmental impacts; and

3. An examination of the secondary environmental effects of induced economic development due to the drilling and production.

D. Upon receipt of an environmental impact assessment, the Department of Mines, Minerals and Energy shall notify the Council on the Environment to coordinate a review of the environmental impact assessment. The Council on the Environment shall:

1. Publish in the Virginia Register of Regulations a notice sufficient to identify the environmental impact assessment and providing an opportunity for public review of and comment on the assessment. The period for public review and comment shall not be less than thirty days from the date of publication;

2. Submit the environmental impact assessment to all appropriate state agencies to review the assessment and submit their comments to the Council on the Environment; and

3. Based upon the review by all appropriate state agencies and the public comments

received, submit findings and recommendations to the Department of Mines, Minerals and Energy, within ninety days after notification and receipt of the environmental impact assessment from the Department.

E. The Department of Mines, Minerals and Energy may not grant a permit under § 45.1-361.29 until it has considered the findings and recommendations of the Council on the Environment.

F. The Council on the Environment shall, in conjunction with other state agencies and in conformance with the Administrative Process Act (§ 9-6.14:1 et seq.), develop criteria and procedures to assure the orderly preparation and evaluation of environmental impact assessments required by this section.

G. A person may drill an exploratory well or a gas well in any area of Tidewater Virginia where drilling is not prohibited by the provisions of subsection A of this section only if:

1. For directional drilling, the person has the permission of the owners of all lands to be directionally drilled into;

2. The person files an oil discharge contingency plan and proof of financial responsibility to implement the plan, both of which have been filed with and approved by the State Water Control Board. For purposes of this section, the oil discharge contingency plan shall comply with the requirements set forth in § 62.1-44.34:15. The Board's regulations governing the amount of any financial responsibility required shall take into account the type of operation, location of the well, the risk of discharge or accidental release, the potential damage or injury to state waters or sensitive natural resource features or the impairment of their beneficial use that may result from discharge or release, the potential cost of containment and cleanup, and the nature and degree of injury or interference with general health, welfare and property that may result from discharge or accidental release;

3. All land-disturbing activities resulting from the construction and operation of the permanent facilities necessary to implement the contingency plan and the area within the berm will be located outside of those areas described in subsection A of this section;

4. The drilling site is stabilized with boards or gravel or other materials which will result in minimal amounts of runoff;

5. Persons certified in blowout prevention are present at all times during drilling;

6. Conductor pipe is set as necessary from the surface;

7. Casing is set and pressure grouted from the surface to a point at least [~~*300*~~ *2500*] *feet below the surface or* [~~*50*~~ *300*] *feet below the deepest known groundwater, as defined in § 62.1-44.85,* [~~*used*~~] *for a beneficial* [~~*purpose*~~ *use*] *, as defined in § 62.1-10 whichever, is deeper;*

8. Freshwater-based drilling mud is used during drilling;

9. [~~*Any onsite disposal of drilling mud or other fluids shall comply with applicable water quality standards and regulations; and*~~ *There is no onsite disposal of drilling muds, produced contaminated fluids, waste contaminated fluids or other contaminated fluids;*

10. Multiple blow-out preventers are employed; and]

[~~*10.*~~ *11.*] *The person complies with all requirements of Chapter 22.1 of Title 45.1 and regulations promulgated thereunder.*

H. The provisions of subsection A and subdivisions one and four through nine of subsection G of this section shall be enforced consistent with the requirements of Chapter 22.1 of Title 45.1.

Appendix D

1992 SESSION

LD4017376

HOUSE JOINT RESOLUTION NO. 95

Offered January 20, 1992

Continuing the Joint Subcommittee Studying Oil and Gas Drilling Under the Chesapeake Bay.

Patrons—Murphy, Bloxom and Stieffen; Senators: Cross and Gartlan

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Referred to the Committee on Rules

WHEREAS, the Joint Subcommittee Studying Oil and Gas Drilling Under the Chesapeake Bay considered the economic and environmental issues raised by drilling in Tidewater Virginia; and

WHEREAS, the Joint Subcommitee found that exploratory wells for oil or gas may be located outside certain areas surrounding the Chesapeake Bay and its tributaries; and

WHEREAS, the Joint Subcommittee found that production wells for gas could be located in certain areas of Tidewater but not enough information had been received regarding whether or not the production of liquid hydrocarbons should be permitted and, if so, what specific safeguards those operations may require; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Joint Subcommittee Studying Oil and Gas Drilling Under the Chesapeake Bay be continued as the Joint Subcommittee Studying Oil Drilling in Tidewater Virginia. The membership of the joint subcommittee shall remain the same as set forth in HJR 251 (1990). The Joint Subcommittee is continued to study the environmental impacts of allowing drilling for the production of oil in Tidewater Virginia and what, if any, particular safeguards are needed to protect the unique natural resource features found in that area of the Commonwealth.

All agencies of the Commonwealth shall provide assistance upon request as the Joint Subcommittee deems appropriate.

The Joint Subcommittee shall complete its study by December 1, 1992, and submit its findings and recommendations to the Governor and to the 1993 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

The indirect costs of this study are estimated to be $10,650; the direct costs of this study shall not exceed $7,920.

Implementation of this resolution is subject to subsequent approval and certification by the Joint Rules Committee. The Committee may withhold expenditures or delay the period for the conduct of the study.

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Date: _____	Date: _____
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Clerk of the House of Delegates	Clerk of the Senate