

DIVISION OF OIL AND GAS

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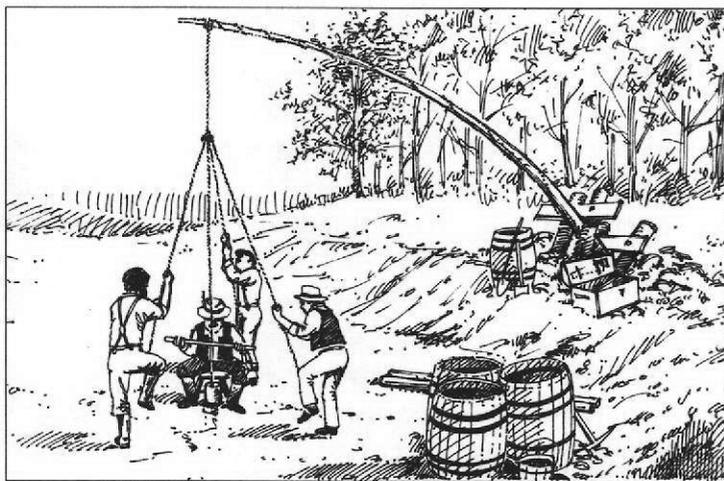


Figure 15.1. By use of a spring pole, a saltwater well was drilled (or "kicked down" as referred to by early drillers) in 1814 near South Olive in Noble County. At a depth of 475 feet, it accidentally struck oil and reportedly became the first drilled well in the world to deliver oil. (See also Plate 15.)
Graphic by Jim Glover.

In 1965, the Division of Oil and Gas was formed and incorporated into the Ohio Department of Natural Resources. This new Division was charged with overseeing Ohio's oil and gas developments in response to a wild drilling boom which occurred in Morrow County in the early 1960's. Legislation transferred most of the existing regulatory authority over Ohio's oil and gas industry from the Department of Industrial Relations, Division of Mines, to the newly created Division of Oil and Gas. Today in Ohio, over 64,500 active wells, operated by more than 2900 registered owners, are producing significant amounts of energy for industrial and residential needs within an orderly framework designed to protect and conserve our oil, gas, and water resources.

INDUSTRY: BIRTH AND DEVELOPMENT

The Division's history is relatively short in comparison to that of the oil and gas industry whose operations date from the mid-1800's. Ohio was a key player during the industry's infancy. Indeed, Ohio may lay claim to the world's first discovery of oil from a drilled well. In 1814 while drilling for salt, a valuable food preservative on the frontier, saltwater well drillers accidentally struck oil at a well site near South Olive in Noble County (Fig. 15.1 and Plate 15). Until the mid-1800's, people had little use for oil.

Figure 15.2. The Drake Well near Titusville, Pennsylvania, struck oil on 27 August 1859 and signaled the birth of the modern oil and gas industry. Colonel Edwin L. Drake (right) and Peter Wilson, a Titusville druggist, are shown in this classic photo of the second rig.

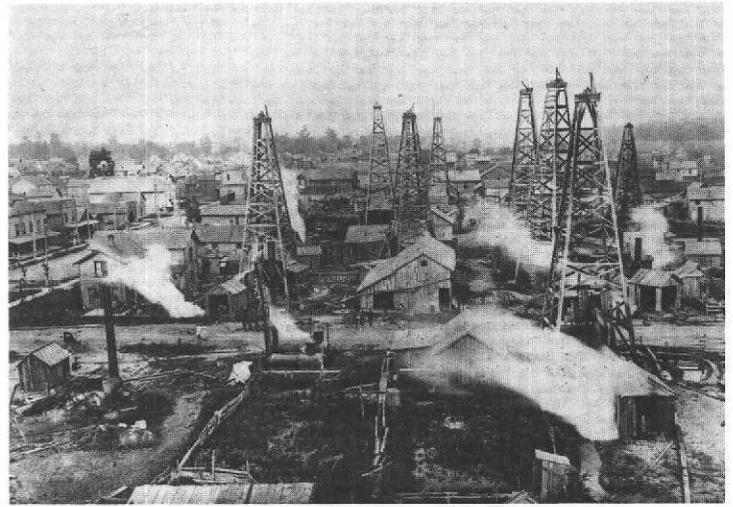


Figure 15.5. A town in northwestern Ohio during the oil boom of the late 1800's. Photo by permission of the Ohio Historical Society.

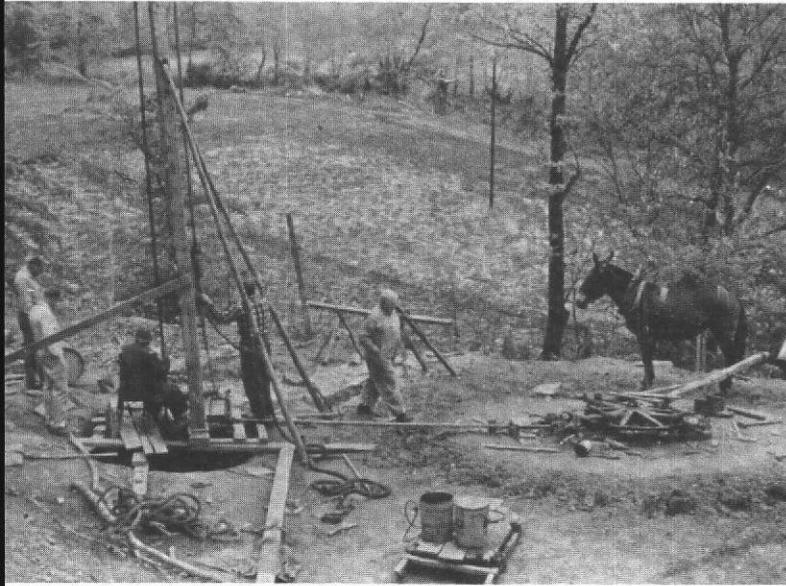


Figure 15.3. A mule powers an early drilling rig. Photo by David M. Ashbrook. Division of Oil and Gas file photo.



Figure 15.4. In 1861, the Cow Run oil field was discovered in Washington County, east of Marietta. Photo by permission of the Ohio Historical Society.

It was considered a nuisance because it contaminated salt and water wells. However, those who tried to find uses for the black crude found it to be an excellent lubricant, and the Seneca Indians and others used it for medicinal purposes. Not until the 1850's when a scarcity of whale oil created a need for alternative sources of illumination was petroleum promoted as a good source of fuel, and demand for it increased.

The oil and gas industry as a whole was born on 27 August 1859 at Titusville in northwestern Pennsylvania, when Colonel Edwin L. Drake intentionally and successfully drilled the first well to produce oil (Fig. 15.2). The success of his drilling venture touched off a major drilling boom in Pennsylvania. One year later, in 1860, oil and gas operations spilled into Ohio with drilling in Washington County near Macksburg and in Trumbull County near Mecca (Fig. 15.3). Another field was discovered in 1861 at Cow Run, east of Marietta (Fig. 15.4). Ohio, however, did not experience a major drilling boom until the 1880's when production from the Pennsylvania fields declined. When this happened, drillers moved into northwestern Ohio where abundant supplies of oil and natural gas had been discovered (Fig. 15.5).

The industry expanded rapidly, and the first oil and gas law was enacted in 1883. This first Ohio law regulated the methods used to case and plug oil and gas wells with the sole purpose of excluding water from penetrating and contaminating oil and gas bearing rock (Fig. 15.6).

During development of the Lima-Indiana field in northwestern Ohio, abundant production of oil and gas and a lack of storage facilities caused millions of cubic feet of natural gas to be burned, or flared, daily. Gas was also flared to promote development of towns and cities, especially Findlay (Fig. 15.7). At this time, people believed that

Figure 15.6. Horses were used to pull casing out of wells before engines were available. Division of Oil and Gas file photo.

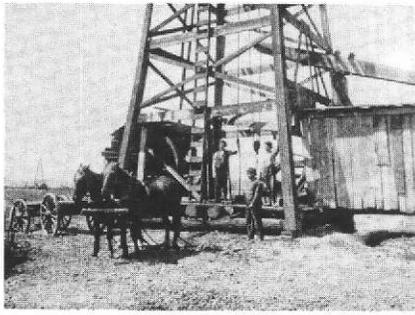


Figure 15.8. A gusher. Division of Oil and Gas file photo.

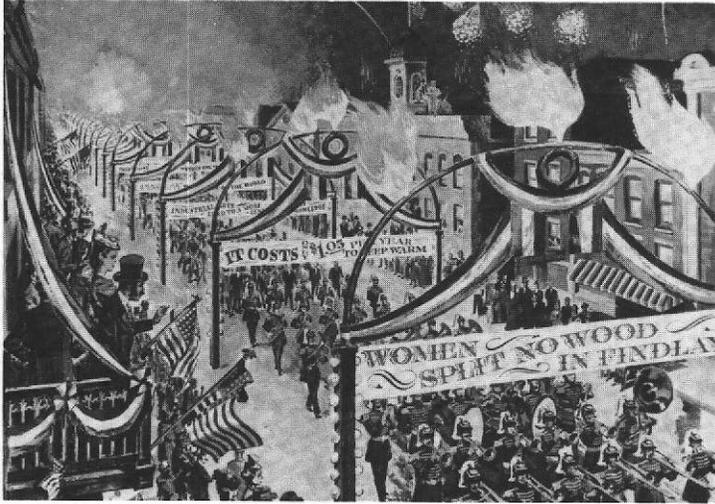
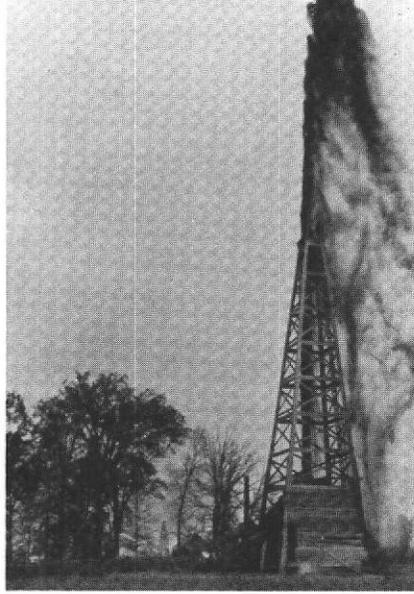


Figure 15.7. Findlay became an exciting boom town in the 1880's, and the people built gaslight arches in the streets for a huge jubilee. The bubble burst when the gas ran out, but by that time, Ohio's leadership in the petroleum industry was well established. This painting, entitled *The Oil Men*, was painted by Ohio Artist, Brennan West, Jr. Photo of the painting by courtesy of BP America, formerly known as The Standard Oil Company (Ohio), and the Ohio Historical Society.

Figure 15.9. Promotional map of Marietta in use about 1900 highlighting availability of oil and gas in the area. Photo by courtesy of Bruce Dudley and Marietta College Archives.



natural gas and oil supplies were infinite. By 1888, the once abundant natural gas supplies were largely depleted, and the first conservation legislation was enacted to prohibit the waste of oil and gas resources.

Until 1889, oil produced from northwestern Ohio was considered to be substandard in comparison with the petroleum produced from the Pennsylvania fields. Because of its high sulphur content, it had a foul odor and northwestern Ohio oil was labeled "sour crude" and "skunk oil." But, in 1889, the Standard Oil Company developed a refining process to convert this oil to an acceptable quality kerosene. Once the refining process was discovered, this oil was in demand, and a flurry of drilling activity ensued. By 1896, Ohio was the leading petroleum producer in the nation (Figs. 15.8, 15.9, and 15.10). (See also Figure 5.5 on page 45.)

Coal mining in Ohio was then, and still is, the state's leading mineral extraction industry. The fact that much of the oil and gas drilling activity was located in coal-mining regions prompted legislation to protect the mines and miners from the dangers imposed by oil and gas well

Figure 15.10. The high density of wells such as these at North Baltimore in Wood County in the late 1800's was a major reason that the fields played out by 1900. Division of Oil and Gas file photo.

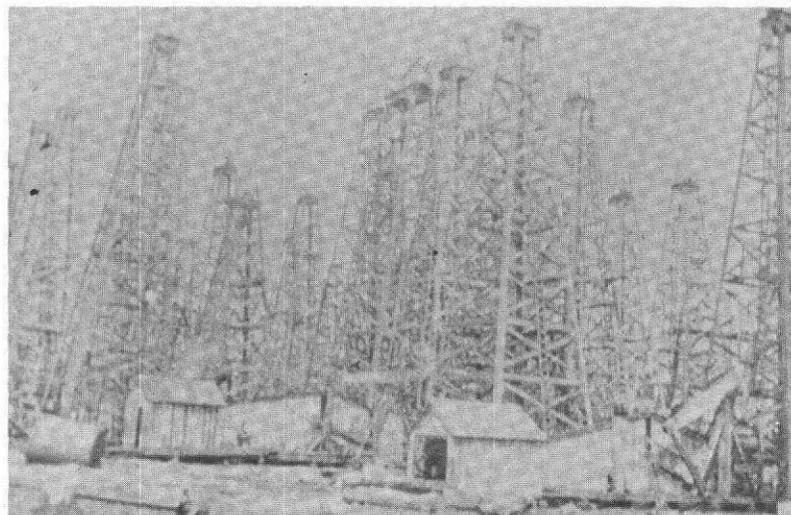


Figure 15.11. On 8 December 1959, the "No. 2 Monk Well" in Bennington Township, Morrow County, struck oil and became the first productive well in Morrow County; it remains productive in 1990. Photo by Linda Goodwin, June 1990.



drilling. In 1898, improper drilling and well-plugging practices were prohibited in mining areas. The administration of this law was placed under jurisdiction of the Division of Mines, but the law only pertained to wells in coal-bearing regions.

By the early 1900's, drilling dwindled in Ohio's oil fields as Ohio lost its ranking as a leading petroleum producer when larger, more productive fields were discovered in Texas and Oklahoma. Oil-field activity declined as many of the drillers and prospectors ventured westward to greater profits in the larger fields. The small independent producers who continued to operate in Ohio were regulated by a hodgepodge of laws that were largely self-enforcing and applied only to wells drilled in coal-bearing areas. These laws also were administered by the Department of Industrial Relations, Division of Mines.

Only minor legislative changes were made during this time to strengthen the requirements of the law. In 1917, legislation required that operators submit a map showing the location of proposed wells when they applied for a permit to drill. Maps were required only for wells drilled in coal-bearing townships. In 1927, a law was passed to require that drilling logs be filed with the Division of Mines for all wells drilled in "coal-bearing" areas.

In 1931, legislation created the first position of "oil and gas well inspector." Until this time, enforcement authority over oil and gas wells was vested in the deputy mine inspectors, and governed only those wells drilled in coal-bearing townships. In 1941, the Division of Mines gained authority to generate and enforce rules to protect health and safety and to conserve oil and gas resources. Not until 1951 was a law passed requiring that applications for a drilling permit be filed for all wells drilled in the state, regardless of whether they would be drilled in coal-bearing areas. This legislation gave the Division of Mines a method of tracking the number and location of oil and gas wells being drilled.

MORROW COUNTY BOOM: DRILLING CHAOS

An event occurred on 8 December 1959 that marked the

beginning of a series of events that profoundly impacted the history of the Ohio oil and gas producing industry. In September 1959, Noel J. Monk, a Morrow County resident, applied to the Division of Mines for a permit to drill a well on his farm located in Section 22, Bennington Township. Five or six exploratory wells had been drilled in Morrow County, none of which recorded even a show of oil or gas. Monk had already drilled one dry hole on his farm a few months earlier. However, he was a persistent man who was convinced that oil was underneath his property, and he was going to find it. His persistence paid off. On 8 December 1959, he completed the "No. 2 Monk Well" at a depth of 3731 feet (Fig. 15.11). His well produced 240 barrels of oil per day! The producing formation was the Trempealeau, or Copper Ridge Dolomite, of Cambrian age. The significance of Monk's discovery was twofold: it was the first productive well drilled in Morrow County, and it was the first Ohio well that established production from the Trempealeau Formation. Monk's discovery well caused a lot of excitement and interest; and shortly afterward, drilling commenced on several adjacent farms. Interest faded, however, when succeeding drilling ventures failed to find additional oil.

In spring of 1961, The United Producing Company of Charleston, West Virginia, discovered oil in commercial quantities on the Orrie and Erma Myers Farm in Canaan Township, Morrow County. This well produced in excess of 2000 barrels of oil per day! The company thought that they had discovered another "East Texas" type oil field. United Producing Company tried to keep the nature of their discovery confidential while they dispatched employees of their land department to secure oil and gas leases on all of the nearby land. However, the news of the discovery and its magnitude soon leaked out and spread rapidly, and the "Morrow County Boom" began. Drilling rigs (Fig. 15.12) sprang up everywhere, in front yards, back yards, railroad rights-of-way, and even cemetery plots. These rigs, the large rotary type, were moved in from Oklahoma, Kansas, Texas, and Illinois. A rotary drilling rig was a rare sight on the landscape of Ohio where nearly all drilling was done with the much smaller cable tool drilling rigs (Fig. 15.13).

Figure 15.12. Rotary drilling rigs and town lot drilling were common in Morrow County in the early 1960's. Issues created by the "Morrow County Boom" lead directly to the formation of the Division of Oil and Gas in 1965. Photo by David Karle/Photorama, Galion. Used by permission of the Ohio Historical Society.

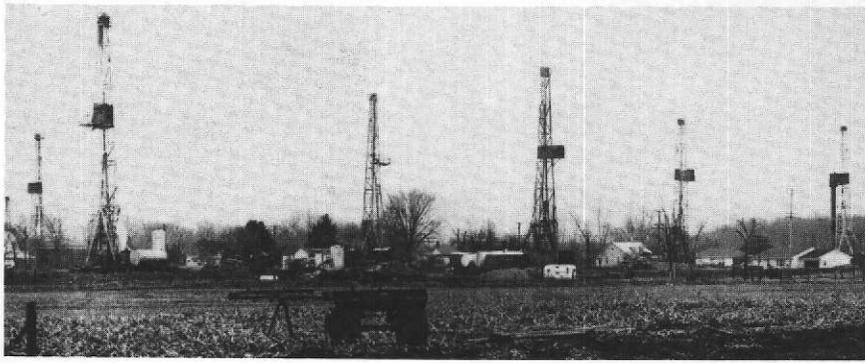
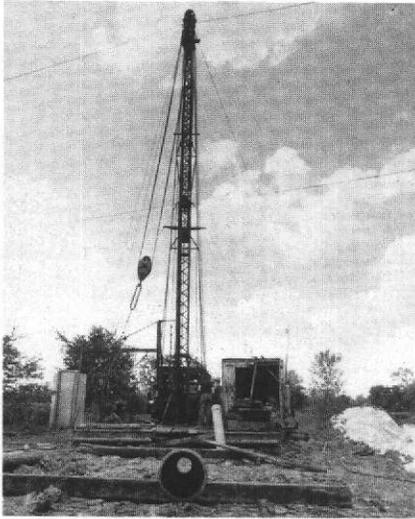


Figure 15.13. The common cable tool drilling rig is still used in Ohio as demonstrated by this Morrow County rig. Photo by Linda Goodwin, June 1990.



These rotary rigs (see Plate 16) were capable of drilling 3000 feet in five days, whereas a cable tool rig required approximately 30 days to drill such a well.

The tranquility of the small communities of Mt. Gilead and Cardington was totally disrupted by town lot drilling, and massive traffic jams developed every weekend as hundreds of people from miles around came to observe the drilling activity. The spectacle attracted national attention when the major television networks provided live coverage in their evening news broadcasts. *The Oil and Gas Journal*, a trade publication of national circulation, presented photographs and articles in nearly every one of its issues for several months. The Secretary of the Interior, Stewart Udall, called Governor Rhodes to inquire why something was not being done to provide for the orderly development of this new oil field. The fact of the matter was that the Ohio Oil and Gas Law was not adequate to control the situation. There were no well-spacing regulations in force.

The Morrow County Boom served notice to all that the Ohio Oil and Gas Law was in dire need of revision. In late 1963, the Conservation and Legislative Committee of the Ohio Oil and Gas Association and the Interim Joint Legislative Study Committee on Oil and Gas went to work to revise the Ohio Oil and Gas Law. This work, which had its genesis from studies conducted by the Ohio Oil and Gas Association

in 1962 and 1963, continued for over a year. Long series of meetings were held with both State and industry participation. Goals were set to propose a bill that would address the inadequacies in the law exposed by the Morrow County Boom and to safeguard the citizens of the state while allowing industry to operate in an economical and efficient manner. Ohioans benefited by looking at legislation developed by western oil and gas producing states, and legislative initiatives were aided by national organizations such as the Interstate Oil Compact Commission.

CREATION OF THE DIVISION

The General Assembly convened early in 1965. House Bill 234 was introduced and received many hearings and revisions, both in the House and in the Senate. It became politically controversial only when it reached its final legislative destination on the floor of the Senate. The coal industry strongly opposed formation of a new Division of Oil and Gas and lobbied to keep the regulatory powers over oil and gas with the Division of Mines. After much debate, Amended Substitute House Bill 234 passed by only one vote in the Senate.

This laborious legislative process produced a comprehensive oil and gas conservation law, which some say may have provided for the most comprehensive changes made in the oil and gas laws of any state in a single piece of legislation. It was signed into law by Governor James A. Rhodes on 16 July 1965 (Fig. 15.14) and became effective 15 October 1965. Codified under Chapter 1509 of the Ohio Revised Code, it created the Division of Oil and Gas within ODNR. It empowered the Chief of the Division of Oil and Gas to enforce Ohio's Oil and Gas Law and to promulgate rules for its administration and implementation. The law also created an appeal board, the Oil and Gas Board of Review, and an advisory board, the Technical Advisory Council on Oil and Gas. Members of both these boards are appointed by the Governor in accordance with statutorily defined qualifications.

ODNR Director Morr appointed Dr. Donald L. Norling



Figure 15.14. Governor James A. Rhodes (seated center) signed into law Amended Substitute House Bill 234 creating the Division of Oil and Gas on 16 July 1965. To his left is Representative Harry Armstrong of Logan, and to his right is Representative Don Cooper of Ashland. Standing from left to right are Richard C. McConnell of the Ohio Oil and Gas Association, Representative John McDonald of Newark, and Kirk Jordan of the Ohio Oil and Gas Association. Photo by courtesy of Kirk Jordan and the Ohio Oil and Gas Association.



Figure 15.15. Dr. Donald L. Norling, first Chief of the Division of Oil and Gas, 1965-1967.

as the first Chief of the Division of Oil and Gas (Fig. 15.15). Dr. Norling, at the time of his appointment, headed the Subsurface Geology Section of the Division of Geological Survey. A graduate of The Ohio State University where he earned his Ph.D. degree in Geology, he had worked for a major oil company and as an independent consulting petroleum geologist.

As Chief of the new Division, on 17 September 1965, Dr. Norling worked immediately to organize the Division's structure and to recruit personnel. He chose Dorothy A. Amrine, who was affiliated with the Department of Geology at The Ohio State University, as secretary. Theodore A. DeBrosse, a geologist in the Subsurface Geology Section of the Division of Geological Survey, transferred to the new Division as Technical Assistant. From the Division of Mines, Norling recruited Charles Finck, Forest Kieffer, Cliff Laughlin, Gilbert Archer, Grover Blausser, Rolland Cox, David Edgar, and Karl Merrick. These individuals were trained and experienced oil and gas well inspectors. Arrangements were made to house the new Division in Room 811, Ohio Departments Building, 65 South Front Street, Columbus.

The first telephone call Dr. Norling made was to Albert Molt of the Office of Administrative Services to arrange for oil and gas records and files to be transferred from the Division of Mines to the Division of Oil and Gas. J. Lester Zimmerman, Chief of the Division of Mines, refused to release the records and files, so Dr. Norling contacted the Governor's Office, and Governor Rhodes issued an Executive Order to force Division of Mines to relinquish the well files and records to the Division of Oil and Gas.

Staff members of the Division of Mines were very much opposed to the creation of a new agency to administer the oil and gas law. When it became apparent that their lobbying efforts were unsuccessful, they immediately took action to increase what little authority existing legislation reserved for them. The Division of Mines still maintained

review and approval authority over oil and gas wells drilled or plugged in coal-bearing townships. On 15 October 1965, the same day that the Division of Oil and Gas was created, the Division of Mines issued an order designating 34 more townships as coal-bearing areas. Today, the Division of Mines still exercises control over oil and gas wells located in coal-bearing areas.

On 27 October 1965, the Oil and Gas Board of Review held its organizational meeting and selected James J. Morgan of Wooster as Chair, Nace T. Mefford of Columbus as Vice Chair, and J. Richard Emens of Marion as Secretary. The other members were Jerry D. Jordan and Robert L. Alkire, both of Columbus. On the next day, 28 October 1965, the Technical Advisory Council on Oil and Gas held its organizational meeting and selected Richard C. McConnell of Newark as Chair, Gerald H. Moore of Canton as Vice Chair, and Donald C. Hubbard of Columbus as Secretary. The other original advisory members were David H. Bell of Logan, J.E. Schaefer of Cleveland, Walter E. Stitzlein of Ashland, and J.W. Straker of Zanesville.

Rules passed by the Division of Mines in 1964 to control the wild drilling spree in Morrow County were adopted by the Division of Oil and Gas and made effective on 14 December 1965. These rules established the first well-spacing regulations and bonding requirements. The spacing regulations required a ten-acre drilling unit for the drilling of a new well, the reopening of an existing well, or the deepening or plugging back of an existing well to a different pool to produce oil and gas below the top of the Clinton Formation or its geological horizon. Surety bonds were conditioned on an oil and gas well operator's compliance with the provisions of Chapter 4159 and Section 4151.03 of the Ohio Revised Code and remained in force until the bonded wells were properly plugged and abandoned. The Division required a \$2000 surety bond be posted for a single well and a \$10,000 blanket bond for multiple wells operated by one principal owner.

1949-1989

Well depth (feet)	Minimum acreage per well	Minimum distance (feet) between wells in same pool	Minimum distance (feet) from property boundary
0-1000	1	200	100
1000-2000	10	460	230
2000-4000	20	600	300
4000 or deeper	40	1000	500

Figure 15.16. Spacing regulations regarding siting of oil and gas wells in Ohio as adopted on 1 November 1967 and still in effect.

Although Ohio's oil and gas producing industry accepted creation of the new Division, many well operators were second and third generation small independent producers who did not easily adapt to change, especially when the Division of Oil and Gas began exercising its authority. Dr. Norling attempted to add a provision to the law to require well owners to file annual production statements with the Division. Most western states had required production data be submitted on the basis of an individual well for many years. Production data provided valuable information for new producers to evaluate the economics of drilling wells in particular areas, but many oil and gas producers felt this requirement to be an invasion of privacy. Compromise was reached when Dr. Norling agreed that producers would report their annual production on a statewide basis rather than by an individual well.

On 26 June 1967, the Chief was given authority to permit the construction of liquid industrial waste disposal wells. Passed by emergency measure, Senate Bill 226 required that such permit applications be reviewed by the Division of Geological Survey, the Division of Water, the Ohio Department of Health, and the Water Pollution Control Board, as well as the Division of Mines if these wells would be located in a coal-bearing township. The first disposal permit was issued 17 July 1967 to Empire Reeves Steel, a Division of the Cyclops Corporation of Mansfield, Ohio. The well permit allowed disposal of sulfuric acid pickling liquor. The law was changed several years later vesting jurisdiction over industrial waste disposal wells with the Ohio Environmental Protection Agency.

One of Dr. Norling's most significant achievements was the adoption of new well-spacing regulations (Fig. 15.16) which became effective on 1 November 1967. These regulations, still in force today, stand as proof of good conservation achieved through well-spacing patterns that provide for maximum efficient recovery of oil and gas resources.

As the focal point of drilling activity shifted from Morrow County to East Canton in Stark County, Dr. Norling was promoted to Deputy Director of ODNR, and Wayne T. Connor became the second Chief of the Division

of Oil and Gas on 15 December 1967 (Fig. 15.17). Connor held a B.S. degree in Geology from Bowling Green State University and was previously employed by Pure Oil Company as a geologist.

During Connor's tenure in 1968, a discovery well drilled near Claysville in Guernsey County shifted the focal point of drilling activity from East Canton to Guernsey, Muskingum, and Noble Counties. Most new wells were being drilled with rotary rigs, and additional rigs were moved into the area from out of state. By 1970, wells drilled with rotary rigs outnumbered those drilled with cable tool rigs for the first time.



Figure 15.17. Wayne T. Connor, second Chief of the Division of Oil and Gas, 1967-1971.

AUSTERITY AND ENVIRONMENTAL AWARENESS

With the inauguration of John J. Gilligan as Governor in January 1971, power shifted from the Republican to the Democratic Party. Although Division leadership was not immediately changed, on 23 August 1971 ODNR Director Nye issued a memorandum announcing an austerity program effective 1 September 1971. The austerity program included the layoffs of Chief Connor and Deputy Director Norling. Horace R. Collins, Chief of the Division of Geological Survey, was assigned additional duties including Acting Chief for the Division of Oil and Gas and Deputy Director. Collins, instructed by Director Nye to search for a new Chief for the Division, met G. Lyman Dawe at a professional geology conference. Dawe's most recent employment had been with the Mobil Oil Company in Libya, and he was then pursuing a Ph.D. degree in Geology at the University of Texas. Collins arranged for Dawe to be interviewed by Director Nye, who subsequently appointed Dawe as the third Chief of the Division of Oil and Gas effective 17 January 1972 (Fig. 15.18).

Dawe was a strong environmentalist whose philoso-



Figure 15.18. G. Lyman Dawe, third Chief of the Division of Oil and Gas, 1972-1975.



Figure 15.19. Harry L. Armstrong, fourth Chief of the Division of Oil and Gas, 1975.

phies focused Division emphasis on environmental protection. Chief Dawe sought to eliminate tens of thousands of earthen brine “storage” pits, many of which were contaminating Ohio’s ground water. (Brine is a salty oil-field waste water. Interestingly, it was the resource sought by the first well drillers in Ohio.) He also sought to decrease damages caused by increased drilling activity by the larger, faster rotary type drilling rigs. These rigs disturbed much greater land areas to accommodate operations than the smaller cable tool rigs, and serious erosion and sedimentation problems were created by lack of prompt and adequate well site restoration work.

Many oil and gas lease holders were not fulfilling contractual agreements with landowners to restore land to its original condition and pay for damages to crops, fences, timber, etc. The Division was deluged with telephone calls and letters from dissatisfied landowners, and the need for legislation to resolve restoration problems was evident. The General Assembly passed House Bill 216 to require prompt and adequate well site restoration, effective 23 September 1974.

As the number of producing oil and gas wells in the state increased, so did the number of violations of the Ohio Oil and Gas Law. The field enforcement staff was severely hampered in its efforts to cite violators by a lack of information at the well site concerning the name, address, and telephone number of the well owner. Wells had often changed ownership several times, without notification having been submitted to the Division. To alleviate this problem, the General Assembly enacted Section 1509.31 of the Ohio Revised Code to require that the assignor or transferor notify holders of the royalty interests and the Division of Oil and Gas of the name and address of new well owners within 30 days of the assignment or transfer date. A rule was also adopted to require all well owners to identify legibly their operations on or near the well head or storage tanks.

Another problem needing immediate attention was the large volumes of brine that were being produced with limited storage and disposal facilities. Rules became effective on 22 January 1975 to require all persons engaged in

any phase of transportation and disposal of oil-field brines to file an annual report and list the quantities of brine hauled and/or disposed of during the year and the locations of disposal.

ADDRESSING THE ENERGY CRISIS AND ABANDONED WELLS

Division leadership changed with the 1974 re-election of James A. Rhodes as Governor. Robert W. Teater was appointed ODNR Director, and on 23 January 1975, G. Lyman Dawe was relieved of his duties. On 15 May 1975, Harry L. Armstrong was appointed the fourth Chief (Fig. 15.19). He came to the Division with a 26-year record of public service as a State Senator, State Representative, Township Trustee, County Commissioner, and Soil and Water Conservation District Supervisor. He was a conservation leader during the twelve years he served in the General Assembly, and he cosponsored Amended Substitute House Bill 234 which created the Division of Oil and Gas in 1965. Chief Armstrong knew and understood the oil and gas business as he had two producing wells on his Hocking County farm. He dealt with people effectively and established an open-door policy with industry to resolve problems. However, after serving only five months, Harry Armstrong announced his retirement on 1 October 1975, and Director Teater appointed Assistant Chief Theodore A. DeBrosse as Acting Chief (Fig. 15.20). DeBrosse filled this position for over two years continuing the open-door policy of Armstrong. This harmonious working relationship with the industry was greatly enhanced through the wise counsel and guidance of John T. Davidson, Deputy Director for Resource Protection (Fig. 15.21).

The 1973-74 heating season was plagued with natural gas shortages. Natural gas distribution and transmission companies severely cut back supplies to “low priority” users. Many industrial plants and manufacturing facilities were classified as “low priority” users, and were in great danger of being shut down by fuel shortages. To meet industrial needs, Ohio established a Self-Help Program to enable companies to drill and produce their own natural gas

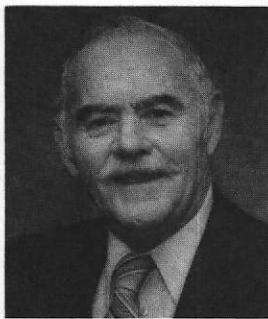


Figure 15.20. Theodore A. DeBrosse was appointed Acting Chief of the Division of Oil and Gas on three occasions: 1975, 1975-1977, and 1983.



Figure 15.21. John T. Davidson, ODNR Deputy Director for Resource Protection. The entire Department was shocked and grieved by his sudden death due to a heart attack on 22 May 1977.

Figure 15.22. Cartoon by Eugene Craig focusing on the dangers of leaking and improperly plugged gas wells as published in November 1975. Reprinted with permission from The Columbus Dispatch.

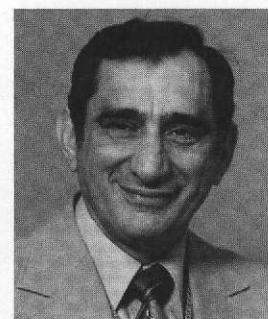


Figure 15.23. Andrew G. Skalkos, fifth Chief of the Division of Oil and Gas, 1977-1983.

supplies. Many plants drilled wells on their property; others drilled nearby and transported the gas by pipeline. By 1976, a large percentage of Ohio drilling activity was due to the success of the Self-Help Program, and when the 1976-77 energy crisis developed due to severe weather, Ohio industrial facilities were able to continue operations and maintain employment levels.

Hazards created by leakage of gas from abandoned wells had been recognized for years. Some wells were never plugged and others, although plugged, were not properly sealed to prevent leakage. To secure proper plugging for abandoned wells without legal owners, many of which had been drilled at the turn of the 20th Century, DeBrosse initiated and promoted establishment of the Idle and Orphan Well Plugging Program (Fig. 15.22). This program was created by passage of Amended House Bill 28 in 1977, and it enabled the Division of Oil and Gas to finance the plugging of oil and gas wells and restore well sites when no legally responsible party could be found to assume these costs. This program was funded by a portion of the mineral severance tax. Initially, 25 percent (approximately \$1 million) of the mineral severance tax was dedicated to the program. In 1982, program funding was changed to provide an annual allotment of a flat \$1 million. Elmer E. Clinesmith, an Oil and Gas Well Inspector headquartered in Medina County, was appointed as the first Idle and Orphan Well Program Coordinator on 25 April 1977. Since this program's inception, Ohio has plugged more wells in the Appalachian region than any other state, and has reduced the hazard potentials of fire, explosion, and pollution.

EXPANSION, GROWTH, AND PRIMACY

ODNR Director Teater appointed Andrew G. Skalkos as the fifth Chief on 8 December 1977 (Fig. 15.23). Skalkos

was a military man holding the rank of Colonel and a graduate of Miami University at Oxford, Ohio, with a degree in Business Administration. Under his leadership, the Division experienced its greatest growth and reorganization. At the time Skalkos became Chief, Division staff numbered 27 full-time employees. When his term ended in 1983, there were 96 full-time employees. He established Regional Offices in Dellroy, Millersburg, Newark, and Marietta to decentralize authority and quicken Division response time.

Under Chief Skalkos, the Division was granted primacy in two federal programs. The Natural Gas Policy Act of 1978 established a maximum lawful price for which natural gas could be sold in the intrastate market. The price was determined by an elaborate set of criteria. Although there was no federal funding provided to the states to support the program, the federal government requested various state regulatory agencies to assume primacy; and Ohio was among the first states to have the program in place. The other federal program was the Underground Injection Control Program. A spin-off from the federal Safe Drinking Water Act of 1974 (Public Law 93-523), the program exercised authority over all wells that inject oil-field waste fluids into underground formations. Federal funds partially supported this program.

Problems associated with the handling and disposal of produced brine continued to plague the Division, and Skalkos was instrumental in securing a grant from the Ohio Water Development Authority to fund a study to determine the magnitude of the problem, and recommend solutions to facilitate brine disposal in an environmentally safe manner. The contract study was awarded through a competitive bidding process to Templeton and Associates of Marietta, Ohio. The President of the firm, Elmer E. Templeton, was a former Professor of Petroleum Engineering at Marietta

Figure 15.24. *Renee J. Houser, sixth Chief of the Division of Oil and Gas, 1983-1987.*



College. The report, "Environmentally Acceptable Disposal of Salt Brines Produced With Oil and Gas," was completed in January 1980.

Drilling activity in the northeastern part of the state was rapidly increasing and, unlike southeastern Ohio where the citizens had lived with the industry for over a hundred years, drilling activity was a new phenomenon for many in the area. Citizens in bedroom communities near Cleveland, Akron, Canton, and Youngstown did not welcome the oil and gas producing industry in their midst. Unlike southeastern Ohio, the industry did not heavily boost area economies.

Reacting to citizens' complaints, many municipalities and zoning boards and commissions began to pass ordinances and rules to control the oil and gas industry. The result was a conglomeration of regulations with which compliance was impossible. Legislation was needed to address complaints from both citizens and industry, and Amended Substitute House Bill 264 was passed on 25 July 1980. Referred to as "The Carney Bill," this Act substantially changed the Ohio Oil and Gas Law. Drilling permit fees were increased from \$35 to \$95, and these fees were deposited in a newly created rotary fund to be appropriated to the Division biennially for administrative expenses. The Act prohibited counties, townships, and municipalities from imposing fees and ordinances more stringent than those required by State law. It strengthened bonding and well site restoration standards and empowered the Chief to shut down wells that endangered public health, safety, or the environment. The Chief could deny to issue permits to operators who were in violation of the law.

FOCUS ON BRINE DISPOSAL

The 1982 gubernatorial election resulted in state leadership change from Republican to Democratic, and on 13 May 1983 Andrew G. Skalkos was relieved of his appointed authority as Chief. His successor, Renee J. Houser, was appointed on 21 June 1983 as the sixth Chief of the Division of Oil and Gas (Fig. 15.24). Houser, an attorney, graduated from The Ohio State University College of Law

and served previously as an Assistant Attorney General assigned to the Division of Reclamation. She assumed the position of Chief at a time of brisk drilling activity. In 1984, for the first time, the combined total value of Ohio's crude oil and natural gas production exceeded \$1 billion.

Northeastern Ohio remained a focal point of drilling activity, and a series of newspaper articles dealt with illegal brine dumping and environmental problems. The Division was besieged by environmentalists and citizen-action groups to act on Ohio's brine disposal problems. In 1983, State Representative Robert E. Hagen of Madison in Lake County introduced House Bill 501 which called for a complete moratorium on all oil and gas well drilling in Ohio until the Chief of the Division of Oil and Gas could certify to the legislature that a sufficient number of underground injection wells existed to handle all produced brine. After extensive revisions and numerous hearings, a moratorium on drilling was abandoned, and Amended Substitute House Bill 501 passed the General Assembly and went into effect 12 April 1985. The Act increased drilling permit application fees and well site restoration requirements, eliminated earth pits for brine "storage," strengthened brine disposal and transportation requirements, and increased the Division's enforcement measures by substantially raising civil and criminal penalties.

Passage of Amended Substitute House Bill 501 and a Herculean effort by the Division to enforce it did not silence critics. The oil and gas industry felt the Division was overzealous in its enforcement efforts, and the environmental community claimed the Division was not using its regulatory authority effectively to protect public health and safety. The Division was caught in the conflict between both groups, and this mounting environmental criticism was becoming a reelection issue for Governor Richard F. Celeste. He called for an investigation by the Oil and Gas Regulatory Review Commission formed by Executive Order 86-35. The Commission was directed to assess environmental problems associated with oil and gas drilling, production, and waste disposal; examine the current regulatory program; and recommend solutions to any and all problems it identified. The Commission submitted a report to the Governor on 30

January 1987, after the gubernatorial election. While making some suggestions for continuing change, the Commission's report generally affirmed that the Division had made great progress in protecting the environment and was adequately enforcing oil and gas laws.

The Division's efforts to implement this new law, however, still met with considerable criticism from the oil and gas industry, especially those producers operating primarily in the southeastern part of the state. They felt burdened with excessive regulations not needed in their area, and the cost of complying with the new laws would force them to plug and abandon many of their wells, and thereby deprive many low-income citizens of natural gas to heat their homes. To ensure that domestic gas supplies were not terminated capriciously to the detriment of public health and welfare, Governor Celeste on 9 October 1986 issued Executive Order 86-43 to prohibit oil and gas well owners and operators from shutting-in domestic use wells.

In response to southeastern Ohio complaints, Representative Jack Cera of Bellaire in Belmont County, introduced House Bill 572 to relieve the small southeastern Ohio producers from some requirements of the law. Relief was provided in 1987 with passage of Substitute House Bill 572, frequently referred to as the "Exempt Mississippian Well Bill." ("Mississippian" refers to the geological age of the rock units producing the oil and gas.) Mississippian wells that were used primarily to supply domestic fuel were exempted from certain legal and financial requirements and, most importantly, exempt well owners were not restricted to the lawful brine disposal options established by Amended Substitute House Bill 501.

For several years, the Division had been estimating the statewide production of brine at 160,000 barrels per day. The oil and gas community hotly disputed this figure. To determine a more exact estimate, Chief Houser prescribed a new form for filing the annual statement of production which required that the total volume of crude oil, natural gas, and *brine* be reported on *an individual well basis*. This form was first used to file the 1985 reports; and based on a compilation of the data submitted, the Division revised its estimate to 43,000 barrels per day. Interestingly, it took 20

years to arrive at what Dr. Norling, the first Chief, wanted as the prescribed form in the first place.

Chief Houser made significant organizational changes during her term when she established the positions of three Deputy Chiefs. Theodore A. DeBrosse was appointed Deputy Chief for Administrative Support; Scott R. Kell, Deputy Chief for Technical Support; and Robert J. Rothwell, Deputy Chief for Enforcement Operations.

In 1986, crude oil prices plunged from \$26 per barrel at the beginning of the year to less than \$10 per barrel. As a result, drilling activity decreased. Applications for permits to drill declined 42 percent. Some producers elected to shut-in wells rather than sell oil at prices less than production costs. Industry took a downturn, and many oil-field workers lost their jobs.

One of the most significant additions to the Division was the Brine Management Research Special Account (BMRSA). This fund was provided by well owners who paid an additional \$50 in permit fees to dispose of brine by any method other than deep injection into an underground formation. The account funded studies on the potential uses of brine, reinjection, and treatment for produced brine and on the environmental effects of spreading brine on roads for dust and ice control and on annular disposal. Annular disposal is a low-cost disposal method by which brine is disposed into the space (annulus or annular space) between the surface and production casings of a well.

One of the most significant BMRSA-funded projects was conducted by The Ohio State University Research Foundation. This study, which was completed in 1989, entailed a worst-case scenario assessing ground water and soil quality changes caused by controlled brine spreading on a road surface. The BMRSA was repealed, as mandated by law, in July 1989. Over a four-year period, five brine disposal research projects were funded.

PROGRESSING TOWARD THE 1990'S

On 20 February 1987, Houser resigned her duties as Chief and ODNR Director Sommer on 26 April 1987, appointed J. Michael Biddison as the seventh Chief of the



Figure 15.25. J. Michael Biddison, seventh Chief of the Division of Oil and Gas, 1987-1990.

Division of Oil and Gas (Fig. 15.25). A native of Columbus, Biddison received a B.S. degree in Geology and Mineralogy from The Ohio State University and an M.B.A. degree from Kent State University. He came to the Division with nine years experience in the oil and gas industry. Prior to his appointment, he managed petroleum engineering and geological services for the General Electric Company.

Biddison assumed leadership faced with the challenge of easing tensions between the oil and gas industry, environmentalists, and the Division. Prior to official acceptance of the position, he met with industry representatives and environmental groups to gain their perspectives on Division issues. This preplanning established the precedent of open communication and cooperation between the Division and its constituencies that prevailed throughout Biddison's tenure.

Biddison made extensive changes to the Division's annual publication, "Summary of Ohio Oil and Gas Developments," also known as "The DeBrosse Report," by publishing statistics of all Division activities, as well as the traditional drilling and production activities. With more accurate and greater volumes of data and computer graphics, the expanded version of the report was redesigned to communicate to the general public as well as the oil and gas industry. Biddison's most noteworthy accomplishment was to maintain a high level of public health, safety, and environmental protection despite downward economic trends in the oil and gas industry. By the end of 1989, the Division had conducted nearly 38,000 well site visits and issued over 3600 oil and gas well permits of various types.

In late 1987, Biddison employed a "team approach" by establishing task force groups composed of industry leaders, Division members, and outside interest constituencies to address such controversial issues as establishing minimum standards for pit liners used to make drilling pits liquid tight and defining parameters to determine maximum injection pressures for enhanced recovery and brine injec-

tion wells. The task force groups completed their work in 1989 by submitting their recommendations and implementation plans to the Division with the intent of initiating adjustments to Ohio's oil and gas laws, rules, and policies.

The oil and gas community faced a 1 September 1988 deadline to develop and perform mechanical integrity tests on Ohio's operating annular disposal wells, or lose authority to use this brine disposal method. Leaders from the Division and the oil and gas industry collaborated for ten months before finalizing two mechanical integrity tests to submit to the United States Environmental Protection Agency (USEPA) for approval. Both tests met USEPA approval, but as a result of rigid testing standards, Ohio experienced a dramatic decline in the use of annular disposal of brine. In June 1989, new rules affecting annular disposal went into effect. These rules enacted better notification requirements, cementing of surface casing, and demonstration of mechanical integrity prior to approval for brine disposal.

In keeping with its mission, the Division administers Ohio's oil and gas laws so as to:

- 1) Allow for orderly and efficient development of oil and gas resources.
- 2) Assure protection of public health, safety, and the environment.
- 3) Conserve natural resources.

The Division works to strengthen its communications efforts in a cooperative spirit to resolve issues in a constructive manner with industry and constituents. The Division recognizes the changes that have affected the perspectives of both the industry and the general public, and it strives to make proper positive adjustments. As with any regulatory agency and the industry that it regulates, there are differences of opinion, segregated focal points, and in general, built-in conflicts depending on the issues. However, the constraints that the Division maintains on the industry not only provide the industry with safe guidelines on how to proceed with low-risk operations but also protect public and private concerns while conserving the valuable natural resources of oil, gas, and water.