

The Knowledge Bank at The Ohio State University
Ohio State Engineer

Title: The Relation of Maps to the Oil and Gas Industry

Creators: Newhouse, Russell Conwell

Issue Date: Jan-1927

Publisher: Ohio State University, College of Engineering

Citation: Ohio State Engineer, vol. 10, no. 2 (January, 1927), 8, 34.

URI: <http://hdl.handle.net/1811/33851>

Appears in Collections: [Ohio State Engineer: Volume 10, no. 2 \(January, 1927\)](#)

The Relation of Maps to the Oil and Gas Industry

RUSSELL C. NEWHOUSE, '29.

In the early days of the gas and oil industries no one company held so much land that the location of the wells could not be remembered with sufficient accuracy for all practical purposes. Now, however, when a single company may own hundreds of thousands of acres of land and hold leases for two or three times that amount it is necessary to have an accurate and complete system of records in order that the innumerable wells, holdings, and other attendant data may be found at any time. As the business grew and vast corporations were formed, which own thousands of wells and leases on millions of acres of land, often scattered over many states, it became impossible for individuals to retain the relationship of the different facts in their minds.

The oil and gas company is divided into a number of departments. I shall attempt to give a brief explanation of their purpose in order to make clear the need of maps. First is the leasing department which secures leases, pays for them, and secures rights to drill for oil and gas from landowners who will not sell or lease their land. Next comes the choosing of the locations for wells. This is usually done by a group of experts who are well versed in geology and the practical side of the business. The engineering department has charge of marking off these locations upon the ground, and, after the well is drilled, of determining and surveying the routes for pipe lines which are needed, if the well is a producer. The lines from all the gas wells are connected to a compressing station which sends the gas on to the city where its pressure is changed to that necessary for the consumer.

You can understand from this that it would be impossible for the men who control the policy and operations of the company to have a clear view of the business as a whole from the separate information of the various departments. A map is the only thing which can bring the important facts before the executive in their proper relationship.

The maps employed for this purpose are drawn on the scale of four inches equals one mile. A map on this scale shows a section, four inches square, a one-hundred and sixty-acre farm, as two inches square; and a forty-acre piece, as one inch square. These maps show section lines and numbers, lots and lot numbers, roads, streams, railroads and property lines. The landowners' names and the acreages owned are lettered in the centers of the pieces. All the wells which have ever been drilled are marked with small circles, and additional markings indicate a gas or oil well, or both, or an abandoned well or a dry hole. Then to the upper right of the well marking, in lettering as small as can be read and printed properly, is given the cubic feet gas production of the well the first twenty-four hours, or the oil pro-

duction in barrels, and the rock stratum from which the production is obtained. If the well belongs to a competitor, it is not always possible to obtain all this information, and, of course, it must be omitted. If it is one of the company's own wells, this information is always given, and often a complete list of the rock formation drilled through, and the depths at which they were struck is given. Then at the lower right of the well symbol is given the number of the well in the order in which the wells were drilled on the lease. When you consider that there may be several wells marked within a space of a square inch on the map, you can realize the task with which the draftsman is confronted. These maps are drawn so as to show one township, which makes them average between two and two and one-half feet square.

The items mentioned above are all drawn on the tracing cloth in black ink. A negative is printed, having transparent lines on a black background. Then a blue print is made on cloth from the negative, which gives a blue line on a white background. These prints are folded into convenient sizes, and are titled and numbered and filed away, so that they can be obtained when needed. One of each township is kept up to date by marking in red ink all new wells and changes of farm property lines and ownership. The leases of the company and its larger competitors are marked by coloring the pieces with distinctive colored crayons. The companies owning leases have, in addition to the color, the lease number in red ink under the farm owner's name. The pipe lines of the different companies are marked in various colored inks. The leases and pipe lines are never marked on the tracings because they are not at all permanent features, but are constantly changing. The additional copies of the maps, besides the ones which are kept up to date, are checked up from time to time and the proper changes made. After certain periods of time, when the number of changes has become excessive, the tracing is corrected, and a new set of prints replaces the old.

Often one complete set of prints is pasted together and placed on rollers, so that county maps, or as much of a state as can be placed side by side in the length of the room available, may be shown together. These large maps are kept up to date, and thus when there is a meeting of the department heads, or of the board of directors, they can see at a glance the progress being made by themselves, and their competitors and can determine future policies.

This is not the only use of the maps, however. When it is decided to lease land in a certain county, the first thing is an order to the map de-

(Continued on Page 34)

THE RELATION OF MAPS TO THE OIL AND
GAS INDUSTRY

(Continued from Page 8)

partment for maps of the townships in question. These are sent out as a guide for the work of the men in the field. They make note of all farms which have changed ownership, and all farms which they find leased to competitors and send this information in along with the new leases they have taken. These changes are then made on the maps.

As previously mentioned, the depths of the wells and the depths of the various rock formation through which they are drilled are recorded on the maps, and thus it is possible to trace out the slope of the formations and predict chances for getting producing wells in various locations. The ground water forces oil and gas to the domes and ridges in a porous stratum of rock covered by an impervious rock. The geologist locates these points with the aid of the information obtained from all the producing wells and the dry holes which have been drilled, and the locations for new wells are chosen accordingly.

When an engineer is sent out to mark out these locations, he is given a map to direct him in his work and make sure that he gets it on the right farm, which is somewhat of a problem in strange country.

As the location of the gas and oil supply changes, due to the exhaustion of wells and the drilling of new ones, it becomes necessary to lay new pipe lines. The points to be connected are determined on the map and a line is drawn between them. This shows the farms which must be crossed and provides the basis for buying the privilege of a right of way for the line.

The larger the corporation, the greater is the necessity of maps, and the better maps it has the more valuable they prove to be. A gas or oil company without its maps would be like a person without eyes.
