THE HISTORY OF GEOPHYSICAL PROSPECTING, Volume One
Chapter 50 - Letter from Geussenhainer to Sweet

Hannover, Germany
October 27, 1964

Mr. George Elliott Sweet
President
Sweet Geophysical Company
502 Georgina Avenue
Santa Monica, California

Dear Mr. Sweet:

I hope you arrived at horne safely after an interesting trip to Europe and that you have collected sufficient material to start your "History of Exploration Geophysics.“

I promised to assist you with information about the pioneer time of the practical geophysical work, especially as far as it concerns seismic investigations, executed to the benefit of the oil and mining industry. Furthermore, I am able to provide you with dates of the life of Professor Mintrop, the inventor of the practical seismic methode.

I met Mintrop for the first time immediately after the first world war, in March, 1919, in the Geophysical Institute of the German University Goettingen (founded in the year 1737). Mintrop and I were pupils of the famous geophysicist, especially seismologist, Professor Emil Wiechert (1861- 1928). Mintrop finished in the year 1911 and I graduated ten years later from the same Institute. While I still studied, Mintrop was teacher at the Mining School in Bochum, near Essen (Ruhr district). During the years 1919-1921, Mintrop visited Professor Wiechert and me as often as possible in Goettingen. On these occasions Mintrop discussed with us his plans to use artificial earthquakes caused by the blasting of dynamite. The propagation of the shock waves was registered with portable seismographs similar to those which he had used during the war, in order to locate inimical guns. Since 1919 Mintrop made seismic investigations in the environs of Hamburg and in the salt dome region near Hannover. Encouraged through his first successes he established the geophysical company "Seismos" in Hannover for the purpose to search oil, ore, coal and other valuable minerals for the industry.

The foundation of the Seismos Company took place on April 4, 1921. At this time, I was engaged with my studies for the government examination as teacher on a first grade classical school. So I could assist Mintrop in his practical work only from time to time during the year 1921. In November, 1921, I made seismic investigations together with Mintrop's technical assistant, Mr. Paul Liebrecht, below ground in the coal mine of Loebbejuen, near Halle, middle Germany. It was rather difficult to blast below ground and to register the "artificial earthquake" with the still crude instruments of those days, but I liked the pioneer work with its adventures. I concluded my studies at the University of Goettingen on December 14, 1921, with the government examination. I became a member of Mintrop's Seismos Company on January 1, 1922. At that time Seismos consisted only of one chief (Mintrop), two geophysicists (Almsted, who had resigned by the summer of 1922, and the writer) and three technical assistants. Only one of the technical assistants and I, myself, are still alive. So I know the practical seismic work as pioneer from its first beginning, and I suppose, I can give you the information you need about Mintrop and his invention.

On June 1, 1953, Mintrop had this to say in a letter to me:

> 'You were one of my oldest and most meritorious associates of the society (Seismos). Your optimistic attitude about the possibilities of the development of the artificial earthquake method was encouraging. Your sacrificing activity in the backwoods of Mexico, in the hot prairies of Texas, in the wild mountains of Iran and Iraq and in numerous other places, was responsible for building up Seismos. Only men who have witnessed and suffered the immense difficulties and the extraordinary inimical attitude against the new prospecting method can judge the situation at that time.'

The number of employees of the Seismos increased in the year 1922. Toward the end of the year the first commercial crew to investigate a mining property was sent out under the leadership of Dr. Roepke to a district in northern Sweden, while almost at the same time Dr. Muegge and Dr. Haubold started work in a coal district of southeastern Holland. The activities of this second party called the existence of Seismos and of the Mintrop method to the attention of the Royal Dutch Shell.

The first overseas expedition of Seismos embarked on March 27, 1923, bound by steamer for Tampico, Mexico. The Party Chief of the petroleum seismic party was Dr. O. Geussenhainer, the Computor a mining surveyor named Rellensmann and the technical assistant, Mr. Liebrecht. The whole technical equipment consisted of one Mintrop seismograph, one photographic recorder and one observation tent. The whole seismic outfit weighed less than the personal luggage of the three Seismos men. The difficult prospecting work for Shell was carried out in the Mexican jungle between Veracruz and Tampico.

A few months later, Mintrop and two technical assistants, Mr. Weitershagen and Mr. Schwiening, took a similar set of equiprnent to Oklahoma to commenee operations for the Marland Oil Company. The beginning of this work in the Mid Continent area was in July, 1923.

In April, 1924, Mintrop called Geussenhainer from Mexico to Texas, in order to organize the seismic seareh for salt domes in the Gulf Coast region for the Gulf Production Company. During my stay in Texas and Louisiana I worked under the direction of Mr. L. P. Garrett, Mr. Paul Weaver and Mr. W. F. Henniger. The Gulf representative who gave us such fine help in an advisory capacity was Mr. E. G. Thompson.

The Gulf Production Company sent us out to two well known salt domes to do our test shooting. The work on Blue Ridge Dome and on Boling Dome took several weeks. At the conclusion of this experimental part of our seismic survey, the crew was directed to investigate the northern portion of the Moore Ranch in Fort Bend County, Texas. Our party still had two of the original three technical men who had started operations in Mexico just a year earlier; Geussenhainer and Liebrecht. Mr. Roeltgen had replaced Mr. Rellensmann as the surveyor. The Gulf people believed there was a salt dome associated with a conspicuous bend in the Brazos River and two unsuceessful tests had been drilled on this theory. But all of these facts were kept secret; we were merely told to shoot such and such lines and see what we recorded.

Sinee the first shots showed nothing and were completely normal, I took the responsibility of moving our seismic equipment about five miles to the southwest. The first shooting in this new area indicated the presence of high velocity material. More detailed work in this region convinced me that a salt uplift must be there. The typical and characteristic symptoms of a salt dome could be seen on the seismograms. Before reporting to the Gulf Company concerning the find, I wired Dr. Mintrop in New York City. He caught the next train to Houston. This was late in June, 1924. After Mintrop's arrival, additional seismic profiles were shot in all directions. All the shooting told the same story; all of it confirmed my original analysis and properly established the location and extent of the salt dome. On September 20, 1924, Mintrop and Geussenhainer fixed a point "K" on the map of the area under investigation and proposed to Gulf that they drill a test well exactly at that spot. The geologists of the Gulf Production Company were somewhat skeptical about the location "K" because it did not coincide with their preconceived ideas of "creekology." Nevertheless, they decided that the only way to test the Mintrop method was to drill where we said to drill and with some misgivings they gave orders to that effect.

My English was not so good at the time but I could tell that there were a number of doubters in the Gulf organization. There was a lot of laughing and joking about the "German well location." Mr. Paul Weaver's command of the German language was good and he was fond of joking with me in my native tongue. Once he said:

> "Doctor, if this well really and truly hits the caprock, you know what we are going to call the well? 'Peachtree #1 of Orchard.'"

The official designation of the test well was Moore #1. On November 19, 1924, the Moore well hit caprock at a depth of 350 feet, almost the exact depth we had predicted. In December the Moore well came in as an oil producer. Originally the oilfield that developed there was referred to as the Moore Field but in time the salt dome and the oil field at the salt dome were called Orchard after the nearby village of Orchard. No one joked anymore about 'Peachtree #1.' The news spread like a prairie fire and caused the upmost in excitement in petroleum circles. Orchard Dome was the first salt dome found in the United States by the seismograph methode. Only the Nash Dome (discovered by torsion balance) of the Rycade had preceded Orchard as a geophysical discovery.

Very truly yours,
Otto Geussenhainer