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EVALUATION OF SUBSURFACE PRESSURES OBTAINED FROM DRILL STEM TESTING[1]

by
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Abstract

This paper dealt with the data produced by bottom hole pressure recorders in drill stem testing. Fourteen examples of very accurate subsurface pressure versus time charts and their interpretations were given, Basic points of various types of testing charts, as well as unusual cases, were discussed. The importance of accuracy of the recording instruments and in the handling of the records so produced was carefully pointed out.

A steadily increasing interest in the evaluation of drill stem testing pressure charts has become prevalent throughout the Oil Industry. Proper interpretation of this data is highly important to the proper use of drill stem testing.

It should be understood that careful consideration must be given to *all* factors involved in the planning of the test in order to obtain the desired results. These in part include:

1. The removal of all tight spots in the hole.
2. Removal of all drilled cuttings and/or carvings from the well bore.
3. Proper conditioning of the drilling fluid for the testing operation.
4. Careful selection of the proposed packer seat.
5. Clear cut instructions to the service company's representative in order for them to supply the correct tool assemblies and necessary instruments to obtain the most accurate record possible of the entire testing operation.

This paper dealt with the subsurface recordings obtained on a group of selected drill stem test charts which indicate significant conditions prevailing during the test. These charts were recorded by the B. T. (Bourdon Tube) Pressure Recording Device which is a large size of parallel design to the Amerada RPG-3 Instrument. The charts produced with this instrument are read with a micrometer chart reader whose error is plus or minus one thousandth of an inch. The deflection readings are then converted to pressure from individual calibration curves which are drawn on 10x10 cross section paper, the vertical scale having a value of .100″ per inch and horizontal scale equal to 100 PSI per inch. With this reading technique extreme accuracy is obtained.

The accuracy of the recording gage is maintained by re-calibration on a 60-day interval using a dead weight tester with a maximum error of .1 of 1% based on a "G" factor of 980.076 CM/SEC^2 at an operating temperature of 68° F ± 10°. The instruments are calibrated at three previously selected temperatures in an oil bath with temperature control of ± 2° F. This extreme care and control during calibration insures instruments of the highest rated accuracy and sensitivity to the industry for drill stem testing.

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[2] Formation Testing Service Halliburton Oil Well Cementing Co

[1] This article in its entirety was published in World Oil, Feb. 1952.

As can be seen by the relatively few charts which were discussed, it is necessary to have thorough knowledge of the basic tools and their auxiliary assemblies. Also, extreme care should be taken in preparation of the well prior to testing. The instruments used must be the best available both in accuracy and sensitivity. The chart reproductions must be an exact duplication of the original without falsification or retouching. With all the above adhered to, very intelligent study must be made of the charts, the recovery and the entire available data in order to obtain the full value of each drill stem test.

LIMITATIONS OF METHODS OF DRILLING AND TESTING WILDCAT WELLS

by
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Abstract

Current drilling methods are not well adapted to the detection and reliable evaluation of oil-producing formations. The very principle of rotary drilling requires the sealing off of permeable horizons, and it is difficult and sometimes impossible to restore their permeability. Electric logs are poor indicators of saturation, and mudloggers are inaccurate and not always reliable. Cores are normally flushed and do not give true values of oil content. Even drill stem tests do not provide a good estimate of the barrels per day a formation will produce. If we are going to the expense of opening a hole into a formation, we ought to be able to get a positive test and not have to rely on interpretations of electric log and core data to tell whether it contains commercial oil. Development of new tools should be directed not solely towards faster, or even cheaper drilling, but towards those methods that result in the best oil wells.

BLACK HILLS FIELD TRIP

by
J. V. HOWELL[2]

Abstract

Mr. Howell's talk included a comparison of a present day field trip to the Black Hills with those of the nineteenth century. Attendance at the Third Annual Field Conference of the Billings Geological Society was approximately 340. Trips in 1853-78 led by F. V. Hayden to the same region usually included from 60-80 men. Many pictures of the recent field trip and old pictures from the days of Hayden were used as illustrations.

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