

# Use of antennae standing wave coefficient measurements for determining an anisotropic medium over hydrocarbons

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The paper presents a study of the standing wave coefficient of antennas for detecting an anisotropic medium over hydrocarbons. Experimental studies were carried out on real hydrocarbon fields. The results of conducted tests confirmed the increase in accuracy of hydrocarbon deposit boundaries determination on the basis of antennae standing wave ratio measurements by 20 - 30 %. The obtained results can be used in prospecting geophysics for increasing the accuracy of determining boundaries of deposits by measuring antennae standing waves ratio in a wide range of frequencies and for increasing resolving power of deposit positioning by measuring standing waves ratio of two or more antennas.

Topics

**Geophysics, Telecommunications engineering, Organic compounds**

<https://doi.org/10.1063/5.0199953>

## REFERENCES

1.D.V. Gololobov, Interaction of electromagnetic waves and hydrocarbon deposits (Minsk, Bestprint, 2009).

Google Scholar

2.V.N. Moskvichew, Eng. and Electr. 18, 91–96 (1989).

Google Scholar

3.J. Fielding, Geophys. Res. Lett 25, 3215 (1998).<https://doi.org/10.1029/98GL52260>

Google ScholarCrossref

4.V.N. Moskvichew, Interaction of electromagnetic waves (EMW) with anisotropic inclusion in communication line 9-th Microw, Conf. NICON – 91, 20-22 May 1991, Rydzyna (1991), pp. 240–244.

Google Scholar

5.V.F. Yanushkevich, D.A. Dauhiala, A.L. Adamovich, S.N. Abramenska and S.V. Kalintsau, Journal of Physics: Conference Series 2373(5), 052016 (2022).

Google Scholar

6.V.F. Yanushkevich, D.A. Dauhiala, T.V. Maladzechkina, S.V. Kalintsau and V.A. Bogush, Journal of Physics: Conference Series 2373(5), 052026 (2022).

Google Scholar

7.K.M. Strack and S. Davydycheva, New Approaches in Engineering Research 2, 69–79 (2021).<https://doi.org/10.9734/bpi/naer/v2/8202D>

Google ScholarCrossref

8.K.M. Strack and K. Vozoff, Geophys. Prospect 44, 71–74 (1996).<https://doi.org/10.1111/j.1365-2478.1996.tb00188.x>

Google ScholarCrossref

9.R. Streich, Survey in geophysics 37, 47–80 (2016).<https://doi.org/10.1007/s10712-015-9336-0>

Google ScholarCrossref

10.C.H. Henke, M. Krieger, K. Strack and A. Zerilli, Interpretatio 8(4), 15–24 (2020).<https://doi.org/10.1190/INT-2020-0026.1>

Google ScholarCrossref

11.S.L. Helwig, W. Wood and B. Gloux, *Geophys. Prospect* 67(6), 1582–1594 (2019).<https://doi.org/10.1111/1365-2478.12771>

Google ScholarCrossref

12.I.A. Geldmacher and K. Strack, *GRC Transactions* 41, 1649–1658 (2017).

Google Scholar

13.T. Holten, X. Luo, G. Naevdal and S.L. Helwig, Time lapse CSEM reservoir monitoring of the Norne field with vertical dipoles, *SEG Technical Program Expanded Abstracts*, Dallas, pp. 971–975 (2016).

Google Scholar

14.B. Arkoprovo, *Advances in Modeling and Interpretation in Near Surface Geophysics* (Springer, 2020).

Google Scholar

15.K.M. Strack, *Survey in geophysics* 35, 157–177 (2014).<https://doi.org/10.1007/s10712-013-9237-z>

Google ScholarCrossref

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