

21. LOW RESIDUAL GAS CONTENTS OF FOUR LEG 21 CANNED-SEDIMENT SAMPLES

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INTRODUCTION

Four canned mud samples from Leg 21 were analyzed for residual hydrocarbon gas contents as part of our continuing program of organic geochemical analyses. Organic carbon and gaseous hydrocarbons were determined by the same procedures reported for Leg 18 and Leg 19 samples (McIver, 1973a; 1973b). Results are tabulated in Table 1 and are compared with results from analyses on similar samples from Leg 18 and Leg 19 in Figures 1 and 2. Figure 1 shows the absolute residual gas contents; Figure 2 shows the gas content as a function of organic carbon.

DISCUSSION

Residual gas contents of these four samples are very low; they are at the low range of all samples analyzed to date. The small contents, 110 to 230 parts per million of total hydrocarbon, by volume of sediment as received, may be considered just a trace and are so low that any estimate of the breakdown by carbon number (i.e., methane, ethane, propane, and butane) would be meaningless.

The gas contents as a function of organic carbon contents for the samples are also quite low. Apparently, these muds are oxidized, so the organic matter they contain, while not terribly low as deep-sea samples go, is just not hydrocarbon-prone. Perhaps this is because the sediments are truly deep-sea sediments without any influence of continental margins, i.e., organic matter indirectly derived from land-sourced or upwelling nutrients. Whatever the case, these four samples are certainly gas-lean.

TABLE 1
Residual Gas Contents of Leg 21 Sediment Samples

Site	Core No.	Core Section	Depth Below Sea Floor (m)	Age	Organic Carbon (%)	Hydrocarbon Gas (ppm by Volume)
204	5 ^a	4-0, 3-150 cm	99	Tertiary (Eocene or younger)	0.29	180
204	5 ^a	4-0, 3-150 cm	99	Tertiary (Eocene or younger)	0.40	230
210	5 ^b	1-0	36	Late Pleistocene	0.12	130
210	5 ^b	2-0	38	Late Pleistocene	0.14	110

^aDescribed as graded cycles in interbeds of light green-gray to dark green-gray nanno ooze.

^bDescribed as iron oxide clay—dark reddish brown, composed of clay minerals and iron oxide—some glass shard ash and some authigenic carbonate layers.

REFERENCES

- McIver, R. D., 1973a. Hydrocarbon gases from canned core samples, Sites 174A, 176, and 180. *In* Kulm, L. D., von Huene, R., et al., Initial Reports of the Deep Sea Drilling Project, Volume XVIII. Washington (U. S. Government Printing Office), in press.
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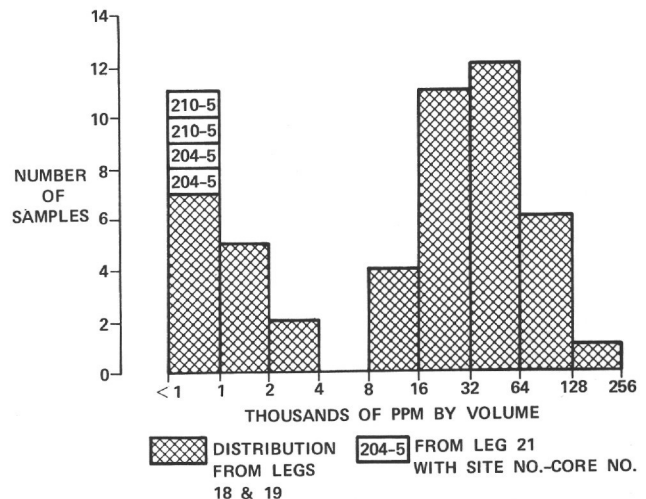


Figure 1. Range of residual hydrocarbon gas contents of canned muds, DSDP Legs 21, 18, and 19.

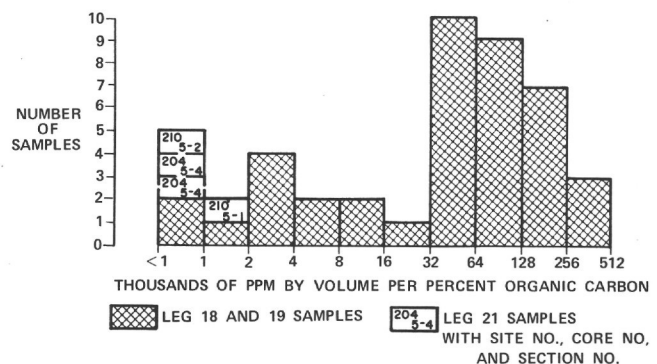


Figure 2. Distribution of residual hydrocarbon gas contents as a function of organic carbon contents.