

## GEOLOGICAL NOTES

### CLASSIFICATION OF FORMATION WATERS BASED ON SODIUM CHLORIDE CONTENT<sup>1</sup>

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The terms fresh water, brackish water, salty water, and brine are often used by petroleum geologists and engineers with reference to formation waters. As far as the writer has been able to determine, no adequate definitions exist for these terms as used in the petroleum industry.

Commonly this terminology refers to chloride or sodium chloride content, which is usually the major constituent of formation waters. Since in many cases only chloride determinations, frequently reported as sodium chloride, have been made, it seems that a salinity classification of waters found in sediments should be based on sodium chloride content. The following classification is therefore proposed.

0 to	1,000 ppm. NaCl—Fresh water
1,000 to	10,000 ppm. NaCl—Brackish water
10,000 to	100,000 ppm. NaCl—Salty water
over 100,000	ppm. NaCl—Brine

The fresh-water group includes those waters containing a maximum of approximately three times the sodium chloride content generally accepted as the limit for drinking water. The division between brackish water and salty water is placed at approximately one-third of the sodium chloride content of sea water. The division between salty water and brine is approximately three times the sodium chloride content of sea water or one-third of the salt content of a saturated solution of sodium chloride at normal temperature and pressure.

For some purposes it may be desirable further to divide the fresh-water group. In that case the logarithmic breakdown here proposed should, if practical, be continued.

<sup>1</sup> Manuscript received, June 30, 1958.

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### BURRO UPLIFT, NORTHEASTERN LIMIT OF SEDIMENTARY BASIN OF SOUTHWESTERN NEW MEXICO AND SOUTHEASTERN ARIZONA<sup>1</sup>

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#### INTRODUCTION

The relatively thick section of sedimentary rocks in parts of southwestern New Mexico and southeastern Arizona is receiving increasing attention from the

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