Samples of "sandstone" from near the site of the upper Rio Blanco nuclear explosion were heated in the laboratory at temperatures between 600 and 900°C. The composition and amount of noncondensable (dry) gas released were measured and compared to the amount and composition of gas found underground following the explosion.

The gas released from the rock heated in the laboratory contained ~80% CO_2 and 10% H_2; the balance was CO and CH_4. With increasing temperatures, the amounts of released CO_2, CO, and H_2 increased. The composition of gas released by heating Rio Blanco rock in the laboratory is similar to the composition of gas found after the nuclear explosion except that it contains less natural gas (CH_4, C_2H_6. . .).

The amount of noncondensable gas released by heating the rock increases from ~0.1 mole/kg of rock at 600°C to 0.9 mole/kg at 900°C. Over 90% of the volatile components of the rock are released in <10 h at 900°C. A comparison of the amount of gas released by heating rock in the laboratory to the amount of gas released by the heat of the Rio Blanco nuclear explosion suggests that the explosion released the volatile material from about 0.42 mg of rock per joule of explosive energy (1700-1800 tonnes/kt).

WEED, H. C., Duba, A., Piwinskii, A. J., and Santor, M. L., The electrical conductivity of sandstones, limestone and granite, Eos Trans. AGU 56 976 (1975). [UCRL-77308, Abstract]

The electrical conductivity (σ) of cylindrical cores of Westerly granite; Nugget, St. Peter, and Kayenta sandstones; and Indiana limestone having length/diameter from 2.00 to 0.25 was measured under ambient comditions *in vacuo*, in air, and after saturation in distilled water, tap water, and 0.1*M* NaCl solution. The three-electrode technique with a guard ring and the two-electrode technique without a guard ring were used in the frequency (ν) range from 50 Hz to 10 kHz. For each rock studied, σ(0.1*M* NaCl) > σ (tap water) > σ (air) > σ (*in vacuo*). Specimen diameter and ν influence the σ of all rocks, especially those measured *in vacuo*. Sample size affects the σ of rocks saturated in 0.1*M* NaCl solution least, and within this solution a linear relationship exists between log σ and log volume porosity (ϕ), commonly termed Archie's Law. Measurements of samples saturated in water and 0.1*M* NaCl solution using a guard ring are not appreciably different from those obtained without a guard ring. No simple correlation was found between log σ and log ϕ for rocks saturated in tap or distilled water. If thus appears that