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FUEL RESEARCH INSTITUTE OF SOUTH AFRICA.

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TECHNICAL MEMORANDUM NO. 40 OF 1967.

NOTES ON METHANE PRESSURE MEASUREMENTS
IN A SOUTH AFRICAN COLLIERY.

PROGRESS REPORT.

By:

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FUEL RESEARCH INSTITUTE OF SOUTH AFRICA.

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NOTES ON METHANE PRESSURE MEASUREMENTS
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Some years ago preliminary work was undertaken to develop a device by means of which the methane pressure in a coal seam could be measured.

During the past year this work was again taken up and developed to a stage where actual measurements in a colliery were undertaken.

The pressure measuring equipment consists of a long, $\frac{3}{8}$ " diameter copper tube, to one end of which a pressure gauge can be fitted.

Over the other end a rubber stopper is slipped to a position about 12" from the end of the tube. The tube is then inserted into a hole drilled in the seam and sealed by a chemical grout. After allowing time for the grout to set a pressure gauge is fitted to the protruding end of the copper tube.

The grout consists of one part by weight of a AM 9 chemical grout (manufactured American Cyanamid Company) and two parts by weight of Portland cement.

The setting time of the grout can be accurately controlled by the amount of catalyst added to the mixture. Before setting the mixture has a low viscosity and can thus be easily poured into the hole.

Laboratory tests have shown that the grout forms a very strong bond with the wall of the hole and with the tubing. For instance, a hole was drilled in a large block of coal (about 2' x 2') and a copper tube fixed into it. The seal withstood a pressure of 100 lbs. per square inch. Over a period of a week only a slight pressure drop was

observed

observed which could have been due to gas escaping along cracks and fissures in the coal.

The drilling of the test holes, in the colliery selected (Durban Navigation Colliery) was undertaken by the Management. To date three tests were made.

In section 25 a 10 ft. hole, sloping downwards at an angle of 10° was drilled and fitted with a manometer.

Over a period of 14 days no pressure was observed in this hole.

A second hole in section 25, also 10 ft. deep, indicated a positive flow of gas from the copper tubing but when the gauge was fitted no pressure rise was observed.

In section 50 a deep hole (diamond drill) was available for a test. Although this hole was drilled about six months ago a fairly strong flow of methane was issuing from it. A 20 ft. copper tube was sealed into the hole (only the first 8 ft. of hole could be grouted). After fixing the tube into position gas was emitted from the tube with a sharp hissing sound. When the grout had set a manometer was fitted on to the tube and within a minute a pressure of 3 lbs. per square inch was recorded, but gas emission from another spot near the floor became audible.

These tests clearly indicate that although the holes can be successfully sealed pressure measurements depend mainly on the physical condition of the strata immediately surrounding the test hole.

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PRETORIA
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