BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

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TESTING MANHOLE ATMOSPHERE SURVEYS FOR OXYGEN DEFICIENCY

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1. General

1.01 This is a new section which describes the method of making routine tests with the Suction Gas Indicator to identify and mark manholes that are deficient in oxygen.

1.02 Surveys are made in areas where the Suction Gas Indicator is not employed to make routine tests for gases in manholes. The surveys should be made during the summer months at which time conditions of oxygen deficiency are most likely to be found.

1.03 Oxygen deficiency usually results from the exhaustion or displacement of oxygen in the manhole due to the accumulation of carbon dioxide, or other gases that may be generated by decaying vegetation or animal matter in the surrounding earth. Street paving or earth fill tends to obstruct the passage of these gases through the earth to the outer atmosphere and as a consequence they may discharge into the conduit structure and manholes.

2. TESTING PROCEDURE

2.01 **Test for Carbon Monoxide:** The manhole should first be tested with the Carbon Monoxide Detector. Coloring of the ampoule indicates the presence of either carbon monoxide or hydrogen sulphide. The presence of hydrogen sulphide can generally be recognized by its disagreeable odor which resembles that of rotten eggs and by its irritating effect on the eyes. If manufactured gas is present, the condition should be reported in accordance with local routine and cleared before testing with the Suction Gas Indicator. Generally, a period of about two weeks should elapse between the time the gas con-

dition is cleared and the manhole is tested with the Suction Gas Indicator, in order that the atmosphere in the manhole can assume a normal condition.

2.02 If the test then shows that the manhole is free of manufactured gas or a mixture of manufactured and natural gas, the workman should proceed with the test for oxygen deficiency.

2.03 **Test for Oxygen Deficiency:** The Suction Gas Indicator should be set up near the manhole and operated as described in the section covering this instrument. The sample of air should be taken from a point about one foot above the floor or surface of the water in the manhole.

2.04 A deficiency of oxygen is indicated by a lowering of the flame, the flame being extinguished when the proportion of oxygen in the mixture is 17 per cent or less (normal air contains about 21 per cent oxygen).

2.05 Manholes that are found to be deficient in oxygen should be marked with the appropriate warning sign.