attention to a potential problem likely to be associated with periods of atmospheric stagnation. The plant is located in the floor of an Appalachian valley. The local topography is characterized by parallel ridges rising from 400 to 1,000 feet above the valley floor. When meteorological forecasts are for conditions that might result in buildup of pollution levels in the vicinity of the plant, control plans provide for use of low-sulfur coal until the alert period is ended. Also, during such periods supplementary air monitoring is conducted.

While a number of alert periods have occurred since this procedure was initiated in 1954, at no time has significant buildup of pollution occurred.

It appears that for air pollution potential forecasts, powerplants should be viewed as a special case for which the meteorological criteria normally used may not be applicable. For example, general air stagnation conditions prevailed in the Kingston plant area for a 3-day period in the fall of 1964. TVA was alerted by the U.S. Weather Bureau at the beginning of the period and precautionary air pollution control measures were initiated. Autometers were checked at regular intervals. Special helicopter and mobile sampling were conducted during the 3-day period. Frequency and concentrations of SO_2 recorded at ground level were no higher than during normal atmospheric conditions. Under such conditions air pollution does build up in urban areas, as is evidenced by the abnormally high pollution levels which developed in large urban areas during a long period of air stagnation over much of the Eastern United States in November and December 1962.

Operational controls:

The limited special use of low-sulfur coal as mentioned previously is the only operational control that TVA has used so far for air pollution control at its plants. However, there are a number of other potentially useful operational controls which might be used singly or in combination to reduce emissions, enhance dispersion, or both, during periods when ground level concentrations of stack emissions might be expected to exceed desired control levels Among these are load reduction, chemical removal of SO_2 by limestone injection, and raising the temperature of stack gases to increase plume rise. In addition to the obvious operational problems and costs involved in application of measures such as these, there is the problem of forecasting air pollution potential far enough in advance to permit effective application of the controls and accurately enough to limit their use so far as possible to periods when they actually are needed. Intensive dispersion studies at the Paradise plant are expected to lead to better use of meteorological and operational data in predicting significant ground concentrations. In addition, the studies are expected to result in further improvement in formulas for dispersion of emissions from large powerplants.

Research on removal of SO_2 from powerplant stack gases:

As Mr. Wagner mentioned, early in its air pollution studies TVA directed attention to possible processes for removal of SO_2 from powerplant stack gases. TVA's interest in development of a practical process was twofold: for use, if needed, as an air pollution control measure, and also as a possible source of sulfur for fertilizer production and other purposes.