OBJECTIVES AND APPROACH

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The basic objectives of the Ozone Specialists Workshop were to determine present means of coping with the problem of ozone contamination in aircraft cabins and to identify R&D efforts needed to provide solutions. The approach used to pursue these objectives was to form three topical panels. One panel concentrated on obtaining a better definition of the problem. Two other panels assessed solutions.

A thorough definition of the problem can best be derived from direct in-flight measurements of ozone concentrations inside and outside airliners in their normal operations. The panel set up to look into this area was identified as the Panel on In-flight Measurements. Ambient or outside ozone measurements would contribute to establishing the characteristics of ozone concentrations as encountered by airline aircraft. Additional simultaneous measurements of ozone inside the aircraft would determine the normal attenuation of ambient ozone by cabin air systems in different types of aircraft.

Ozone encounter characteristics include the ozone concentrations, variability, duration, frequency, and relation to season, latitude, and synoptic meteorology. Attenuation of ozone by cabin air systems has been determined by NASA on the B 747-100, B 747-SP, and the Gates Learjet. On the two types of B 747's where measurements were made, a large variability of ozone losses in the cabin air were found. This would infer that other types of aircraft would be different and need to be determined to clearly identify the problem for the many different types of aircraft in the airline fleet.

Solutions to the cabin ozone problem were discussed under two areas: (1) flight planning to avoid high ozone concentrations, and (2) ozone destruction techniques installed in the cabin air systems. The two panels were organized under these titles. Flight planning may be an interim procedure until ozone destruction hardware can be

made operational, or as an established procedure used on air routes where excessive ozone may be only a rarity. Flight planning will need to have basic guidelines as well as a better understanding of ozone concentration and corresponding meteorological data along air routes for preflight forecasting. Flight planning could also include possible establishment of in-flight procedures if high ozone is encountered. Ozone destruction techniques are a direct solution. Considerations must be given to size, weight, cost, and maintainability. Optimum designs need an understanding of the basic technology for the mechanism of destroying ozone. Since ozone can be destroyed by several means, screening tests on materials and processes to determine effectiveness, life, and possible configurations would be appropriate. A good candidate technique would require a representative aircraft installation and subsequent flight demonstration to prove performance.

The results of the Workshop are in the form of recommendations for research and development effort to better define and solve the cabin ozone problem. The Workshop also provided an up-to-date assessment of the problem presented in several overview papers. The recommendations and assessment will help guide NASA and others in determining how their capabilities may be applied in reaching satisfactory solutions to the overall problem.