Conclusions , and Suggestions for Future Free Flight Work.

In all., the tests ware remarkably successful. The first two "Crude" models evaluated the test system as a whole, and while on the third "crude" model the yaw impulse mechanism failed to operate, this malfunction was remedied on the fourth model, on which a large amount of telemetery was tested.

The three "Drag" models provided all the data required to evaluate supersonic airframe drag, and in addition served as a preliminary and mainly qualitative assessment of the C-105 dynamic stability.

Drag was slightly hi-her than previously estimated. The benefit from the two types of "Area Rule" modifications to the fuselage contours, along with other slight configuration changes may be seen between Fig. 22 and Figs. 23, 24.

The first seven firings were achieved with 100% successful launch, boost, separation and model free flight, a record which compares very favourably with that of any other free flight programme.

From the subsequent test of models 8 and 9 it was found that the disturbances in pitch and yaw from the divergent motion of models 6 caused only slight increase in drag. However, in future free flight tests the effect on drag of such motion may be more pronounced, making it all the more important to eliminute such instability, using tools such as the analog computer or the ballistic range.

The present series of drag model tests provided the supersonic modal drag with reasonable accuracy, which was the requirement. To obtain good transonic and subsonic drag it is essential to have a pitot-static pick up in a position of undisturbed flow on the modal, for as model speed decreases the percentage of tho true air speed which ths rather uncertain wind velocity represents, increases, and one has to rely on pitot-static tube for true model airspeed. There should also be an additional longitudinal accelerometer and an additonal pitot pressure trans-

drag acceleration at the low airspeeds. More complete recommendations will be made in Reference 72