

## STRUCTURAL RESONANCE TESTING OF A PROTOTYPE APT POWER CAR IN THE VEHICLES GROUP LABORATORY

The purpose of these tests was to identify and describe the structural modes of vibration of an Advanced Passenger Train power car body that are of interest to the vehicle design engineers. The vehicle tested was fully equipped and was sitting on its usual suspension, except that the secondary lateral and secondary yaw dampers were disconnected for most of the tests.

The tests were adequate to be able to define accurately the fundamental vertical and fundamental lateral bending modes. However, above these frequencies modal information becomes more difficult to interpret.

This vehicle does not have a 'jelly mode', a mode lower in frequency than the first bending mode, the nature of which is associated with the roof and floor bending laterally in opposite phases. This observation is consistent with calculations and with the behaviour of other vehicles of similar structure. Other than for the fundamental frequency the calculations are at variance with the measured modes. In the main the calculated frequencies are higher than those measured.