

during the project will continue to be applicable for such a follow-up.

STATUS OF STUDIES

Each of the three principal study groups has refined their field study procedures and a comprehensive data collection program is now well underway.

Road User Costs Surveys

The User Costs Surveys Group has developed procedures that are generating vehicle operating-cost data from a wide variety of survey participants who are becoming increasingly cooperative. An average of over 6000 vehicle-months of data covering different items of user costs are in hand and ready to be processed. Detailed inventory information covering road way characteristics on over 12000 km of user surveys routes has been developed by two survey vehicles that have been operating continuously since the beginning of 1977.

All of the inventory data are validated on computer files, but only 20 percent of operating-cost data has passed preliminary processing and been completely validated for analysis. High priority has been placed on processing all existing data and establishing the exact disposition of participants in a newly established quantified version of the users surveys design factorial. In the future, highest priority will be given to filling identified gaps in this factorial and efforts will concentrate on developing information on those items that have the most impact on user costs.

Road User Costs and Traffic Experiments

This group has identified 13 required and nine additional desired experiments needed in developing a deterministic model to predict vehicle speeds and fuel consumption. This includes nine required speed studies with a nine-man crew, that are 44% complete, and four required fuel studies with a 19-man crew,

that are 74% complete. Preliminary equations developed from the fuel data are summarized below, and final relationships will be established in the near future, as each of the experiments is completed and data validated.

It was necessary to expand the driver-behavior studies because in November 1976 the Brazilian Government implemented a policy of strict enforcement of speed limits. This influenced operating speeds, and has confounded the data analysis requirements. Programming was missing to generate summary reports which would permit field-data screening to locate discrepancies and errors. A conceptual framework has been developed for a deterministic model to predict time and fuel consumption, while different traffic simulation programs are being examined, for use in explaining traffic-composition effects on speed.

A tight schedule has been planned for finishing the required traffic experiments. The fuel crews who are expected to complete their studies early in 1978 will then be diverted to help with traffic-behavior experiments.

Pavement and Maintenance Studies

This group has established 86 paved sections. They have completed at least one cycle of roughness, deflection and condition survey measures on every section and this measurement program is running smoothly. Material characterization on 21 sections is complete, while a material consultant is currently conducting tests on another 30 sections and a contract is pending on the remaining sections.

Axle-loading data has been collected on 30 of the sections and this program will continue. Traffic-classification information has been developed for only a limited number of test sections. However, in the future considerable assistance is expected from the DNER-DER agencies, so no problems are expected in completing this work.

The methodology for testing the unpaved roads sections

was defined on six test sections, while the more time-dependent paved sections were being located. The major work program on unpaved road began in July 1977 and 19 sections have now been located.

The measurement time cycles on the unpaved roads are relatively short, so there will be little problem collecting data to develop time relationships on these roads. We expect to cover 50 unpaved sections before the end of the study period.

An additional Maysmeter is needed to ensure continuous monitoring of roughness on the unpaved roads and this unit is currently being fabricated.

Our laboratory facilities are not adequate to handle the control testing work from two material consultants concurrently. We will need to use the assistance of the DER-DF laboratory which has been offered to complete this work.

A work schedule and the necessary resources to complete the pavement study objectives by November 1978 has been presented. However the time dependent nature of the pavement-maintenance studies indicates that the period of observation may be too short to produce meaningful results. This is particularly true for the maintenance studies where the monitoring period will be as little as nine months. Arrangements are being pursued for long-term monitoring.