
PUBLIC TRANSPORT CORPORATION

AUTOMATIC VEHICLE MONITORING SYSTEM

OPERATION

The Automatic Vehicle Monitoring (AVM) system utilises sophisticated computer and radio communications technology to enable efficient tram and bus fleet management and the provision of enhanced passenger and crew safety.

The AVM system locates buses and trams with pinpoint accuracy and instantaneously.

The AVM system consists of a Central Computer at Fleet Operation Centre (FOC) which performs data acquisition tasks and to process vehicle data as they are received from vehicles. The data is transmitted to and from the vehicles via a two-way data and voice radio network distributed throughout the metropolitan area.

The location signposts (low power radio transmitters), which are installed at schedule time-points along each route, provide basic location information to the transit vehicle. This information after processing by on-board AVM equipment in the vehicle, is transmitted to the FOC. The central computer then processes the information to determine the vehicle's schedule adherence (running early, on-time or late). The schedule adherence information is also transmitted back to the vehicle for display to the driver.

The central processor continuously updates the graphics display to show the status and location of all AVM vehicles in the fleet.

By assessing the location and status of vehicles, the control centre operator (CCO) can decide whether control tactics should be applied so that operational problems can be minimized or avoided.

The radio-communication capabilities of the AVM system allows the CCO to communicate directly with the vehicle driver and to issue public address announcements.

A key feature of the AVM system is its efficient emergency alarm system. Whenever a silent alarm switch (concealed) in a vehicle is activated by the driver, the emergency alarm will be relayed to the FOC within 10 seconds. The CCO can notify the Police, or any emergency services through direct phone links.

The AVM system also has the capability to process the transit operational data collected on a day to day basis. The processed data are available as management information reports which are used for revising schedules so that the frequency of on-time running can be maximized.

SYSTEM DIMENSION AND EXPANSION CAPABILITIES

Under AVM Stage 1, 200 Trams and 300 buses have been fitted with AVM vehicular equipment. The remaining vehicles are scheduled to be equipped in the second stage of the project. The total system capacity is for 2,000 vehicles incorporating approximately 10 data and 10 voice radio channels.

MAIN BENEFITS

Management information reports are generated and used for scheduling and rostering and for route and service planning purposes.

Enhances safety and security for crew and passengers through its efficient emergency alarm system.

Passenger service can be improved and efficiency of operation can be enhanced resulting from better schedule adherence and vehicle headway.

TECHNICAL DETAILS

System Type

Computer based radio-communication, command and control system which automatically determines the location and status of vehicles in a transit fleet.

Vehicular Equipment

- Mobile Data Unit
- Control Head
- Mobile Radio
- Public Address Amplifier
- Emergency alarm unit

Fleet Operation Centre (FOC)

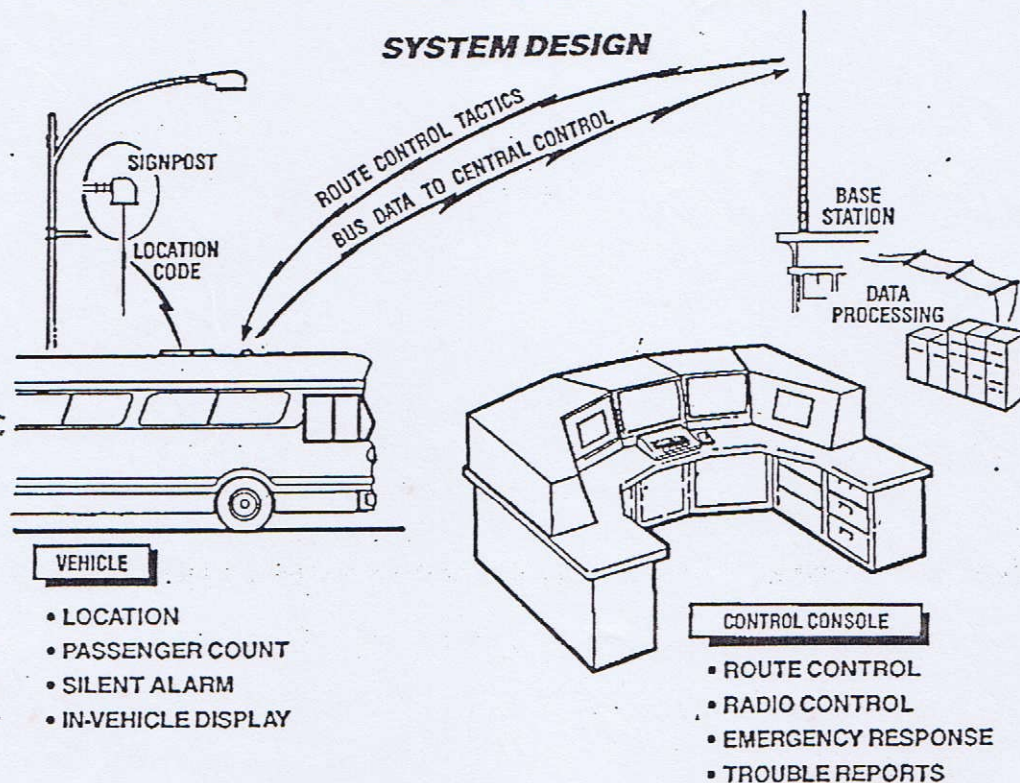
- Duplicated computer system
- Display processor system
- Graphic display system
- Alphanumeric and colour graphic display control consoles

Radio Network

Data and voice communications is provided via a UHF radio network from two city and two suburban radio base station sites (Stage One).

Signposts

250 low power radio transmitter signposts are installed with battery life approximately five years.



SYSTEM DESIGN

