

Abstracts of Papers

SYSTEM ASSURANCE FOR CURRENT AND FUTURE GUIDEWAY TRANSPORTATION SYSTEMS

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System assurance may be defined as that process by which any system is made safe, reliable, and easy to maintain. Although system safety is not considered explicitly in this paper, a properly designed, reliable, and maintainable system will certainly be a safe system. The paper describes a plan for improving the reliability and maintainability of transportation systems. The reliability budgets for system hardware are presented, and estimates are made of total system performance. An analysis of the relations between system life-cycle cost and system assurance show that the reliability of commercially available subsystems must be improved significantly before planned PRT systems can operate with acceptable assurance. Some recommendations are made as to how such improvements can be accomplished.

The paper deals with those factors that can be controlled by system planners and suppliers and that affect the service, comfort, public appeal, and economic feasibility of fully automated, guided transportation systems. Only fully automatic systems are considered, for those systems have been shown to be more economical during the design life than labor-intensive systems. A high degree of automation explains why the Lindenwold Line serving Philadelphia and its New Jersey suburbs is a profitable operation.

MAINTAINABILITY AND RELIABILITY CONSIDERATIONS FOR DUAL-MODE VEHICLES IN OFF-GUIDEWAY OPERATION

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Research

Analyses were made of the reliability and maintainability of current urban buses and were conducted in support of the Transbus program. The paper presents the results and discusses the off-guideway operating environment of dual-mode vehicles, particularly street conditions, traffic accidents, and vandalism. Design implications related to maintainability and reliability of dual-mode vehicles in off-guideway operation are presented.

INSPECTION AND DIAGNOSTIC TECHNIQUES FOR A DUAL-MODE TRANSPORTATION SYSTEM

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The potential catastrophic results of a public transportation failure require system inspection and diagnostic techniques of the highest order. These techniques must provide the required safety without significantly degrading reliability. A failure modes and effects analysis of the operational circuits of the dual-mode transportation system and of the inspection and diagnostic equipment is presented as a method for systematically analyzing the effects on system reliability and safety. The paper presents and discusses specific inspection and diagnostic schemes that should be considered during the development of a dual-mode transportation system.