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Rail Transit Consultants, Inc.
(A Kinki Sharyo Engineering Company)

Richard T. Lerew
RTC President

After over 20 years of working together, Rail Transit Consultants, Inc. (RTC) has joined the Kinki Sharyo family of companies. At the start of 2006, RTC became a subsidiary company of Kinki Sharyo (USA) Inc.

RTC is a specialty engineering company that is located in the Pittsburgh, Pennsylvania metropolitan area at 901 South Railroad Street, Penn, Pennsylvania. RTC is an organization of highly qualified professionals, with over 175 man years of experience in the rail rapid transit industry, covering a broad spectrum of advanced-technology disciplines. RTC currently employs seventeen individuals of which eleven are engineers. The members of the firm have extensive experience in rail transit vehicle and wayside signaling / train control technology that includes equipment invention, design, documentation, application, and testing.



Rail Transit Consultants, Inc. Offices
901 South Railroad Street, Penn PA, USA

Figure 1

RTC's engineers bring expertise in Systems Engineering, Rail Equipment Design, Technical Program Management, Reliability Maintainability Safety and Human Factors Engineering (RMSH), Qualification Testing, Development of Specialty Test Equipment, EMC, Documentation (preparation of O&M Manuals), Training Programs, and Tender / Proposal Preparation resources to Kinki Sharyo.

RTC has played major roles in all Kinki Sharyo US projects starting with Kinki Sharyo's first project, the MBTA Number 7 SRC project. RTC has played major systems engineering and technical program management roles in: DART, Hudson Bergen, VTA and the new DART SuperLRV project; and engineering support rolls in the Seattle Sound Transit and Phoenix Valley Metro Rail projects. RTC has also worked internationally on Kinki Sharyo projects for the Cairo Number 2 Line and is now supporting the Dubai Metro Project. Additionally, RTC

played a major engineering role in building locomotive hauled passenger railcars for The Alaska Railroad and the rebuild of Arrow III EMUs which operate at NJTransit.

When not supporting Kinki Sharyo projects, RTC provides services to carbuilders and equipment suppliers in the passenger rail vehicle industry. RTC's experience as systems integrators on many successful rail vehicle projects and its varied experience with the design and application of vehicle subsystems and communications, diagnostic and monitoring equipment allows RTC to propose unique solutions that benefit the carbuilder and bring efficiency to the design effort. RTC's ability to engineer, manage, and document the complex designs specified on new US and International car procurements is outstanding. The engineers have experience in all aspects of systems integration design and rail vehicle test.

As part of the systems design effort, RTC has designed the vehicle controls and integrated the subsystem equipment. Additionally, RTC's engineers have managed and performed the Systems Assurance (RMS) aspects of the programs. This approach leads to reduced cost associated with the efficiencies gained by the integrated effort. RTC has developed and managed the application of Communications, CCTV, Vehicle Health Monitoring and Diagnostic Systems on several programs utilizing the application of LonWorkstm network based equipment typical to US rail vehicles. RTC has managed and prepared / performed the manuals and training efforts on many rail vehicle procurements.

Management of vehicle qualification testing and the performance of "Type Tests" is another RTC specialty. RTC takes this process a step further and designs and builds automated test and analysis equipment, Vehicle Monitoring Unit (VMU), which is used to perform the vehicle qualification and acceptance testing. The VMU shown in Figure 2 is based on National Instruments Data Acquisition (DAQ) equipment and LabViewtm software. This equipment provides both the data acquisition and the tools to analyze the test data.

As part of the integrated design approach, RTC designs testability into the vehicle. By designing the vehicle control circuits to easily connect to the VMU, this facilitates the vehicle qualification test and routine vehicle acceptance test process by reducing the amount of test set-up time and the equipment required. Signals from Traction Control Equipment, Friction Brake Equipment, pressure transducers,

digital trainlines, and car control circuitry are input into the VMU for data acquisition during a test run. The signals are then stored on a standard notebook computer for analysis. By use of the LabViewtm software, the signals are analyzed to verify that the vehicle is operating within the specified operating requirements. For vehicle acceptance testing, this approach will allow for completion of the testing and preparation of the test report within a twenty-four hour period.



Vehicle Data Acquisition Test System
Figure 2

In addition to vehicle qualification and acceptance testing, the VMU can be equipped for frequency analysis. This provides the ability to perform sound level, ride quality and vibration testing with one test set.

Another RTC area of specialty is RMSH. Increasingly on US and International projects, RMSH requirements form a basis for ensuring that a Reliable, Maintainable and Safe vehicle is produced. This is done with bottoms up approach that starts at the earliest stages of the procurement and is integrated throughout the design and confirmed by testing. RTC performs these analyses manually and uses Relx Reliability Studio reliability analysis software tools. This automates the process of performing the Reliability Prediction Analysis, making Reliability Block Diagrams, performing the FMECA (Failure Modes Effects and Criticality Analysis), and developing complex Fault Tree Analysis (FTA) Models utilized in Safety Analysis Studies. Additionally, RTC monitors the subvendors throughout the RMSH and design process to verify that the subvendors meet all of the RMSH requirements for the project.

With the increasing globalization of the passenger rail transit industry and the developing international markets, the close cooperation of RTC personnel from the US with the Kinki Sharyo personnel will aid in the spread of technical knowledge throughout the entire organization and increase competitiveness for future projects.