



DEPARTMENT OF TRANSPORTATION

NEWS

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The U.S. Department of Transportation's State-of-the-Art Cars (SOAC), experimental urban transit rail cars representing the best in current technology, have completed in-service testing and will soon enter extended public service on Philadelphia's Lindenwold High Speed Line.

SOAC was developed by the Department of Transportation's Urban Mass Transportation Administration (UMTA) and contains the most innovative ideas in modern rail car design and technology. Revenue demonstrations of SOAC cars in five of the nation's rapid rail cities--New York, Chicago, Boston, Cleveland, and Philadelphia--have met overwhelming enthusiasm from both riders and operators.

In 1971, UMTA let a contract to the Boeing Vertol Company of Philadelphia to construct and demonstrate a rail car representative of the current state-of-the-art in urban rail transit. Besides demonstrating technological innovation, the cars were used in actual revenue service to provide passengers with an opportunity to sample equipment designed to make rail transit riding more attractive.

The unique two-car unit SOAC, built by the St. Louis Car Division of General Steel Industries, first underwent extensive testing at the Rail Transit Test Track at DOT's Transportation Test Center in Pueblo, Colorado.

In addition to standard acceptance tests, the SOAC vehicles underwent a series of engineering tests that produced a standard test procedure for future vehicle programs and a strong baseline set of data against which actual urban performance could be measured.

SOAC was then put into simulated revenue service at the Test Center, making "station stops" during 3,000 miles of operation around the 9-mile transit test track. Before leaving the Test Center, SOAC had logged nearly 20,000 miles of operation.

The cars then went to five cities for revenue testing, where they operated on the A, D, E, and N lines of the New York City Transit Authority; the Massachusetts Bay Transportation Authority's Red Line in Boston; the Cleveland Transit System's Airport Line; Chicago Transit's Skokie Swift Line; and the Southeastern Pennsylvania Transportation Authority's Broad Street Line in Philadelphia.

The cars operated 104 total revenue service days in the five cities, carrying 312,500 passengers over 19,595 miles. Passenger reaction to the SOAC cars was decidedly positive; spontaneous applause greeted the cars when they first entered Boston's Park Street Station. Philadelphia riders compared the trains with deluxe intercity trains to New York and operating crews said that driving the cars was like driving a luxury auto.

That a single vehicle type could operate in five different cities was a feat in itself. The SOAC cars were equipped with a variable adjustment to accommodate the varying platform heights in the different cities. Removable threshold plates filled the gaps between cars and platforms where necessary.

The sleek cars include large windows and carpeting throughout. One car of the two-car unit features a low density interior that can accommodate 62 seated passengers and a maximum of 220 riders. The high density car features smaller seats and more floor space for standees and holds 72 seated passengers and a maximum 300 riders.

The cars, capable of 80 mile-per-hour service, are controlled by a solid-state "chopper" system, more energy efficient and smoother than traditional mechanical cam control systems. Ride quality exceeds specifications and low noise levels make SOAC the quietest rail car ever built. At 50 mph, interior noise is as low as 63 decibels, equivalent to a modern office building.

Designed as a showcase for innovative equipment rather than as a standard car, SOAC has already influenced rail car purchases in several cities. San Francisco and Boston have requested the chopper system, SOAC-type rubber chevron and air spring suspension, resilient wheels, and a number of other elements for their new light rail cars. Chicago is buying 10 chopper-equipped cars and Atlanta is using the SOAC description in the UMTA-developed "Guideline Specification for Urban Rail Cars" for its new cars. Philadelphia also is preparing specifications for new cars that include many of SOAC's features.

Every step of SOAC's performance had been documented and a five-volume report on the Test Center program is available from the National Technical Information Service, Springfield, Virginia 22151. Reports on the engineering test program, revenue testing in each city, and passenger reaction also will be available soon.

SOAC has not yet reached the end of its line, however. The Port Authority Transit Corporation (PATCO) has invited SOAC use in extended revenue service for at least nine months on the Lindenwold High Speed Line from Philadelphia to southern New Jersey points. On this line SOAC will be able to demonstrate its high speed capacity.

Modifications are now being made to adapt the SOAC cars for use on the Lindenwold Line. Service is expected to begin this Fall.

After the PATCO operation, SOAC will be refitted with several innovative subsystems for a later appearance with still more innovative equipment.

For further information contact the UMTA Office of Public Affairs at (202)426-4043.



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