

### **Automatic Train Stop-Pattern (ATS-P)**

The ATS system warns train operators if train speed is not reduced when approaching a stop signal and, if no action is subsequently taken, automatically brings the train to a halt. An advanced version of the ATS safety system, the ATS-P uses computers to provide more accurate control of train movements. ATS-P compares train speed with the distance to a stop signal and provides automatic braking if the system determines that the train could not stop before the signal is reached. The ATS-P raises capacity by allowing trains to operate safely at closer intervals.

### **Centralized Traffic Control (CTC)**

The CTC system determines and oversees train routes, locations and other aspects of train operations, and transmits control commands and information to each station and train. The nucleus of the system is the CTC Center, which has display and control boards to coordinate each section of railway that it controls.

### **Commuter pass**

A credit card-sized card, normally encoded magnetically, allowing unlimited travel between two points over a period of one, three or six months. The magnetic code enables the cards to be inserted directly into automatic fare collection gates. Generally in Japan, employers traditionally pay for these passes.

### **Independently generated electric power**

JR East has one of the nation's largest electric power generation systems for internal use and meets approximately 60% of its requirements for electricity internally.

### **Japan Freight Railway Company (JR Freight)**

Japan Freight Railway Company was formed through the April 1987 division and privatization of JNR to conduct nationwide freight operations. JR Freight does not own railway lines other than freight yards and other facilities used exclusively for freight operations. This company makes payments to the JR passenger railway companies for the use of their lines.

### **Japan Railway Construction Public Corporation (JRCC)**

Established in 1964, JRCC is a government-owned corporation whose primary activity is the construction of the Seibi Shinkansen (see "Shinkansen") and other national projects. Within JR East's service area, this corporation is presently building the Hokuriku Shinkansen and Tohoku Shinkansen extension. JR East rents the Nagano Shinkansen, which is one sector of the Hokuriku Shinkansen and commenced operations in October 1997, from JRCC. JR East also rents the Musashino Line, Keiyo Line and three other lines from JRCC. The "Law for Disposal of Debts and Liabilities of the Japanese National Railways Settlement Corporation" (the "Law") was enforced in October 1998. This resulted in the liquidation of the JNRSC and the transfer of JR East shares held by JNRSC to JRCC's JNR Settlement Headquarters. In August 1999, JRCC sold 1 million of these shares to the public, retaining 500 thousand shares.

### **Narrow-gauge lines and standard-gauge lines**

Most railway lines in Japan are narrow-gauge, which have a rail width of 1.067 meters. The major exception is the Shinkansen network, which uses 1.435-meter-wide standard-gauge rails.

### **Number of passengers**

This figure includes both passengers who begin their journey at JR East stations and passengers who transfer to JR East from other railway company lines.

### **Operating kilometers (passenger line network)**

Operating kilometers are units of measurement of the actual length of a railway line between two stations, regardless of the number of tracks along the line. Fare and charge calculations are based on this figure.

### **Passenger-kilometers**

Passenger-kilometers are units used in measuring passenger volume. They are calculated by multiplying the number of passengers moving from one station to another by the distance (in operating kilometers) between the stations.

### **Programmed Route Control (PRC)**

An advanced version of CTC, PRC uses the latest computer technology and software at PRC Area Centers to monitor the position of trains in relation to their schedules and other factors and to control train routes automatically. The PRC system is linked to station display and announcement networks to ensure the smooth relay of information. Most importantly, PRC eliminates the possibility of human error and improves efficiency.

### **Rolling stock kilometers**

Taking into account the number of railcars on each train, rolling stock kilometers (or railcar kilometers) are precise measures of transportation capacity. They are calculated by multiplying the number of railcars (excluding locomotives and freight cars) that pass between two stations by the distance (in operating kilometers) between the stations.

### **Shinkansen**

The high-speed rail system in Japan often referred to as "bullet trains." JR East operates the Tohoku Shinkansen from Tokyo to Morioka, Joetsu Shinkansen from Omiya to Niigata, and Nagano Shinkansen from Takasaki to Nagano. The Central Japan Railway Company (JR Central) operates the Tokaido Shinkansen. The West Japan Railway Company (JR West) operates the Sanyo Shinkansen. Several new Shinkansen lines are now under construction or in advanced planning stages. These lines are collectively called "Seibi Shinkansen" and are covered by the Nationwide Shinkansen Railway Development Law (see page 27). The Nagano Shinkansen, which commenced operation in October 1997, is one of these lines.

### **Shinkansen-conventional line through-service hybrid trains**

This service is provided by specially designed trains capable of running on both Shinkansen lines and conventional lines where the track width has been broadened to standard gauge but the original narrow-gauge bridges, tunnels, stations and other facilities are used. Currently, JR East's Yamagata and Akita Shinkansen are the only hybrid trains of this type in Japan. The conventional sector of the Yamagata Shinkansen was extended from Yamagata to Shinjo, a distance of 61.5 kilometers and through service began in December 1999. This through-service is unrelated to the Seibi Shinkansen.