Safety

Fundamental Approach

We approach our safety improvement initiatives with the mindset that safety requires initiative.

Safety principles

1. *Safety is the highest priority in transportation operations.*
2. *Ensuring safety is based on exact observance of rules and procedures, and is achieved through our continuous effort.*
3. *Strict checks and thorough communication are the most important elements of ensuring safety.*
4. *Everyone in every role must work together to ensure safety.*
5. *If you are unsure what to do, take the safest action.*

Safety Control Structure

With proactive involvement from top management, we have established safety management regulations for the purpose of establishing a safety control structure and maintaining and improving transportation safety. In addition, by appropriately operating a PDCA cycle for safety control and implementing activities such as safety audits and safety checks, we carry out checks of our internal safety control structure in an ongoing effort to further ensure safety.

Safety Promotion Committee

Meetings of our Corporate Safety Promotion Committee are held monthly to share safety information and discuss how to prevent railway accidents, hindrances to transportation, and occupational disasters and how to prevent reoccurrence of any incidents that do occur. Matters such as measures and information that are adopted by the committee are disseminated mainly through Safety Promotion Committee meetings held in each branch or department. Furthermore, to ensure unified safety practices among the whole of the JR Kyushu Group, these Safety Promotion Committee meetings are attended by persons in change of safety at JR Kyushu Group companies, and measures and safety-related information that are adopted are disseminated to group companies.

Meetings of the Corporate Safety Promotion Committee

Safety Promotion Committees at branches

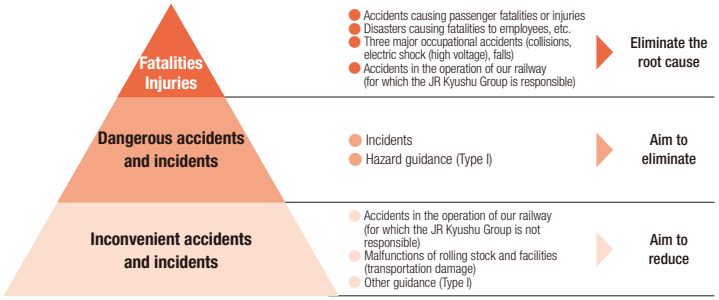
The Two Pillars of Safety

The JR Kyushu Group is working on a three-year Medium-Term Safety Plan (2020-2022) to implement measures that ensure the utmost safety at all times. There are two pillars in these initiatives. The first is a Basic Safety Policy containing key points for each year based on the Medium-Term Safety Plan. This is applied in each department, branch, and group company. The other is actions to ensure safety, centering on key themes each year, based on the unchanging mindset that safety requires initiative.

Safety Framework

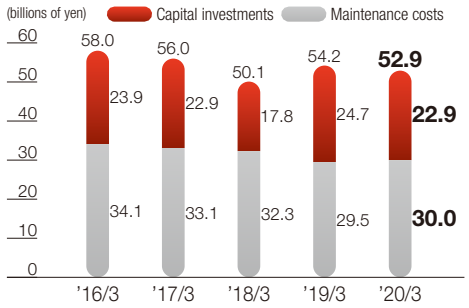
Setting Targets

To turn our principle of ensuring the utmost safety at all times into tangible improvements, targets are set according to the following principles.



Capital Investment Related to Safety

In the fiscal year ended March 2020, we invested ¥22.9 billion in replacement of obsolete facilities, safety and disaster-damage prevention measures, measures for reliable transportation, and rolling stock projects. ¥30 billion was also spent as repair expenses for the maintenance and management of railway facilities, for a total of ¥52.9 billion.



Safety

Initiatives to ensure safety

Top priorities **Initiatives to eliminate signal violations and collision violations***

Prevention of signal violations

- Use of measures such as simulator training to ensure that employees understand the importance of carrying out basic operations correctly and are committed to doing so.
- Thorough checks to ensure correct execution of basic operations and ongoing instruction until these become second nature.

Prevention of collision violations*

- Thorough training on prevention of collisions for employees, etc.
- Use of train collision warning system to prevent collisions caused by human error.
- Safety patrols for assessment and improvement of workplace conditions.

*Collisions that violate our rules on collision prevention

Simulator training

The accident in 2017 that damaged the railway facilities at our Nogata Rolling Stock Center taught us that there are cases where an employee knows something intellectually but cannot act on it in a real situation. To counteract this, we have introduced a simulator on site and have revised our training system to improve employees' understanding of how to handle abnormal situations and ability to respond to these situations. Training takes place on site in small groups and in general training sessions attended by all relevant employees.

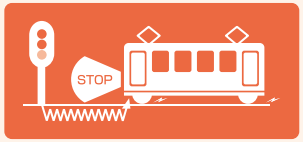
On-site simulator

Ongoing initiatives

1. **Enhancement of systems to improve safety**
   Safety audits and inspections, safety conferences, safety discussion gatherings, views shared by employees about safety
2. **Improvement of the skills of employees, etc. in ensuring safety**
   Self-improvement, competitions, abnormal event training, various other training
3. **Prevention of railway accidents, etc.**
   Preparation of backup equipment, measures for railway accidents and incidents
4. **Strong measures against intensifying environmental issues**
   Measures for earthquakes and tsunamis, stronger disaster prevention, case by case measures for situations such as terrorism
5. **Prevention of accidents involving trains and facilities**
   Replacement of trains and facilities and renovation of trains

Self-improvement

Measures for sloping surface

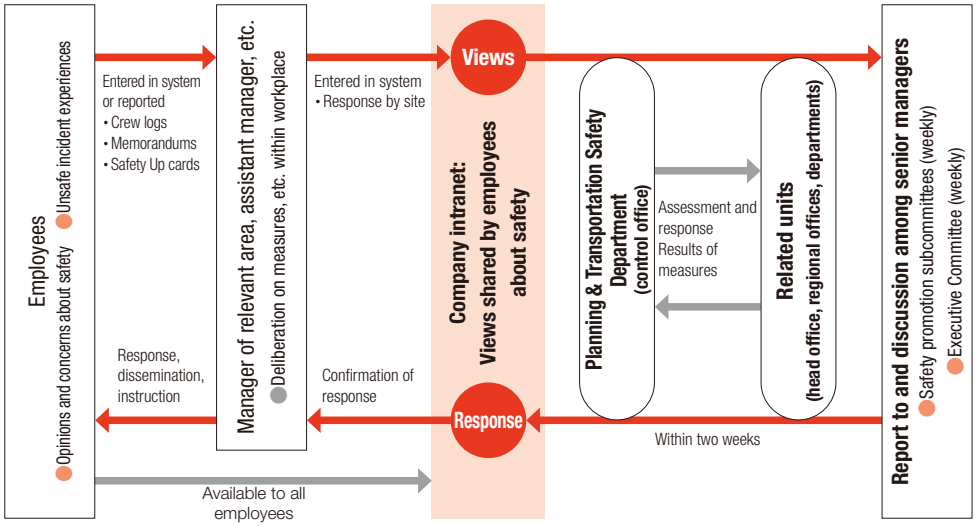


Further installation of ATS-DK

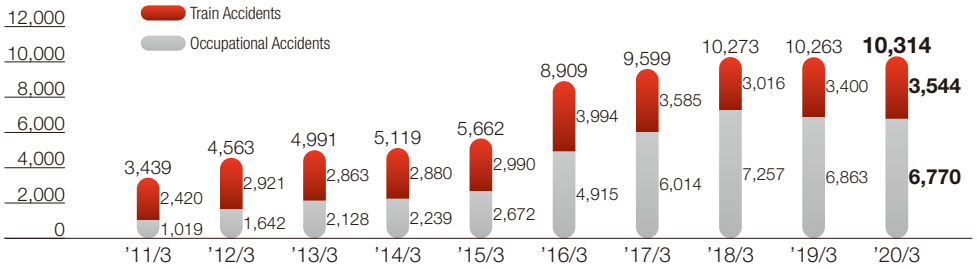
Views shared by employees about safety

Our system for views shared by employees about safety is used to allow employees to share opinions and concerns about safety, unsafe incident experiences, and unsafe incidents that may occur to prevent accidents and other hazards before they occur. Details and solutions are reported to the Executive Committee within two weeks and information is shared with all employees via our intranet.

Process for views shared by employees about safety



Number of Views Shared by Employees about Safety over the Last 10 Years



Safety

Examples of Improvements as a Result of Views Shared by Employees about Safety

Examples of improvements

View

"There are gaps and differences in level between the train and platform at Sotaro Station on the Nippo Main Line and Yunohira Station and Onigase Station on the Kyudai Main Line. I think this is very dangerous because passengers could injure their feet or fall through the gaps when getting on or off trains. I hope you will consider this matter."

Before improvement

After improvement

Measure

After confirming that the gaps and differences in level were within the standards, we painted the areas orange so that passengers would notice them more easily when getting off trains.

Strong measures against intensifying environmental issues: measures for disasters caused by heavy rain

In the fiscal year ended March 2020, we carried out work in 29 areas to reinforce sloping areas alongside the tracks that may be affected by heavy rain or typhoons and prevent rockfall and collapse due to deterioration over time.

Before the measures were carried out

After the measures were carried out

TOPICS

Disaster caused by heavy rain in late June to late July 2019

192 areas of our railway facilities, mainly in southern Kyushu, were damaged during the rainy season in 2019, causing services to be suspended on a large number of lines. 58 areas on the Hisatsu Line, 41 areas on the Nippo Main Line, 29 areas on the Nichinan Line, 24 areas on the Kagoshima Main Line, and 40 areas on other lines were damaged. The main causes were collapses of cut slopes, embankments being washed away, debris being carried onto the lines, and fallen trees.

Large areas of embankments were washed away between Kobayashi and Nishi-Kobayashi on the Kitto Line, causing services to be suspended for a long time, but with the hard work of the people and organizations involved, we were able to carry out the necessary discussions and repair work at a good pace and resumed services on the line around 1 month after the disaster occurred.

Collapse of cut slopes

Embankments washed away

Debris on lines

Fallen trees

At the time of the disaster

Restoration

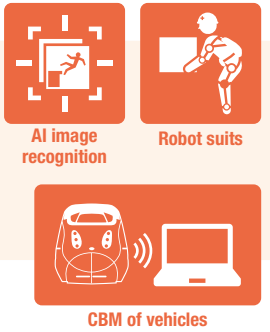
Safety

New initiatives

1. Maintenance tailored to the condition of rolling stock and facilities
2. Disaster measures using external data
3. Implementation of ICT for wider use of information
4. Use of drones for more accurate maintenance inspections
5. Inspections using trains with cameras and sensors
6. Use of smart devices to prevent human error

Initiatives for verification in order to take the next steps

1. Fundamental revision of maintenance cycle by introducing CBM
2. Prevention of unsafe actions by employees, etc. through use of sensors and AI
3. Use of AI image recognition to detect issues that may endanger passengers
4. New maintenance methods using robot technology

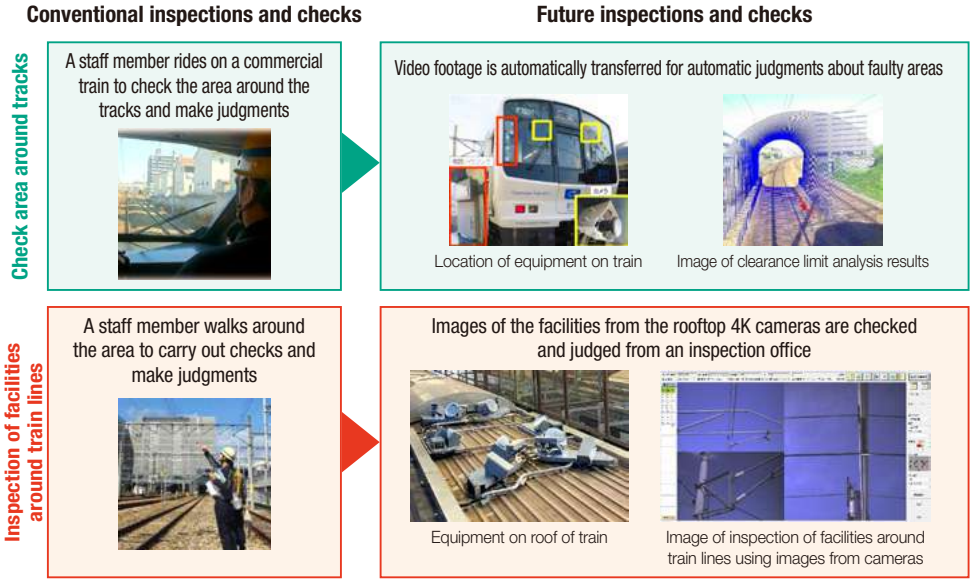


Adoption of RED EYE:

Using commercial rolling stock to improve efficiency of conventional line inspections

Commercial rolling stock has been fitted with Japan's first camera systems with elemental technology to improve the efficiency of some of our inspection operations in our railway facilities, improving the quality of our facilities and the safety for our personnel. These camera trains are called RED EYE trains.

- Cameras and other equipment fitted at the front of commercial rolling stock reduce the patrol work that needs to be done by personnel and improve quality.
- Japan's first rooftop 4K cameras reduce inspection work and improve safety.



Joint development for CBM* of railway signal facilities

*Condition-based maintenance. Maintenance that is carried out only when deemed necessary based on the condition of the facilities.

In March 2019, we worked together with Nippon Signal Co., Ltd. and Kyosan Electric Mfg. Co., Ltd. to develop technology and methods that can be used for CBM for electric switch machines and track circuit devices. We are analyzing various data from our ongoing condition monitoring system, past maintenance inspections, and facility faults and using the results to predict when a fault or deterioration will occur in facilities and build a model to assist in decision making about facility repairs.

- Method of joint development
  1. Accurate repairs of facility faults according to predictions
  2. Proposal of facility replacement plan according to predictions of deterioration

Development targets