

The Importance of Practical Training to “Ensure Safety” in the Station Transport Sector

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The Operation Staff Association is an organization composed of union members who work at station ticket windows, ticket gates, etc., union members involved with train operations such as signal boxes as well as union members who work at station stores and on the sale of travel products.

The business affiliates I am associated with have a tendency to direct their attention to an income and service perspective more so than safety. Thus, the opportunity to be directly involved with safety is limited compared to other branches, but recently a number of problems have arisen such as the occurrence of transport failures which have greatly inconvenienced passengers, trouble which if there had been the slightest mistake could have been linked to major accidents and acts of violence by passengers. Concretely, accidents have taken place involving passengers on the platform such as coming into contact with cars, falling, being sandwiched between the doors and dragged by the train. Also, as regards employees, there have been accidents when undertaking various works on the tracks where employees have been struck by trains because no one was standing lookout, and employees have been subject to violence by passengers.

On this occasion, I would like to report on the current state of the mismatch between systems and human labor related to station transport and to present the thoughts of JREU.

At present, under the catch-phrase “a transport system without the intervention of stations”, the Autonomous decentralized Transport Operation control System (ATOS) has been introduced principally in the Greater Tokyo Metropolitan region to automatically and centrally control train routes and the former route control operations at stations have been done away with. Now, at stations, terminals have been put in place for stations to handle operations in the event of abnormalities with central control, and operations at normal times have been limited to watching monitors.

This kind of new system was built, but unexpected mistakes will occur when station intervenes at abnormal times. This is because the proportion of signal handling operations is being reduced in daily operations as time passes from the introduction of the system.

I will present some examples of recent ATOS related mistakes that have taken place at stations.

The first is an example where, despite a track closure of a portion of station premises due to maintenance work, the program, by mistake, was forcibly terminated canceling all track

closures including locations other than the location in question. Naturally, as the maintenance crews did not know that the track closure had been cancelled, there was a danger that shunting would not have been completed if trains had advanced along the track.

The second is an example where an employee who had not received training in handling operations attempted to cancel track closure for maintenance work in accordance with instructions from command personnel but this was dealt with as a forced termination. In this example, as with the first example, one false move could have resulted in a major disaster as the maintenance crews had not been notified that the track closure had been cancelled.

The third example is where stations had been instructed to amend train numbers when transport command personnel was undertaking operations adjustment, but the computerized interlocking device froze due to a mistaken input of train numbers at a station and it became impossible to make up routes. In this example, many trains were cancelled and transport in the Greater Tokyo Metropolitan Area was thrown into confusion. While this was not directly related to safety, there was a potential for this to develop into an indirect issue in which safety was put into question as a result of a misapprehension and suchlike due to the fact that a schedule differing from the normal came into effect when dealing with repairs to restore the system or when directing passengers.

These events were dealt with as improper systems handling, in other words as a "human mistakes" and, as a result, the files were closed on these incidents as being due to "individual responsibility." However, when searching for the background factors, the trouble was caused by a reduction in the knowledge and technical skills of workers due to systematization and by undertaking work with which they were not familiar. In this sense, the introduction of systems simply to increase the efficiency of workers has, I believe, forced the criteria for "safety" to recede into the background as a result.

Since the introduction of ATOS on the Chuo Line in 1996, ATOS has been introduced one after the other on the Yamanote Line and the Keihin-tohoku Line. At present, the installation of the system is being undertaken on 19 lines with 1054.5 km of track and the Greater Tokyo Metropolitan transport system will be shifted almost completely to ATOS.

How have station transport operations been changed through the introduction of ATOS?

ATOS is a system which makes up the route of each train by a program entered in a central device and, basically, when there are sudden changes, route makeup for each station is undertaken by transport personnel center inputting transport information into ATOS. Additionally, the various informational display equipments within station premises are controlled by ATOS to display information for passengers in real-time linked with scheduling of trains.

Thus, the past operations of handling signal levers at the station's signal box and the

route makeup of each and every train has been done away with. Also, train operations adjustments at station signal boxes and coordination operations accompanying nighttime work in maintenance areas has been simplified. In this manner, functions during normal conditions are indeed being exercised as a “transport system without the intervention of stations.”

However, when transport disruptions occur, the system may not function sufficiently. In particular, when for example operational changes in trains arise due to cancellations and other causes, command personnel undertakes to input changes in ATOS, but the display on station terminals and passenger information displays are no longer accurate because of time lags and other factors resulting in an inability to sufficiently announce directions and in a deluge of complaints from passengers.

Additionally, when system malfunctions occurs, information cannot be processed at the central device and the worker in charge of transport at the station must manually intervene at the station terminal. Moreover, when it is judged that in order to undertake prompt transport operations it is best to manually intervene at the station terminal, manual intervention is undertaken. However, as noted above, if even the slightest mistake is made, such as a number of errors being made thereby increasing transport disruption and there is a potential that a train might advance into a work area, a disaster causing death and injury could be created.

Through the evolution of systematization, human labor is being shifted to a system thereby creating a structure in which humans do not intervene during normal operations. This can be said not only about stations but also with respect to railroad car and various maintenance operations. Through this kind of systematization, it is a fact that efficiency is increased while at the same time the occurrence of human error is curbed. However, as a result of having shifted human labor to a system, the reality is that responses are dulled to the various dangers sensed by humans and situations arise in which technical abilities are lost because system operations do not take place in day-to-day work.

Thus, education and training based on a manual becomes the contact point of humans and systems, but in an emergency there are many cases where this education and training by the book is of no value. In other words, abnormal situations do not favor us by occurring in accordance with the manual. Also, there is the issue of education and training with respect to systems which one does not know when an abnormal situation will arise – systems which a worker normally does not and cannot operate – and we believe it is a fact that employees are losing the ability to place themselves in such situations.

In order to overcome that defect, the building of a structure which gives consideration to the matching of human labor and systems is essential. This is the creation of a structure premised on the very normal course of events in which “systems crash” and “humans make mistakes.” In this sense, daily routine work is undertaken by the system but, for an emergency,

we need a mechanism for the education of technicians able to recover when the system is down and when there are transport disruptions which cannot be processed by the system. For this reason, we need to not only educate technical programmers for data entry into ATOS, we also require "transport pros" who will be strong individuals in charge of station transport at times of emergency able to appropriately respond when trouble arises and individuals in charge of command who are thoroughly familiar with each line. This is premised on the creation of an operational structure designed to meet these ends and higher levels of education and training.

Until now, the training equipment installed at JR East was at a level that allowed for the study of the method of handling general ATOS. At this level, I believe that even addressing daily operations based on the actual conditions at each station is difficult and many cases will arise where a sound response at times of emergency will be impossible. As a first step to overcome this, the minimum requirement with respect to training equipment is to have practical training on a system with the same premise wiring as the station where one will be working. With respect to this simulator, as a result of discussions between the company and workers, I have been able to confirm that it will be installed in the related training center. However, with respect to training equipment and training time as well, in order to absorb situations which one may or may not be confronted with once each year, the development of simulators which have greater realism is essential. As regards the union, we seek the introduction of a simulator which does not simulate commonplace operations in accordance with the operations guide, but rather which provides problems referencing trouble which has arisen in the past and demanding a flexible and impromptu response requiring split second judgments.

In addition, efforts to "establish a safety culture" at stations is a pressing issue requiring a change in the mind-set of related employees. While continuing to proclaim at stations that "safety" is the premise, "increased revenue" and "service" stands at the fore-front. As a result, there is a tendency for "safety" to recede into the background in station operations. However, we in the business division committee were able to learn that one cannot talk about "increased revenues" and "service" once an accident occurs and a disaster takes place through discussions about the two major railroad accidents that occurred on Japan Railway last year.

The first incident was the derailment and overturning which occurred on April 25th last year on West Japan Railway's Fukuchiyama Line resulting in the death of 107 people and the injury of 555. The more one learns about the circumstances of the accident the greater is the shock and it forces those working on railroads to strongly be aware of the precious "lives" being transported regardless of the area where one works.

The second incident was the derailment and overturning which occurred on December 25th last year on East Japan Railway's Uetsu Main Line causing the death of 5 people and the injury of 32. The East JR Workers' Union at its convention last year called for "the

reestablishment of a climate of safety which places a priority on safety above all else” and established cause investigation committees at all levels of the organization. Beginning with “challenges from the workplace”, solid results were being achieved. However, in the middle of this progress, there was an accident which should not have happened.

While in the mass media it was reported that this accident was a “natural disaster”, in order to prevent the reoccurrence of a similar accident, we did not place the blame on a being “natural disaster” and discussed the need for pursuing carefully thought-out safety policies.

The company also put forth policies from the viewpoint of equipment. As for the East JR Workers’ Union, at the same time as equipment policies, we believe that it is necessary to create an organizational structure which allows for the sharing of risk information through, for example, the training of command personnel who are able to analyze weather conditions, such as “today’s atmospheric pressure is bad” or “the way today’s wind is unusual,” and train crew who are able to carry out duties having a keen sense of there location.

From the lessons of these major accidents, we must make “safe transport itself is our major service” the philosophy of safety of the business workplace. Then we will raise it to the shared values of all related employees. For this purpose, we are working to establish “cause investigation committees” in all workplaces of the business division, and to work out as a concrete theory the method of practical training and the method of education that matches the actual conditions of these respective workplaces which will serve as a first step in efforts for “safety” in stations.