

The preventive measures against increasing crew's mistakes and the human resource development

East Japan Railway Company is consisted of 13 branches, and Tokyo branch is covering metropolitan area including Tokyo.

The number of incorrect handling at Conductor office in this branch has been rapidly increasing. There were 294 cases in 2012, the next year had 340 cases and at last 413 cases in 2014. Most of these "incorrect handlings" are closing doors before the time and closing doors without signs. Those workers who have 1 to 3 experiences are most likely to take these errors.

In response to these many errors, the company gave warning with notices and roll-calls/inspections, however the errors had continued to be occurred.

East Japan Railway Workers' Union built a project team and investigate why some conductors had repeatedly made mistakes hearing from conductors of Yamanote Loop Line, which is Tokyo's main transport artery carrying 6.5 million passengers each day with 29 stations in the entire 34.5 km. The company had introduced home doors on platforms of Yamanote Lines since 2010. Today 23 stations in all 29 stations had installed platform doors. The rest 6 stations had difficulties to build home doors because of their structure of platform. Building moving doors in these 6 stations needs reforms of the structure in stations. And it will cost about ¥55 billion (\$52 million) to install platform doors on all stations. It has problems technically and structurally.

Instalement of these platform doors had changed drivers' and conductors' senses. We are sure that growing number of incorrect handling has threated the safety operation, and may lead to some fatal accidents. Therefor let me present you how we had tackled to prevent from them for the future.

At first, I will show you explanations of three conductors of Yamanote Line.

1st conductor who closed doors before / without departure sign.

Quote: I took over a last train bound for Shinagawa Station at Ikebukuro station 3 minutes behind. Because it was the last train, I fully prepared not to miss a departure sign from a station staff. For example I put a course card to check precautions on it. I did not care about the delay. And I was considering the possibility of more delay because of connection with other railroad train that had an injury accident late in the evening.

After I rang a departure bell a little bit longer, I entered a conductor room, waiting for the departure sign from a station staff. At Ikebukuro Station, conductors need to check the departure sign from a station staff, so I was carefully seeing the situation on the platform and the Industrial Television(ITV). At this moment, I was not touching the conductor's switch for opening and closing doors. Then I saw one station staff was waving his hand on a large scale on ITV. In respond to that, I turned the switch to close doors by a reflex action. In a second I noticed I had closed doors without a departure sign, and I handle "the Crew switch for controlling a door operator" to open doors, however it was late. The driver had already started the train with the pilot lamp lighting. The station staff announced he had not hold the departure sign of blue light yet, showing stop sign of red light. I pulled the emergency braking switch for conductors and the train had stopped. I told the situation to the driver by on-train telephone. And after I had got the confirmation from the station staff that all passenger had already ridden, the train had restarted.

The conductor had 2 year and 6 month experience.

2nd conductor who closed doors without the sign of finish boarding and alighting

My conducting train had arrived at Tamachi Station at the same time, Keihin-Tohoku line's train arrived on the opposite side of the platform. I rang the departure bell for 5 second and checked the repeater was lighting and entered the conductor's cabin. I was waiting the sign of finish boarding and alighting. At that time one passenger had passed in front of repeater. I had mistook that flickering as the sign of finish boarding and alighting and turn a switch of closing doors. Instantly I noticed my mistake and handled "the Crew switch for controlling a door operator" to open doors. Then I got the sign of finish boarding and alighting, and closed doors. I was fine and I didn't feel sleepy and in good health. I made a handling error because I was not concentrated to the sign of finish boarding and alighting and I was waiting with my hand on the switch.

The conductor had 2 year and 6 month experience.

3rd con onductor who also closed doors without the sign of finish boarding and alighting

I was assigned the last train bound for Ikebukuro, I said I will be careful to prevent accidents at the roll call. I took the train, and the train departed on time. After I left Yurakucho Station, I made sure that I need a sign of finish boarding and alighting at Tokyo Station. In a minute the train arrived at Tokyo Station, and I rang a departure bell and entered the conductor's cabin. While I was waiting the sign of finish boarding and alighting, a station staff announced "The doors are closing" in order to hurry passenger. This announcement had lured me to turn a switch to close doors. I handled "the Crew switch for controlling a door operator" to open doors with frantic haste. However the train had started without doors reopen. Afterwards I did not pull the emergency braking switch for conductors neither station staffs did put an emergency button on the station. The train continued to be operated as if nothing had happened. I had reported it at the office after I finished my duty. I was healthy at that time.

The conductor had 1 year experience.

From the analysis the conductors who had from 1year to 3 year experience are likely to make errors such as closing doors without the signs.

All of three turned the switch by mistaken in response to the small motion or slight clue. They fully understood they need to wait for the sign, and also didn't miss the signs. However they mistook the small motion as the sign and turn the switch.

We had long discussion about the reason why these conductors are likely to respond to small motions and turn the switches. At last we concluded that conductors' job are becoming habits unconsciously. Their task is becoming highly routine. They open doors after trains stop at the platform, and after they close doors and trains start. Closing and opening doors are closely related to operation of trains, and this situation is natural.

On the other hand, installment of platform doors changed many things. Among them, the biggest change is the conductors' prevention sense of handling doors. Thanks to home doors, the number of minor collision with trains, passengers' falling off to trails during opening doors because of stopping trains at wrong place, dragging passengers at departure had tremendously decreased. Therefore, conductors' awareness of prevention had decreased when they handle the switches of doors. These change of prevention

sense, lower prevention capability because of lack of experience, and an operation system which need observation of signs had effected strongly and lead to errors.

The fundamental of the train service is that trains are running with railway signals. Railway signals cued from stations are very important for conductors because stations are places where passengers are getting on and off. Therefore, there is a reason why time of cuing departure sings are determined, and it is the fundamental of a conductor's jobs to check the departure signs. However, not checking the departure sings means the conductor does not do the fundamental of his/her job (=does not do his/her normal jobs).

Then, why habituation of conductors' jobs is prioritized over safety?

In a questionnaire, there was a question "What do you care the most in the train?" It seems that conductors care about on-time service. 85% of employees recognize "The company says "Safety First" facially." The survey shows that the company puts much value on on-time service than safety and that the company is becoming service-priority-character.

In East Japan Railway Company, from the view of human resource development, "self -development" is appealed, and activities for self-development. The ways of "self -development" are activities in committees established in every work place, "my project" activities which is done by self-initiative, in-company trainings, and so on. Such activities are done with normal jobs arbitrarily. In a questionnaire, over 90% answered "self-development is more important than conductors' normal jobs." That shows the company sees activities of self-development are more important than conductors' normal jobs. Especially, young conductors who have less experience tend to prioritize self-development. This is a serious problem.

Behind of increasing incorrect handlings, there are habituation of conductors' normal jobs, service-priority-character, the character of making light of "normal jobs," and the way of human resource development.

Next, I propose how to prevent closing doors before signs. Conductors should recognize conductor's attribution. A common point of this event is reflection of the body caused by changes of platform situations which come in sight without awareness. Therefore, it is important not to touch the door

switch while conductors are waiting for the departure sign. If body reflection occurs, conductors will not push the door switch. However, more important thing is that himself/herself recognizes the company character such as “service first” and disvalue of conductors’ normal jobs.

It is also important to recognize attribution of conductors’ jobs. Conductors are demanded to deal with abnormal situations accurately. In normal situations, conductors are demanded to deal with routine jobs repeatedly without mistakes. It needs a capacity of endurance. Conductors are demanded that ability.

In East Japan Railway Company has “Life-Cycle” system such that employees are transferred like “station staffs – conductors – drivers.” There is a fact that some employees feel that becoming to a conductor is a pass point because in this “Life-Cycle” drivers is considered as a destination. However, for safety, it is important not to consider a conductor is a pass to step up but to recognize the jobs and responsibilities, and cultivation of human resources that can exert abilities. Yamanote Line has to make it possible that passengers can get on and off smoothly in 29 stations in 1 hour. Yamanote Line has short distances between stations and has many passengers. Also, rushing to get on a train just as it is about to leave is common every day. Plus normal jobs, it is important to consider specialties of his/her line.

Next, I propose problems of work place governance. A problem of the company’s work place governance is that the company tends to consider that conductors work without mistakes. However, this means the company thinks normal jobs are less important. We should think that doing something repeatedly without mistakes is a consequence of conductors’ efforts. The company considers that doing normal jobs without mistakes is “normal” and think it is more important that activities of committees and “my project.” That is a reason for creating twisted work place.

When young conductors make mistakes, they say “I will recover a loss with “my project”.” From this fact, we can see twisted work places are already built. Human activities are prescribed by an organization. That fact becoming common describes transportation work places, its mission is saving passengers’ lives and safety, are horribly awry. Some conductors feel normal jobs are boring, and activities of committees and “my project” are more interesting. However, we should not consider accomplishing conductors’ jobs

and activities of self-development are same. Thus, the reason why closing doors without signs and incorrect handlings are increasing is the company's character such that seeing normal jobs as a conductor are less important and activities of self-development is more important.

It is needed that the company mend such characters and re-build work places of "the fundamental of jobs = do normal jobs appropriately." By that, I feel sure that self-independent conductors and work places that doing normal jobs normally such as checking departure signs will be created. We will learn from the Heinrich's rule, receive warnings from work places, and create work places which are independent, can do normal jobs normally, and can grow human resources.