SUMMARY OF Ph.D. DISSERTATION

School School of Science for Open and Environment Systems	Student Identification Number	SURNAME, First name SUZUKI, Daisuke

Title

A Study of Training Method to Improve Human Error Prevention Ability in Railroad Operation

Abstract

Recently Japanese railroad companies begin to pay attention to measures for suppressing occurrences of human errors in order to prevent accidents caused by human errors. This study focused on training method as one of the measures, defining "*Human Error Prevention Ability*" as ability not to commit human errors even when situations changed frequently, examining training method to improve the ability.

In railroad companies, lectures, simulator trainings and trainings with a real vehicle are conducted. On the trainings with a real vehicle, there are problems trainees' training effects depend on instructors' teaching ability since one instructor teaches one trainee. Simulator trainings which all of trainees attend to same training programs are expected to be solutions of the problems. However present simulator trainings are hardly used for prevention of human error yet. This study, therefore, aimed to expand simulator trainings to training method to improve *Human Error Prevention Ability*.

Operations that considering about human error is important were investigated and four of the operations were selected as experimental tasks, which were basic operation of decreasing velocity, operation of tracking desired velocity, operation against unknown disturbances and operation against known disturbances. In basic operation of decreasing velocity, deviation of timing of braking operation caused human errors and training method educating differences between the timing of beginners and theoretical values was proposed. In operation of tracking desired velocity, operation depending on feedback information was a problem and training method removing unnecessary feedback information was proposed. In operation against unknown disturbances, haphazard operation was a factor of human errors and training method educating control policy was proposed. And in operation against known disturbances, accuracy of prior preparations affected precision of actions toward disturbances and training method prohibiting operations except preparations was proposed.

Based on results of the above experiments, a guide line for simulator training to improve *Human Error Prevention Ability* could be obtained.