

Annex 6: Meeting Minuets of JCC

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1st JCC (9 November 2021)

Mass Rapid Transit Safety Management System of Line 6

Minutes of Meeting

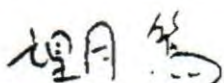
Subject	1st Joint Coordinating Committee (JCC) Meeting
Location	Meeting Room at DMTCL and Zoom Cloud
Date	09 November 2021
Time	10:00 – 12:00 (Bangladesh time)
Participant	<p>[DMTCL] M. A. N. Siddique (MD), Md. Abdur Rouf (Company Secretary). S. M. Shifur Rahman (PS to MD), Md. Aftabuddin Talukder (PD, Line 6), Md. Zakaria (APD, Line 6), Krishna Kanta Biswas (APD, Line 6), Saidur Rahman (APD, Line 6), Mst. Maushumi Habib (DPD, Line 6), Md. Abdul Baten Fakir (DPD, Line 6), Muhammad Shahjahan (PM, Line 6), A.B.M. Arifur Rahman (PM, Line 6), Shaikh Khailur Rahman (PM, Line 6), Khalid Saifullah Sardar (DPM, Line 6), Md. Enamul Huque (DPD, Line 5:North), Abdul Matin Chowdhury (APD, Line 5:North), Mohammad Momenul Islam Mridha (DPD, Line 1), Hosneara Akhter (PM, Line 1), Md. Rakib Uddin (PM, Line 1)</p> <p>[Road Transport and Highways Division] Neelima Akhter (Additional Secretary)</p> <p>[Dhaka Transport Coordination Authority (DTCA)] M. Mizanur Rahman Bhuiyn (Mass Transit Planner)</p> <p>[Bangladesh Telecommunication Regulatory Commission (BTRC)] S.M. Taifur Rahman (Deputy Director)</p> <p>[Fire Service and Civil Defense (FSCD) HQ] Debashish Vardhan (Deputy Director)</p> <p>[JICA] Tomohiro Ono (HQ), Yuki Fujita (HQ), Keisuke Tanaka (HQ), Ginga Nakadai (Bangladesh Office)</p> <p>[Expert Team] Atsushi Mochizuki (NK), Yasuji Ogino (OMS), Nobuo Nakai (OMS), Yoshiyuki Tajima (NK), Ryohei Hashimoto (NK), Hayami Saso (NK), Mahboob E Khuda (Local Expert)</p>
Agenda	<ol style="list-style-type: none"> 1. Self-introduction 2. Opening Remarks by DMTCL 3. Welcome Remarks by JICA-HQ 4. Outline of Technical Cooperation and the Project 5. Introduction and Progress on Safety Management System (SMS) Activities 6. Q&A and Discussion 7. Project Monitoring Sheet 8. Closing Remarks by JICA
Recorded by	JICA Expert Team (JET)
Handout	<ol style="list-style-type: none"> 1. Project Outline 2. Introduction and Project Progress Report 3. Monitoring Sheet Ver.2 4. Record of Discussion (RoD)

Speaker	Content
Mr. Fujita (JICA-HQ)	<p>1. Outline of Technical Cooperation and the Project After the introduction of participants, JICA made presentation on Outline of the Project.</p>
Mr. Mochizuki (JET)	<p>2. Explanation of Introduction and Progress on SMS Activities JICA Expert Team (JET) explained the following items:</p> <ol style="list-style-type: none"> 1) Introduction of Safety Management System (SMS) 2) Current Progress on SMS Activities 3) Work Schedule
<p>Mr. Debashish Vardhan (FSCD)</p> <p>Mr. Ogino (JET)</p> <p>Mr. Abdul Rouf (DMTCL)</p> <p>Mr. Saidur Rahman (Line 6)</p> <p>Mr. Abdul Matin Chowdhury (Line 5: North)</p>	<p>3. Discussion Regarding the SMS Activities</p> <ol style="list-style-type: none"> 1) Passenger evacuation is important. Communication and coordination with Fire Service & Civil Defense (FSCD) is also important. Mr. Vardhan's discussion points were: <ul style="list-style-type: none"> - Rescue and evacuation plan must be developed for each MRT station; - Joint control room between fire service and MRT is very much needed and should keep a close communication; - It is required to organize joint safety related training program among the MRT lines and other relevant departments; - There is a huge potential risk in Metro Rail system. So, risk identification is required to minimize these risks. It requires to procure modern equipment; and - There should be awareness program for the MRT line operators as well as citizens. Required to develop signage in the station area. 2) In Osaka Metro, we have a guideline for emergency response. Also, we have a committee among fire service, police and Osaka Metro regarding the prevention and emergency response enhancement against fire accidents. 3) Procurement of modern equipment is important to enhance railway safety and mitigate the risk. 4) We have considered the fire prevention, mitigation and evacuation in the design stage. However, we need to coordinate with FSCD to have trainings. 5) A few months ago, we had meetings with FSCD and consultant team of Line1 & Line 5: North to have approval of design from FSCD. However, since the Metro Rail system is new in Bangladesh, there are no experienced persons to assess the design for approval. FSCD has only the experiences of rescue in case of fire in building but not in MRT. Instead of the design approval, FSCD requested to provide details of the evacuation plan for each station with necessary drawings. FSCD also requested Line 1 & 5: North consultant teams to conduct training for them.

Speaker	Content
Mr. S.M. Taifur Rahman (BTRC)	6) We also have to consider about the risks of Cyber-Attack. Is there any countermeasures or reduction measures in DMTCL or Japan?
Mr. Nakai (JET)	7) In Japan, for the design approval of underground stations, fire service shall check the ventilation system, evacuation route etc. like hardware system in the construction stage. In the operation and maintenance stage, we formulate the committee with fire service for emergency response.
Mr. Saidur Rahman (Line 6)	8) Regarding Cyber-Attack, the supplier of OCC and signal system should consider the countermeasures.
Mr. M. Mizanur Rahman Bhuiyn (DTCA)	9) In Bangladesh, Metro Rail Act was published in 2015 and it mentions the necessity of safety measures.
MD (DMTCL)	10) Rules and regulations for smooth operation of Metro Rail are being prepared in consultation with stakeholders. Standard Operating Principles have already been incorporated in the draft Manuals for Accident, Incidents & Disasters.
Mr. Muhammad Shahjahan (Line 6)	11) There are many types of metro accidents in the world. We need to collect the case study of those accidents for remedial measures.
MD (DMTCL)	12) The accident in MRT system across the world is very rare. However, we should have preparation against any kind of disaster and accident. DMTCL is planning to train the operation staffs for disaster and accident preparedness. DMTCL will also procure necessary equipment to fight against any sort of disaster and accident.
Mr. Md. Zakaria (Line 6)	13) Like Bangladesh Railway, station controller, train operator and other specialties must have competency certificate.
Mr. Krishna Kanta Biswas (Line 6)	14) Close coordination among the stakeholders viz. Electrical Department, Hospitals and Media is also required for evacuation and medical support during and after the accident. 15) There will be an evacuation team in MRT to evacuate passengers if any emergency arises during MRT operation. Underground Metro Rail is coming. So, FSCD should have a separate team for MRT system.
MD (DMTCL)	16) We will have a meeting with DG of FSCD to discuss for a separate unit for MRT system.
Mr. Ogino (JET)	17) There may have accidents in MRT system. Although it is very difficult to prevent all accidents, we need to be prepared for emergency response.
Ms. Neelima Akhter (RTHD)	18) Suggested to issue an office order regarding JCC on the basis of MoD.

Speaker	Content
MD (DMTCL)	19) Since Metro Rail is new in Bangladesh, we would like to request JET/JICA to organize training program for the stakeholders regarding disasters and accidents preparedness.
Mr. Tajima (JET)	<p>4. Explanation of Monitoring Sheet</p> <p>JET explained the Monitoring sheet (ver 2.0) reflecting the status of current activities. There are three documents which are “Monitoring sheet summary”, “Project Design Matrix” and “Plan of Operation”. JET reported and emphasized the following items:</p> <ol style="list-style-type: none"> 1) Major achievements of the Project are having several trainings and workshop; 2) From Japanese side, JET will provide further trainings/workshops regarding the SMS; 3) From Bangladesh side, JET strongly recommended to implement the SMS activities, authority delegation within DMTCL, appoint manager level as early as possible; and 4) As next activities, JET will provide 3rd training in the early next year. Due to the COVID-19 policy of JICA, implementation of training in Japan has been suspended at least until the end of March 2022.
Mr. Fujita (JICA)	<ol style="list-style-type: none"> 5) JICA added that resume of the training in Japan is unclear. However, we would like to conduct the training in Japan as soon as possible considering COVID-19 situation etc.
Mr. Ono (JICA-HQ)	<p>5. Closing Remarks</p> <p>Main points of the Closing Remarks are as follow:</p> <ol style="list-style-type: none"> 1) DMTCL should take responsibility to arrange a meeting with stakeholders. JICA and JET will fully support. 2) To implement the Metro Rail operation, DMTCL should hire the manager level (Director O&M and General Managers) as a permanent staff as soon as possible. We should not forget that it takes years for the new employed staffs be trained, gain experience by their own, to make necessary decisions in train operation & maintenance.
MD (DMTCL)	<ol style="list-style-type: none"> 3) Concluded the meeting with thanks to the participants for their supports and suggestions.

For and on behalf of Expert Team



Atsushi MOCHIZUKI
Team Leader/ Safety Management
JICA Expert Team

For and on behalf of DMTCL



M. A. N. Siddique
Managing Director
Dhaka Mass Transit Company Limited

Annex 6: Meeting Minuets of JCC

2nd JCC (21 April 2022)

Mass Rapid Transit Safety Management System of Line 6

Minutes of Meeting

Subject:	2nd JCC (Joint Coordination Committee) meeting
Location:	Meeting Room at DMTCL and Zoom
Date:	21 April 2022, 10:30– 12:00 (Bangladesh time)
Participant:	<p>[DMTCL] M. A. N. Siddique (MD), Md. Aftabuddin Talukder (PD, Line-6), Nasir Uddin Ahmed (Director O&M, DMTCL), Krishna Kanta Biswas (APD, Line-6), Abdul Matin Chowdhury (APD, Line-5NR), Md. Zakaria (APD, Line-6), Shaikh Khailur Rahman (PM, Line-6), Md. Iftikhar Hossain (GM Operation), Md. Rakib Uddin (PM, Line-1), Hosneara Akhter (PM, Line-1), Mst. Maushumi Habib (DPD, Line-6), Md. Enamul Huque (DPD, Line-5NR), Md. Zahidul Islam (DPM, EHS, Line-1 & PS to MD, DMTCL)</p> <p>[Ministry of Road Transport and Highways Division] Neelima Akhter (Additional Secretary, Urban Transport Wing through Zoom)</p> <p>[DTCA] Md. Rakibul Hasan (Deputy Mass Transit Engineer)</p> <p>[BR] Md. Romzan Ali (Government Inspector of Bangladesh Railway)</p> <p>[Power Division] Md. Atower Rahman (Sr. Electric Inspector, OCEI)</p> <p>[Fire Service and Civil Defense HQ (FSCD)] Md. Anwar Hossain (Assistant Director, FSCD H/Q)</p> <p>[JICA] Yukihiro Koizumi (JICA HQ, Zoom), Shintaro Ogiwara (JICA HQ), Taro Katsurai (JICA BD Office), Ginga Nakadai (JICA BD Office)</p> <p>[Expert Team] Atsushi Mochizuki (NK), Yasuji Ogino (OMS, Zoom), Nobuo Nakai (OMS, Zoom), Yoshiyuki Tajima (NK, Zoom), Ryohei Hashimoto (NK), Hayami Saso (NK), Mahboob E Khuda (Local Expert), Mohammad Monibur Rahman (Local Expert), Ms. Rubiya Sayed (Local Expert)</p>
Agenda:	<ol style="list-style-type: none"> 1. Opening Remarks by DMTCL 2. Opening Remarks by JICA HQ 3. Review of 1st JCC meeting 4. Presentation <ol style="list-style-type: none"> 4.1 Introduction of the project progress- Expert Team 4.2 Introduction of response to Emergency Situation- Expert Team 4.3 Update of Project Monitoring Sheet- Expert Team 4.4 Way Forward (Project Work Plan)- Expert Team 5. Discussion 6. Closing Remarks by DMTCL
Recorded by:	JICA Expert Team (JET)
Handout:	<ol style="list-style-type: none"> 1. Agenda 2. Minutes of Meeting of 1st JCC 3. Introduction of the Project Progress 4. Introduction of Response to Emergency Situation 5. Monitoring the Progress and Further Activities 6. Project Monitoring Sheet 7. Way Forward (Project Work Plan)

Speaker:	Content:	Action by:	By When	Decision
MD (DMTCL)	<p>1. Opening Remarks</p> <p>Welcoming all participants.</p>			
Mr. Koizumi (JICA)	<p>2. Opening Remarks</p> <p>1) Self-introduction and thanking everyone related to this project.</p> <p>2) Describe the importance of practicing emergency response situations and PR activities and emphasize the importance of safety.</p>			
Mochizuki (JET)	<p>3. Review and explanation of summary of the 1st JCC Meeting</p> <p>JICA Expert Team (JET) explained the remarkable comments on the discussion of 1st JCC meeting as follows:</p> <p>1) Organize the training program with relevant departments;</p> <p>2) Importance of preparation of documents; and</p> <p>3) Preparation of disaster and accidents Responsibility to arrange meetings with stakeholders by DMTCL under the support of JICA and JET.</p>			
Hashimoto (JET)	<p>4. Explanation of Project Progress</p> <p>JET explained the project progress in this half year.</p> <p>4) Abstract of the Project Progress</p> <p>5) Discussion meeting with relevant Organization</p> <p>6) 2nd workshop on Emergency Response</p> <p>7) 3rd Training on Practical SMS Activities</p>			
Mochizuki (JET)	<p>5. Explanation of Response to Emergency Situations</p> <p>JET explained examples of response to emergency situations as follows:</p> <p>1) Possible emergency situation in DMTCL</p> <p>2) Importance of cooperation among organizations</p> <p>3) Communication and each role</p>			
Tajima (JET)	<p>6. Explanation of Monitoring Sheet</p> <p>JET explained the monitoring sheet which</p> <p>1) Purpose</p> <p>2) Format of Monitoring Sheet</p> <p>3) Project Goals (Purpose and Outputs)</p> <p>4) Further Activities</p>			

Speaker:	Content:	Action by:	By When	Decision
	7. Discussion			
Mr. Matin Chowdhury (DMTCL)	1) Mr. Matin Chowdhury commented that 3 rd SMS training was specific on emergency response. Through the training, individual role was specified and importance of working together with stakeholders were identified.			
	2) Standard Operation Procedure (SOP) should be prepared.			
	3) In the meeting with Fire Service, we are requested to arrange a safety drill specific to Fire Service.			
Mr. Nasir (DMTCL)	4) Mr. Nasir commented that safety first culture should be under practice before start of the metro rail operation. Mr. Nasir also mentioned that local training duration should be increased particularly for the junior level staff who are going to work in the field.			
Mr. Krishna (DMTCL)	5) Mr. Krishna commented that safety-related documents such as Safety Policy, Basic Policy of Emergency Response, etc. should be circulated and shared among all.			
	6) Mr. Krishna also pointed that Establishment of Safety audit should be on board as soon as possible. Internal control is also important for DMTCL.			
	7) He also emphasis on Training of Trainers (TOT) course to train co-workers and junior level officials.			
Mr. Matin Chowdhury (DMTCL)	8) Mr. Matin Chowdhury added that the safety education of metro rail passengers is also important. To educate the metro passengers, an animation film may be prepared by the Public Relations (PR) wings of DMTCL and can show in the stations and on electronic media.			
Mr. Zakaria (DMTCL)	9) Mr. Zakaria commented that extensive and exclusive drill should be conducted to make familiar with existing facilities to station staff and all related personnel for quick response during any emergency.			
	10) Mr. Zakaria pointed that our elevated structure is only a few meters apart from high rise residential. Therefore, if there is a fire in these buildings, our operation may be suspended and we have to protect our structure and operation. We should also consider these issues during safety planning process.			
Mr. Anwar (FSCD)	11) Mr. Anwar commented that it is important to continue the process (drill) on regular basis regarding emergency situations. Station staffs should be trained well because they are going to respond first.			

Speaker:	Content:	Action by:	By When	Decision
Ms. Hosneara (DMTCL)	12) Ms. Hosneara commented that coordination with Fire Service is essential.			
	13) Train operators should know how to operate the emergency doors and other safety devices.			
	14) All officials should know how to evacuate from tunnel and elevated section. Not only fire, but also other emergency such as if the derailment may be happened between the two stations of a tunnel or Elevated portion, how the passengers will be evacuated from tunnel and elevated section.			
Ms. Habib (DMTCL)	15) Ms. Habib raised queries how would we assist to evacuate handicapped people.			
	16) She commented that PR activities such as evacuation method should be prepared prior to MRT opening.			
Mr. Katsurai (JICA)	16) Mr. Katsurai commented that very complicated procedures and coordination are required for emergency response. Therefore, this required frequent practice and training repeatedly for all related personnel to DMTCL.			
Mr. M.A.N. Siddique (MD)	17) MD shared his observation. <ul style="list-style-type: none"> - Establishment of safety-first culture is important. - Actual situations drill in a different emergency before commercial operation is important, and make it continue process. - Educate station staffs including train operators to use existing facilities in an emergency is also important. - DMTCL requested to arrange drill for Fire Service and Police Officials and Staff. - To reduce reaction time, DMTCL should conduct drills as many as possible. - Elevated line is close to the residential area, so it will affect them in a fire emergency. Make it clear who is going to respond at that time. - Electronic media could play an important role in such cases. - Requested to finalize the safety policy as early as possible. - DMTCL should consider necessity of SOP. - Trained the Trainer. - Conduct Drills using real people (Neighborhood people). - Involve some disabled person in the drill also. 	PIU members should take necessary actions in these regards under the support of JET members.		

Speaker:	Content:	Action by:	By When	Decision
Mr. Ogiwara (JICA)	18) Thanking all for sharing comments. JICA will bring back all the perspectives to Japan and share them with the related persons. Let us know their review.			
MD (DMTCL)	8. Closing Remark Thanking all participants to share observation and discussion.			

For and on behalf of the Expert Team

Atsushi MOCHIZUKI
Team Leader/ Safety Management
JICA Expert Team

For and on behalf of the DMTCL

M. A. N. Siddique
Managing Director,
Dhaka Mass Transit Company Limited

Annex 6: Meeting Minuets of JCC

3rd JCC (7 February 2023)

*The Project on Technical Assistance for
Mass Rapid Transit Safety Management System of Line 6*

Minutes of Meeting

Subject:	3rd Joint Coordination Committee (JCC) Meeting
Location:	DMTCL Conference Room and Zoom Cloud
Date:	7th February 2023
Time:	11:00 am (Bangladesh Standard Time)
Participants:	<p>[DMTCL] M. A. N. Siddique (MD), Md. Aftabuddin Talukder (PD, MRT Line-6), Nasir Uddin Ahmed (Director O&M), Krishna Kanta Biswas (APD, MRT Line-6), Md. Zakaria (APD, MRT Line-6), Abdul Matin Chowdhury (APD, Mechanical, MRT Line-5:NR), Md. Saidur Rahman (Principal, MRT Training Centre), Shaikh Khalilur Rahman (APD, EST & T, MRT Line-5:SR), Hosnara Akhter (APD, Mechanical, MRT Line-1), Md. Abdul Baten Fakir (DPD, F&A, MRT Line-6), Md. Rakib Uddin (PM, S&T, MRT Line-1), A.B.M. Arifur Rahman (PM-5, MRT Line-6), Muhammad Shahjahan (PM-1, MRT Line-6), Mohammad Momenul Islam Mridha (DPD, Depot Civil, MRT Line-1), Nazmul Islam Bhuiyan (DPD, PR, MRT Line-6), Md. Zahidul Islam (PS to MD), Md. Sajid Hasan (AM, OCC), Kamrun Nahar (AE, Civil, MRT Line-6), Md. Abu Bakor Siddique (AM Mechanical) and Mohammad Raihan Faruque (AM Inspection, Planning and Monitoring)</p> <p>[RTHD] Md. Zahid Hossain (Additional Secretary)</p> <p>[FIRE SERVICE AND CIVIL DEFENSE] Md. Bazlur Rahman (DAD, Fire Service and Civil Defense)</p> <p>[DTCA] Md. Rakibul Hasan (Deputy Mass Transit Engineer (MRT))</p> <p>[BTRC] Md. Ashfaque Ahmed (Deputy Director, BTRC)</p> <p>[Office of the Chief Electric Inspector] Md. Golam Sarwar (Senior Electric Inspector)</p> <p>[JICA Headquarters] Keisuke Tanaka and Shintaro Ogiwara</p> <p>[JICA Bangladesh office] Katsurai Taro, Machida Dai and Suman Das Gupta</p> <p>[Expert Team] Atsushi Mochizuki, Ryohei Hashimoto, Nobuo Nakai, Jun Kawashita, Keiji Matsuoka, Hayami Saso (Zoom), Yasuji Ogino (Zoom), Mahboob E Khuda (Local Expert) and Mohammad Monibur Rahman (Local Expert)</p>

Agenda:	<ol style="list-style-type: none"> 1. Review of 2nd JCC meeting 2. Presentation <ol style="list-style-type: none"> 2.1 Introduction of the Project Progress – <i>Expert Team</i> 2.2 Introduction of ongoing/further activities related to Safety Management System in MRT Line-6 operation – <i>Expert Team</i> 2.3 Update of Project Monitoring Sheet – <i>Expert Team</i> 2.4 Way Forward (Project Work Plan) – <i>Expert Team</i> 3. Discussion 4. Closing Remarks by DMTCL
Recorded by:	JICA Expert Team (JET)
Handout:	<ol style="list-style-type: none"> 1. Minutes of Meeting (2nd JCC) 2. Project Progress Report 3. SMS Activity Plan 4. Project Monitoring Sheet 5. Project Work Plan

Speaker:	Content:	Action by:	By When	Decision
M. A. N. Siddique (MD, DMTCL)	1. Opening Remarks Described the importance of Safety Management System for MRT Line-6 in opening remarks and facilitated participants' self-introduction			
Katsurai (JICA)	2. Opening Remarks Described the importance of the Safety Management System and emphasize its purpose			
Mochizuki (JET)	3. Introduction of the project progress Explained the conducted activities and their summary after the 2 nd JCC			
Mochizuki (JET)	4. Introduction of ongoing and upcoming activities Explained remaining activities until the end of the project (July 2023) and each purpose in accordance with PDCA circle and the expected final output of this project			
Hashimoto (JET)	5. Explain Monitoring the Progress and Further Activities Reminded the purpose of the Project Monitoring sheet. Explained the updated project progress and expected further activities in accordance with Project Monitoring Sheet version-4			
Mochizuki (JET)	6. Explain the Way Forward Presented status of achievement in each activity and explained future project plan until the end of the project			
M. A. N. Siddique (MD, DMTCL)	7. The Managing Director Mr. M. A. N. Siddique requested to start the discussion session			

Speaker:	Content:	Action by:	By When	Decision
Md. Saidur Rahman (Principal, MRT Training Centre)	Mr. Saidur Rahman explained the real condition of the training situation regarding the Safety Management System in DMTCL. Although DMTCL has started partial commercial operation from Uttara to Agargaon on the basis of the employees recruited by DMTCL, they need more employees for the operation from Uttara to Motijheel. The employees to be recruited for full operation need training on Safety Management System. Considering the overall situation and realizing the importance of Safety Management System, Mr. Saidur Rahman requested to extend the JICA technical assistance project up to the full commercial operation between Uttara North Station and Motijheel Station of MRT Line-6. So that the record number of operation staff can get Safety Management System (SMS) training.	Expert Team		Expert Team will take necessary initiatives.
M. A. N. Siddique (MD, DMTCL)	Mr. M. A. N. Siddique explained the meaning of Mr. Saidur Rahman's requests for an extension of the project. In the initial phase of this project (MRT Line-6), there were a total of 50 people. Currently, this number is around 400. And this number will increase gradually, and they will need training. If it is possible to extend the project until the completion of the full operation between Uttara North Station and Motijheel Station, the remaining employees will get the training on SMS.			
Nasir Uddin Ahmed (Director O&M)	He discusses two issues; 1. JET members organized a variety of training and drills based on the Osaka Metros Safety Management System. DMTCL has already prepared the Accident, Incident and Disaster Manual following the Delhi Metro Manual. Further training or drill based on this Manual will be more effective. 2. He requested JET members to check all the equipment they have to handle in a disaster and find out whether the equipment procured by DMTCL are sufficient or not for MRT Line-6 operation. On the recommendation of JET members DMTCL could take further actions in this regard.			
Mochizuki (JET)	Commented on the two points mentioned above 1. JET respect DMTCL's manual and we would like to give advice and support to DMTCL. To improve the safety management system, reviewing the manual and updating is needed. JET is possible to help in this regard.			

Speaker:	Content:	Action by:	By When	Decision
	2. Regarding Equipment and Disaster response, Osaka Metro has already visited several sites and stations and provided feedback. JET will request DMTCL to resolve the relevant technical and human resource issue.			
Md. Zakaria (APD, Line-6)	<p>Mentioned two points;</p> <p>1. Regarding Drill: Before MRT Line-6 became operational, the JET team arranged a variety of Mock drills. I request the JET team to support some drills as required after the revenue operation during the extended project period using real facilities, including station staff, maintenance staff, and operational staff.</p> <p>2. Familiarization with Equipment: Requesting to support a drill in the station including all station staff, maintenance staff, and operation staff for familiarization with the available safety equipment. Through this drill, all staff will get basic knowledge of using safety equipment. We can arrange a survey (online) of employees to find out their thoughts and how aware they are of safety issues.</p>			
Katsurai (JICA)	Want to know if there is training for new recruits?			
Md. Zakaria (APD, Line-6)	He replied recruitment is still going on in DMTCL so it is not possible to train everyone as required. And those who are trained are not trained from this MRT. So, I request to arrange their training using our MRT line.			
Abdul Matin Chowdhury (APD, MECH, L-5 NR)	<p>In continuation of Mr. Zakaria, he mentioned two points</p> <p>1. JET team is requested to make a training module for the DMTCL training academy.</p> <p>2. JET team is requested to share the findings they made by visiting various sites and stations.</p>			
Md. Golam Sarwar (Senior Electric Inspector)	Gave suggestions to build a communication module including contact person, and contact number in case of emergency.			
A.B.M. Arifur Rahman (PM-5 MRT Line-6)	Drills organized under the Safety Management System should not be conducted only at the stations but also in other areas such as workshop, maintenance areas etc.			
Krishna Kanta Biswas (APD, MRT Line-6)	Following JICA Expert inspection, we would like to know whether the equipment in the station controller room is enough to deal with emergencies like Osaka Metro or not.			

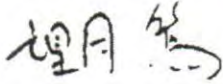
Speaker:	Content:	Action by:	By When	Decision
Mochizuki (JET)	JET visited various site stations and station control rooms. According to Osaka Metro members, the station control room has adequate facilities to deal with emergencies. After talking with MRT staff, Osaka Metro members found that they do not have enough training or experience to use the facilities related to emergencies. It is not just about having the facilities. It's really important to know the utilization of the facilities. So, Training is required.			
Md. Sajid Hasan (AM, OCC)	He mentioned from his one-month experience that the site staffs have a clear understanding of emergency equipment. He felt that everyone should have training on the Accident, Incident and Disaster Manual under the MRT Training Center.			
Suman Das Gupta (JICA)	Whether there are any instructions from DMTCL regarding any abandoned suspicious material.			
M. A. N. Siddique (MD, DMTCL)	Instructions have been given to the Station Controllers or Station Staffs that if any suspicious abandoned object is found at the station or inside the train, Station Controller will take the necessary action immediately.			
A.B.M. Arifur Rahman (PM-5, Line-6)	Warning messages are broadcast periodically over the public address system regarding this issue.			
Suman Das Gupta (JICA)	Recommended three topics; 1. Making some videos: To ensure safety it will be helpful. If safety-related videos are broadcast on monitors at stations, waiting passengers can learn from them. 2. Installing a Scanner at some vulnerable areas like Delhi Metro prevent bringing of dangerous goods. 3. Request to Managing Director for an extension of this Safety Project until full Commercial Operation starts.			
M. A. N. Siddique (MD, DMTCL)	He emphasized on the extension of the project up to June 2024 i.e. One-year Extension.			
Suman Das Gupta (JICA)	We would like to discuss the procedure for the extension of this project with JICA Headquarters.			
Muhammad Shahjahan (PM-1, Line-6)	He requested to conduct the Safety Internal Audit in DMTCL. JET may share the format for the audit.			

Speaker:	Content:	Action by:	By When	Decision
Mochizuki (JET)	<p>He commented on the two issues discussed above;</p> <ol style="list-style-type: none"> 1. We have already prepared an internal safety audit Draft manual which includes the format. JET would like to discuss the PIU meeting regarding the contents of manual. 2. Conducting emergency training and drill is very important. 			
Md. Bazlur Rahman (Fire Service).	<p>He requested to provide training on what to do in an emergency and how to use safety equipment during a fire or earthquake.</p>			
M. A. N. Siddique (MD, DMTCL)	<p>In response to the request, he said that we have already completed the basic training to use equipment in coordination with the Fire Service and will do more in the future.</p>			
Md. Zahid Hossain (RTHD)	<p>Mr. Zahid began his comment by thanking the JICA team for this Safety Management System project. He mentioned some points-</p> <ol style="list-style-type: none"> 1. This is a highly focused project. So, we have to be very careful of avoiding minimum safety breaches. 2. Internal safety audit should maintain Global standard. 3. For the formulation of the Safety Committee, we should consider the context of the country. 4. Safety Manual should be circulated widely to the concerned person. So that the concerned person can take necessary action in an emergency by following standard procedures to ensure safety. 			
M. A. N. Siddique (MD, DMTCL)	<p>Mr. Siddique participated in the discussion session and spoke about his experience. MRT Line-6 starts operation on 29th December 2022. During this short period, DMTCL face some sort of safety issues during the operation</p> <ol style="list-style-type: none"> 1. On 1st January we found a lot of balloons, lanterns, and kites on the electric contact wire. As a result, the train operation was suspended for sometimes. 2. We also observed one medical emergency at the station. 3. We found some issues with the electrical lines for a while. <p>Because of the safety training, we overcome all these situations easily. From the fire service, we got advice to conduct more drills. They asked us to conduct fire drills as well as earthquake drills.</p>			

Speaker:	Content:	Action by:	By When	Decision
Nobuo Nakai (Osaka Metro)	He thanked everyone for supporting this Safety Management Project. Osaka Metro has been assisting DMTCL since late 2020 to ensure safety. The formulation of a Safety Policy has been achieved despite various adversities. And he noted with joy that everyone was working consciously to ensure safety. DMTCL may face several problems once commercial operations begin, and everyone has to work together to solve this problem. Osaka Metro will provide support not only during the project but also after if necessary. He wished for the success of MRT Line-6 and expressed hope that the urban Railway will play its role as a major public transport in Bangladesh.			
Mochizuki (JET)	Following Mr. Nakai's words, he requested DMTCL to share various information related to Safety Management System among DMTCL members. And asked everyone to think about how to improve the Safety Management System.			
Shintaro Ogiwara (JICA)	Thanked everyone, appreciated the partial operation, and mentioned Mr. Mochizuki and JET members have arranged various materials and training on Safety Management System and organized various discussions in PIU meetings. He hoped that DMTCL would manage their day-to-day operations keeping in mind the safety of themselves and their customers.			
M. A. N. Siddique (MD, DMTCL)	<p>Closing Remark</p> <p>Thanked all the participants for giving their valuable opinions. He mentioned the following:</p> <ol style="list-style-type: none"> 1. Formation of Safety Committee: He requested the Director Operation and Maintenance (Mr. Nasir) to take the necessary steps to set up the Safety Committee as soon as possible 2. Suggestion for the procured item for Safety: He requested the JET team to check whether the purchased safety equipment is adequate or not and give necessary suggestions. 3. Request for Arrange Drills: He requested to organize Drills during the operation based on the Accident, Incident and Disaster Manual of DMTCL. He also mentioned that the drills could be organized unannounced to monitor the response of the staffs in emergency situations. 	<p>DMTCL: Mr. Nasir Uddin</p> <p>JET</p> <p>JET</p>	<p>As soon as possible</p> <p>As soon as possible</p> <p>As soon as possible</p>	<p>Safety Committee shall be formed immediately</p> <p>As requested</p> <p>As requested</p>

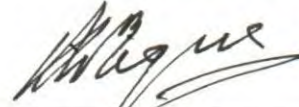
Speaker:	Content:	Action by:	By When	Decision
	4. Request for preparing videos: He requested JET for assisting DMTCL in preparing Safety Management System videos.	JET	As soon as possible	As requested
	5. Format for Safety Audit: He requested JET to provide format of safety audit to DMTCL for conducting Safety Audit.	JET	As soon as possible	As requested

For and on behalf of the Expert Team



Atsushi MOCHIZUKI
Team Leader/ Safety Management
JICA Expert Team

For and on behalf of the DMTCL



M. A. N. Siddique
Managing Director
Dhaka Mass Transit Company Limited

Annex 6: Meeting Minuets of JCC

4th JCC (19 July 2023)

Minutes of Meeting

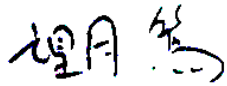
Subject:	4th Joint Coordination Committee (JCC) Meeting
Location:	31st Floor, Conference Room, Hotel Nikko, Osaka, Japan and 13th Floor, Conference Room, DMTCL, Dhaka, Bangladesh and Zoom
Date:	19th July 2023, 14:00– 15:30 (Japan Standard Time)
Participant:	<p>[DMTCL] M.A.N Siddique (MD), Md. Aftabuddin Talukder (P.D. MRT Line-6), Nasir Uddin Ahmed (Director O&M), Krishna Kanta Biswas (Addl. PD, MRT Line-6), Md. Zakaria (APD, Line-6), Md. Iftikhar Hossain, Mr. A.B.M. Ariful Rahman (Project Manager, CP-08, Line-6), Md. Abdul Baten Fakir (DPD, F&A, Line-6), Md. Abu Bakor Siddique (Asst. Manager Mechanical), Mr. Mohammad Raihan Faruque (Asst. Manager Inspection, Planning, and Monitoring), Mohammad Shahjahan (Project Manager 1, Line-6), Abdul Matin Chowdhury (APD, MECH, L-5 NR), Kamrun Nahar (AE, CIVIL, Line-6), Nazmul Islam Bhuiyan (DPD, PR, DMRTDP Line-6), Md. Saidur Rahman (Principal, Training Centre), A K M Hafizur Rahman (DTCA), Khondaker Ehteshamul Kabir (APD, DMTCL), Fire Service & Civil Defense</p> <p>[RTHD] Md. Zahid Hossain (Additional Secretary)</p> <p>[FIRE SERVICE AND CIVIL DEFENSE] Md. Bazlur Rahman (DAD, fire service and civil defense)</p> <p>[DTCA] A K M Hafizur Rahman (Additional Executive Director)</p> <p>[JICA Headquarters] Hideaki Yamaguchi, Tasuku Iida</p> <p>[JICA Bangladesh office] Suman Das Gupta</p> <p>[Expert Team] Atsushi Mochizuki, Ryohei Hashimoto, Nobuo Nakai, Jun Kawashita, Keiji Matsuoka, Hayami Saso, Yasuji Ogino, Mahboob E Khuda (Local Expert), Mohammad Monibur Rahman (Local Expert)</p>
Agenda:	<ol style="list-style-type: none"> 1. Review of 3rd JCC meeting. 2. Presentation <ol style="list-style-type: none"> 2.1 Introduction of the Project Output – <i>Expert Team</i>. 2.2 Update of Project Output – <i>Expert Team</i>. 2.3 Way Forward for Implementation of SMS – <i>Expert Team</i>. 2.4 Future Plan for Capacity Building on SMS– <i>Principal of DMTCL Training Center</i>. 3. Commitment of Top Management to Ensuring the Safety and Establishment of SMS in DMTCL

	4. Discussion 5. Closing Remarks by DMTCL
Recorded by:	JICA Expert Team (JET)
Handout:	1. Introduction of Project Output 2. Project Monitoring Sheet 3. Way Forward for Implementation of SMS

Speaker:	Content:	Action by:	By When	Decision
M.A.N Siddique (MD, DMTCL)	1. Opening Remarks Describe opening remarks and facilitate the program.			
Yamaguchi (JICA)	2. Opening Remarks Described the importance of the Safety Management System in railway operation.			
Mochizuki (JET)	3. Introduction of the Project Output Briefly explained the result of the last JCC meeting.			
Mochizuki (JET)	4. Introduction of the Project Output Explained the conducted project activities and obtained output from these activities.			
Hashimoto (JET)	5. Update of Project Monitoring Sheet Informed update of the 5 th monitoring sheet and briefly explained the updated point in the project monitoring sheet.			
Mochizuki (JET)	6. Way Forward for implementation of SMS Explained the desirable SMS activities by DMTCL toward developing SMS in DMTCL after the JICA SMS project.			
Saidur Rahman (DMTCL)	7. Future Plan for Capacity Building on SMS Explained the human resource and training system including SMS-related training in DMTCL. Emphasized the necessity of further support regarding the capacity building for trainers and hands-on training.			
M.A.N Siddique (MD, DMTCL)	7. Commitment of Top Management to Ensuring the Safety and Establishment of SMS in DMTCL Looked back at the opening of the operation and faced problems in the operation stage and described the importance of Safety operation. The Managing Director emphasized its commitment to further safe operations and the implementation of SMS.			
	8. Discussion			

Speaker:	Content:	Action by:	By When	Decision
Nasir Uddin Ahmed (Director O&M)	Mr. Nasir mentioned the importance of the following manuals to ensure safety in DMTCL. Also, he said, the training implementation using manuals prepared in each department should be implemented to penetrate the contents of manuals.			
Md. Iftikhar Hossain (GM Operation)	Mr. Iftikhar mentioned the need for training and drills for many emergency cases, not just fire cases, and the importance of conducting drills with relevant staff and actual equipment.			
Md. Abu Bakor Siddique (Assistant Manager)	Mr. Abu Bakor said, DMTCL would like to prepare the depot working procedure for secure safety in the depot. If Osaka Metro has such kind of manual, we would like to refer to it.			
A.B.M Arifur Rahman (Deputy Secretary)	Mr. Arif said, when I visited Osaka Metro in training in Japan, I observed the demonstration training in Midorigi Depot. DMTCL also wants to install such kind of practical training for depot staff.			
Krishna Kanta (Additional Project Director)	Mr. Krishna said, when I attended the training in Japan, I learned an internal safety audit system in Osaka Metro. I heard that this activity will be applied to DMTCL. But this activity has not been started yet.			
M.A.N Siddique (MD, DMTCL)	<p>9. Closing Remarks</p> <p>Mr. M.A.N Siddique reviewed this JCC and approved the following 3 things.</p> <ol style="list-style-type: none"> 1. Project output including the 5th Monitoring Sheet 2. SMS activities including Safety Committee will be promoted in DMTCL toward the establishment of SMS 3. Project completion on 31st July 2023 <p>In the comment about unapproved SMS-related manuals identified as unfulfilled tasks by the Expert Team in JCC mentioned, the Managing Director allowed them to be applied to DMTCL toward the implementation of SMS activities.</p> <ol style="list-style-type: none"> 1. (Draft) Basic Procedure of Internal Safety Audit 2. (Draft) The Procedure Manual for Potential Risk Sharing and Reporting 3. (Draft) The procedure manual of the Emergency Drill 			

For and on behalf of the Expert Team



Atsushi MOCHIZUKI
Team Leader/ Safety Management
JICA Expert Team

For and on behalf of the DMTCL

M.A.N Siddique
Managing Director
Dhaka Mass Transit Company Limited

Annex 7: Material for Technical Training

1st Training (Hybrid Style)

1st Batch: 2 - 3 July 2021

2nd Batch: 9 - 10 July 2021

3rd Batch: 16 - 17 July 2021

The Project on Technical Assistance for MRT Safety Management System on Line 6

Training in Dhaka 1: Railway Characteristics and Safety Assurance Mechanism

22nd /Apr./2021

JICA Expert Team (JET)

Outline

1. Characteristics of Railway Transportation and Railway Features
2. Railway System Configuration and Safety Assurance Mechanism
3. Implementation of Maintenance for Safety Assurance
4. Summary

Purpose and Aims of this Course

- Learn basic knowledge required to operate MRT
- Discuss and deepen understanding of safety assurance based on the characteristics and features of MRT and railways

1. Characteristics of Railway Transportation and Railway Features

In this chapter, you will learn about the unique features of railway systems, with an understanding of the role and characteristics of railway transportation.

NIPPON KOEI



1.1 What are the roles of railways?

- Please consider the role of the railway.

1.1 Roles of Railways

As a means of transportation that is indispensable for everyday life, it is an absolute requirement that it be safe and secure.

- Indispensable means of transportation for everyday life, business, leisure and tourism
- Safe, secure and efficient vehicles
- Energy-saving, environmentally-friendly mass transit
- A lifeline for everyday life
- Vehicles run efficiently on railway tracks

1.2 Advantages and Disadvantages of Railway Transportation

While there are many advantages to railways, there are also disadvantages in relation to safety.

Advantages	What are the disadvantages?
Can operate many coaches in a train set allowing large volume transportation	
Possible to operate high-speed and high-frequency	
Highly regularity/punctuality with few external impacts on transportation	
Environmentally-friendly means of transportation	

1.3 Railway Transportation Methods

Even if the transportation methods differ, safety considerations are the same.

Locomotive

Bangladesh Railway

Trains that concentrate power to tow or propel passenger and cargo cars
[Concentrated traction system]

- Steam locomotives
- Electric locomotives
- Diesel locomotives

Electric Train

DMTCL MRT

Trains that take in electricity from “overhead lines” above tracks, driving a motor attached to the vehicle **[Distributed traction system]**

- ✓ Advantage
Motors can be miniaturized because the power of each motor only needs to be strong enough to move 1-2 cars. Also easier to accelerate and decelerate than a locomotive.
- ✓ Disadvantage
Takes effort to maintain because of the many moving parts.

1.4 Types of Railways

Regardless of the type, safety considerations are the same.

Railways are a means of transportation that moves rolling stocks along a fixed support guide such as a rail etc. There are two main types.

(1) Ordinary railways

Ordinary rail that runs on iron wheels on two rails

(2) Special railways

- Suspended, straddled rail - Monorail
- Guide-rail - Automated guideway transit (AGT)
- Trackless trains - Trolleybus
- Funicular rail – Cable car
- Levitating rail – Superconducting Maglev

1.5 Features of Railways

- Consider the features of railways in comparison with road traffic.
- Please consider safety effect in view of these features.

1.5 Features of Railways

Safety assurance needs to take into account the features of railways.

Features of Railways	Impact on Safety of the Features
(1) Runs on a dedicated track (lane)	<ul style="list-style-type: none">- Not possible to freely change direction- Collisions with other trains and obstacles will occur when they are in the dedicated lanes- As a result of the above, derailment or overturning can be a serious disaster
(2) Long breaking distance	<ul style="list-style-type: none">- Trains cannot stop immediately- Speed control is extremely important in addition to braking operation
(3) Connected operation possible	<ul style="list-style-type: none">- Complex movement between vehicles
(4) Managed and operated by business operators	<ul style="list-style-type: none">- If operators make a mistake, fatal accidents can occur

2. Railway System Configuration and Safety Assurance Mechanism

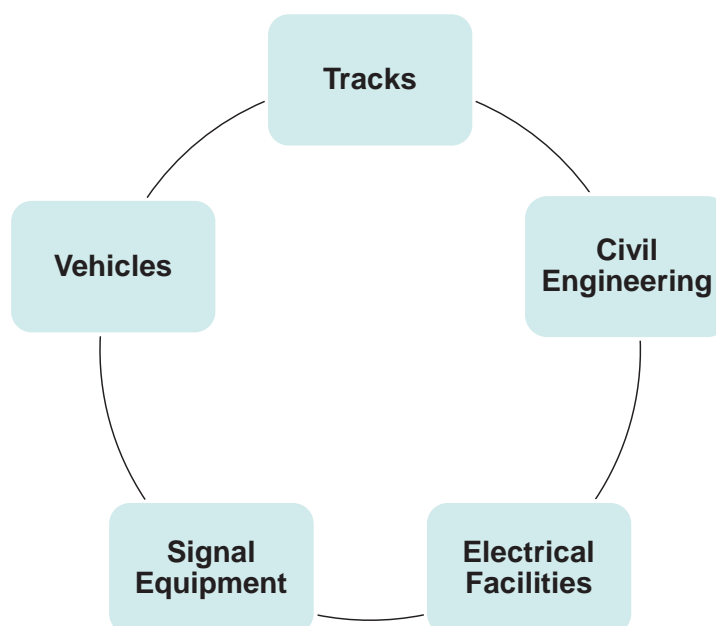
In this chapter, you will learn about what kind of mechanism is necessary to assure safety, with an understanding of the configuration of railway systems.

NIPPON KOEI



2.1 Railway System Configuration (Hard Elements)

Railway systems consist of a variety of “hard” elements. In addition to proper maintenance, it is important to properly operate hard elements to ensure safety.

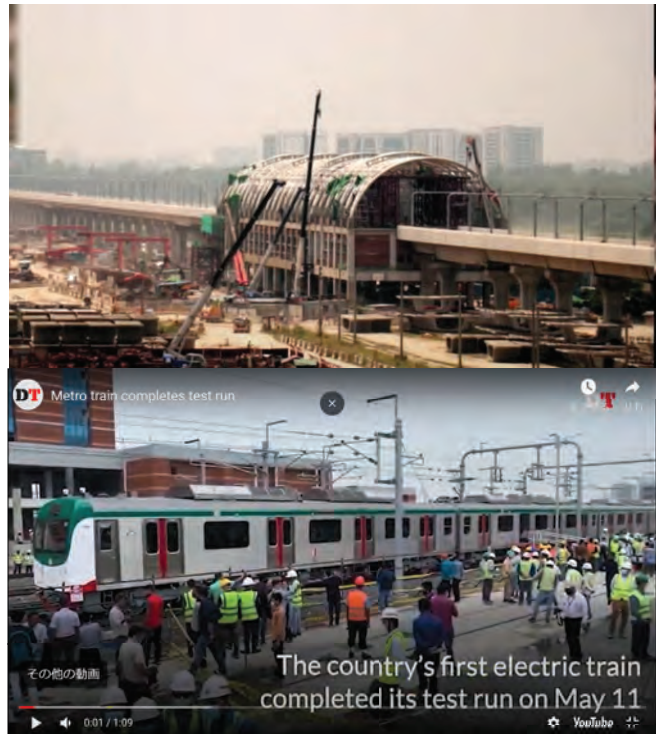


NIPPON KOEI



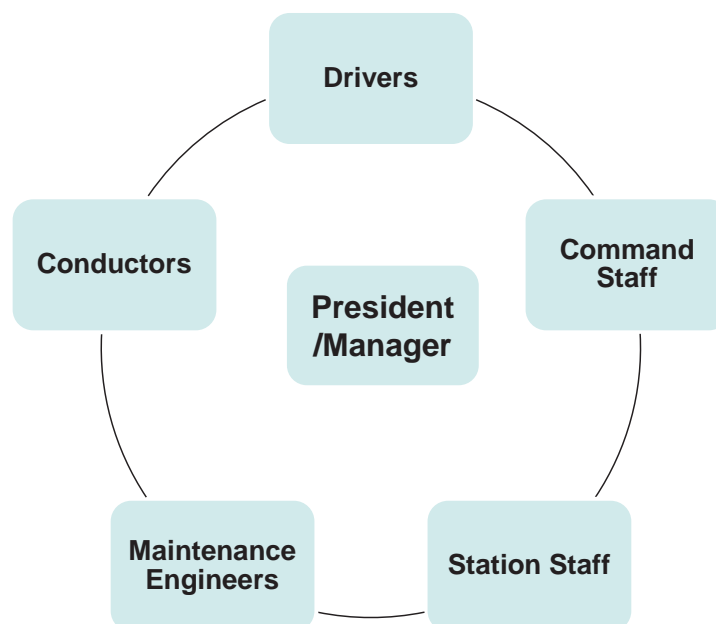
2.1 Railway System Configuration (Hard Elements)

- Insert the hard configuration of MRT Line 6



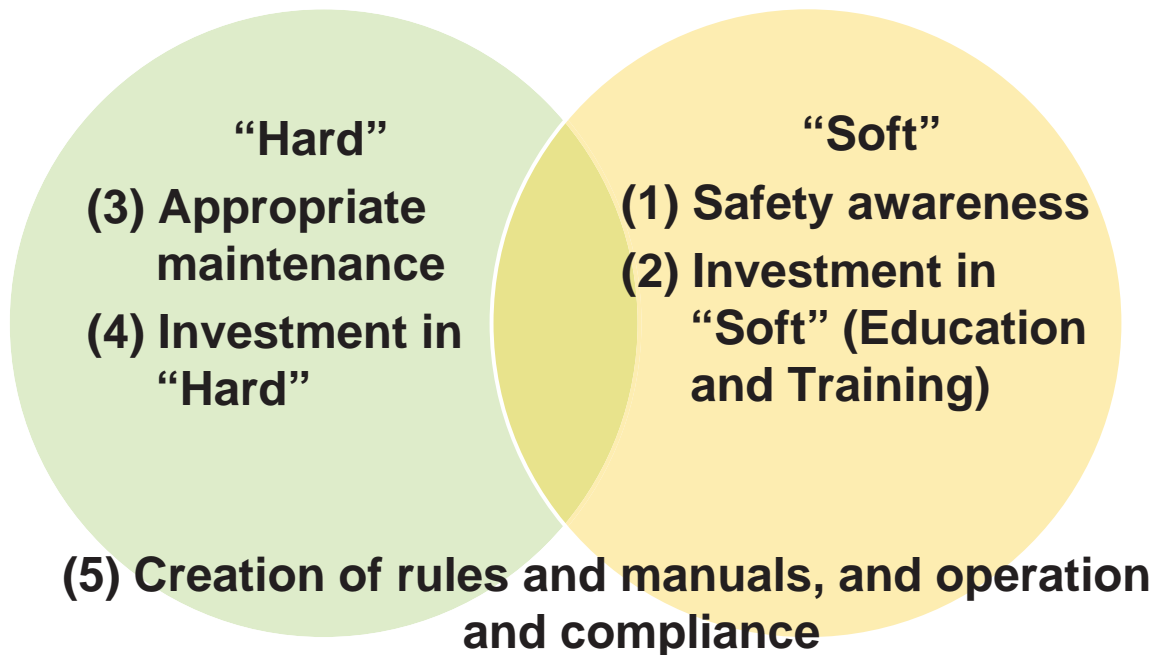
2.2 Railway System Configuration (Soft Elements)

Many people are involved in railway operations. Everyone needs to be aware of the technical matters under your responsibility as you carry out your day-to-day work.



2.3 Components of Safety Assurance Mechanism

Railways are a transport system when “Hard” and “Soft” come together to work as one. Every element is indispensable.



2.4 Safety Assurance Mechanisms ((1) Safety Awareness)

Railway services are only possible because of “staffs” that operate “various hard elements” with an awareness of safety. This recognition is shared among all employees.

Safety awareness that should be shared by all employees

- Railway service is the transportation of many customers and cargo to their destinations at high speed
- Railways have a great impact on society when there is an accident
- Railways are very different from services that can be created simply through desk work
- Always be aware that “safety” is the most important issue for railways
- It is important that actions are kept within the extent to which safety can be assured

Think about your own recognition of transportation safety.

2.6 Safety Assurance Mechanisms ((2) Education and Training)

Education and training must be ongoing to confirm proficiency and to ensure the qualities, knowledge and skills of the “staffs” that are directly involved in operations

Education and training to be implemented as an organization

- Establish and implement the content and procedures for education and training necessary for work responsibilities
- Perform physical and mental aptitude tests

Think about how to handle any doubts about aptitudes or knowledge and skills.

2.7 Safety Assurance Mechanisms ((3) Appropriate Maintenance)

Standards must be set for “Hard” as a basis for maintaining their required structure and function, and appropriate maintenance must be carried out to prevent safety functions from deteriorating.

Important points for maintenance

- Have necessary structure and performance
- Have “fail-safes” to operate safely in the event of a fault
- Check mutual interoperability and function at time of introduction and confirm safety

Maintenance staff: Think about what action you would take if you found fault such as a small crack etc.

Manager: Think about what action you would take if you received a report of a small fault from maintenance staff.

2.8 Safety Assurance Mechanisms ((4) Investment in Things and Proper Operation)

In addition to needing to invest in “Hard” to ensure safety, with a proper understanding of the features of railways, it is also important to operate these “Hard” so that they function properly to ensure safety.

Important investments and operations

- Safety and disaster prevention measures (movable platform fences, fire measures, earthquake resistance measures)
- Transport stability measures (track improvement, interlock update)
- Update of aging equipment (substation equipment, electrical safety equipment, large track maintenance equipment update)
- Vehicles (vehicle update, drive status recording equipment update)
- Other

2.5 Safety Assurance Mechanisms ((5) Creation of Rules and Manuals, and Operation and Compliance)

It is important that staff fully understand “why these rules are necessary” and that they comply with them.

Reasons for the need for operation and compliance with rules and manuals

- “Things” such as driving, vehicles, tracks, electrical equipment and driving safety equipment etc. rely on the correct operation and maintenance of “People”.
- The following rules are for the smooth functioning of operations.
 - Railroad rules specified by the national government as laws and regulations.
 - Basic operation handling and maintenance internal regulations based on laws and regulations
 - Manuals for smooth operation and to be reflected in actual work

Think about what kinds of rules and manuals are needed by DMTCL.

2.9 Safety Assurance Mechanisms (Specific Examples)

▪ For example, train collisions are a unique accident of railways, so please consider what kind of measures can ensure safety against train collisions.

Please consider specific measures along with the features of railways that may cause collisions to occur.

3. Implementation of Maintenance for Safety Assurance

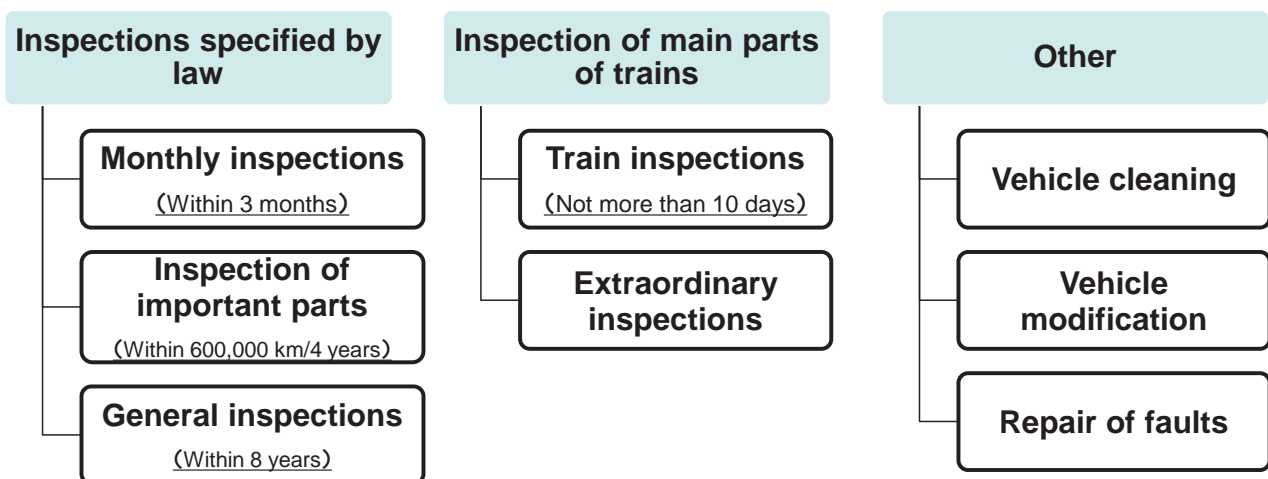
In this chapter, you will learn about maintenance methods for safety assurance.

3.1 Outline of Necessary Maintenance Work

- After the opening of Line 6, what kind of maintenance work shall be done?
 - What is the necessary “Hard” for maintenance?
 - What is the contents of maintenance?
 - How often?
 - Do you really need to conduct maintenance initially even which is developed by Japanese ODA project?

3.2 Maintenance Work Required in Japan (Vehicles)

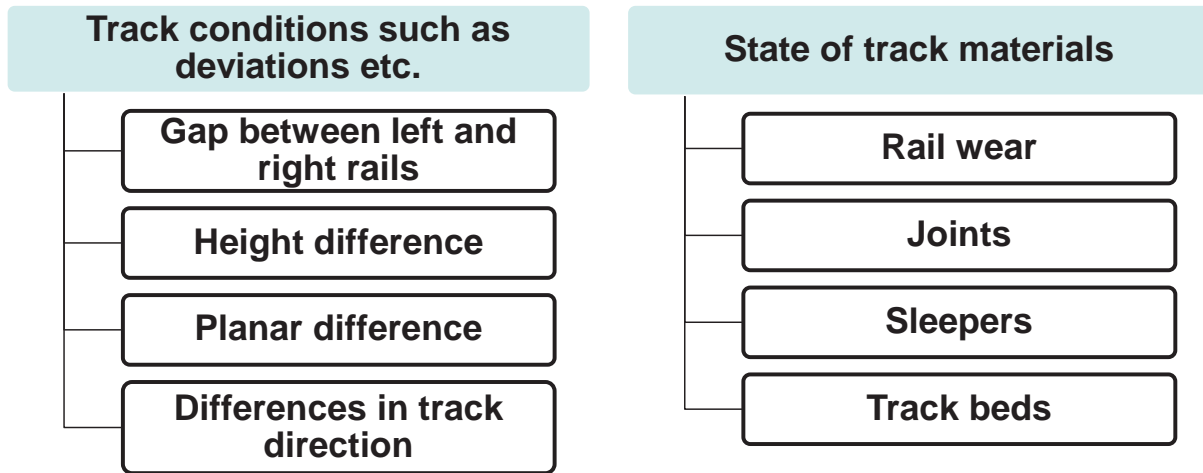
In Japan, inspections established by law and companies must be carried out on vehicles.



What kinds of inspection items are needed to ensure safety in DMTCL?

3.2 Maintenance Work Required in Japan (Tracks)

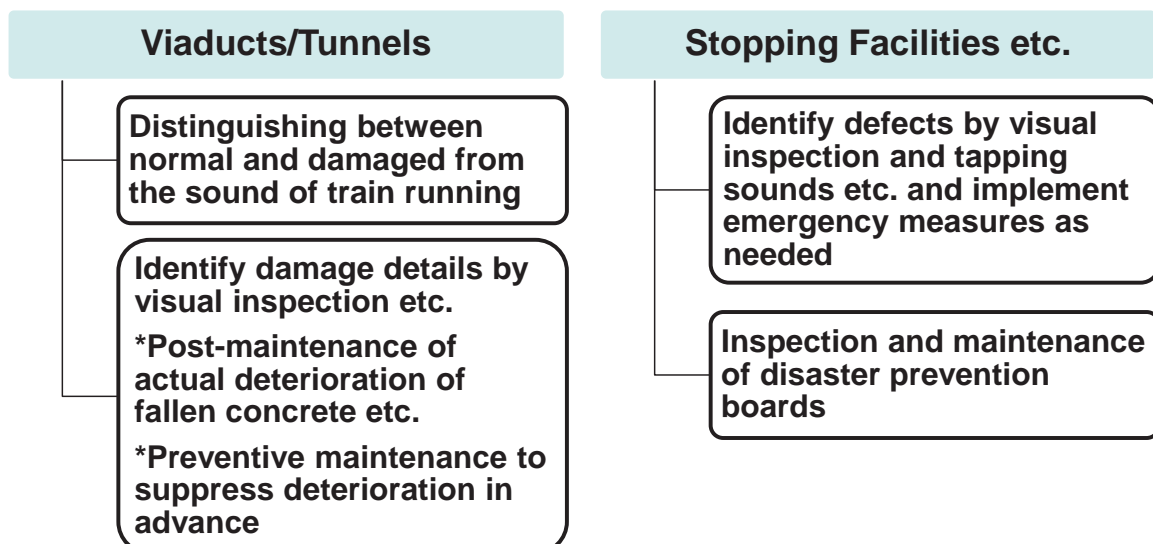
Check the condition of tracks and materials from various perspectives.



How frequently is maintenance carried out to ensure safety?
Also, why is maintenance needed?

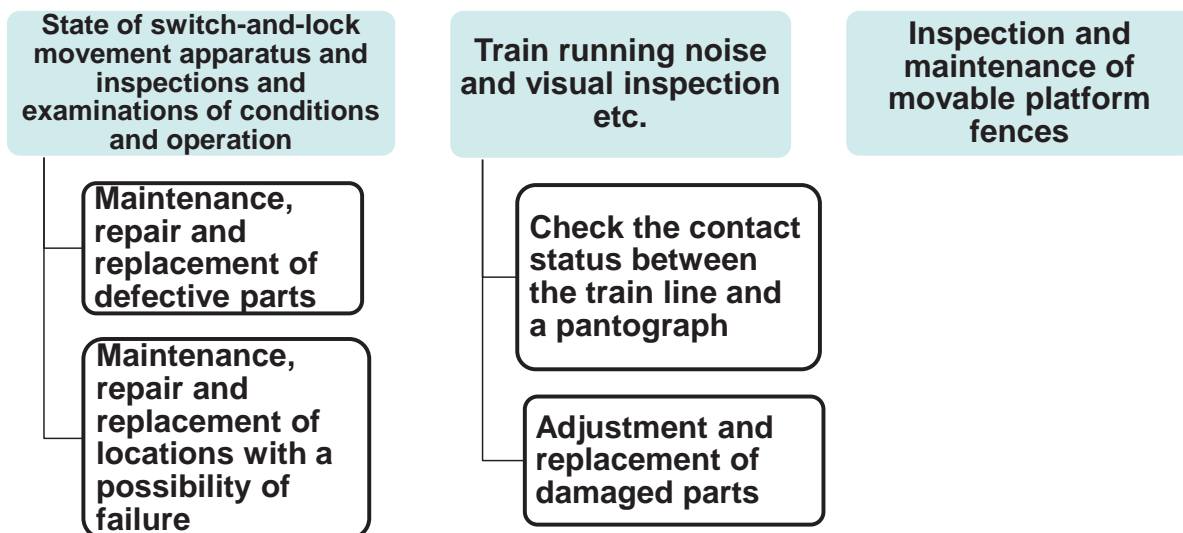
3.2 Maintenance Work Required in Japan (Structures)

Proper maintenance must be performed in civil engineering structures to extend useful life.



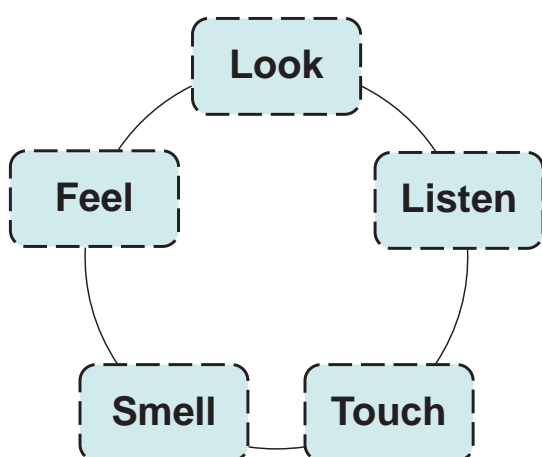
3.2 Maintenance Work Required in Japan (Electrical Facilities)

Proper maintenance must also be carried out for electrical facilities.



3.3 Important Elements of Maintenance Work

Transport safety cannot be secured without effective daily maintenance relying on the five senses.



[Important Elements in Maintenance Work]

- **Preventive maintenance** to control deterioration
→ Reduce transport problems to contribute to safe and stable transport. Reducing total maintenance costs.
- Early detection of damage and **emergency response**
→ Prevent the spread of transport problems and perform early recovery.

Do you think that preventive maintenance is necessary for “Things” that haven’t been damaged? Please also consider the cost.

4. Ensuring Safety in Maintenance Work

In this chapter, you will understand how to ensure safety in maintenance work.

NIPPON KOEI



4.1 Ensuring Safety in Maintenance Work

The safety of employees cannot be protected if safety is not ensured for maintenance work itself. This can also lead to transport problems etc.

(1) Work conducted by closing tracks

- Construction and work carried out to ensure safety through **measures that prevent trains from operating** (suspending operation etc.) in certain sections

(2) Work/patrols performed during operation

- **Placement of train guards and removal of workers and work tools outside of clearance limits etc.** to ensure safety

Think about the extent to which transport and employees would be affected if safety cannot be ensured in maintenance work.

NIPPON KOEI




5. Summary

Summary of this training.

5.1 Summary

Railways are enormous transport systems which consist of complex “Things” that are made, maintained and handled by many “People”. Safe and secure railways systems can be operated by having each of these function properly.

- **What are the roles of railways?**
- **What are the unique features of railways and related safety considerations?**
- **What is the configuration of railway systems?**
- **What are the five safety mechanisms?**
- **What are the important elements of maintenance work?**



Thank you very much for your kind attention
আপনাদের সবাইকে ধন্যবাদ

The Project on Technical Assistance for MRT Safety Management System on Line 6

Training in Dhaka 2: Japanese Railway Accidents and Lessons Learned

22nd /Apr./2021

JICA Expert Team (JET)

Outline

1. Worldwide History of Railways and Accidents
2. Japanese Accident Case Study and Lessons Learned (1951 Train Fire Accident)
3. Japanese Accident Case Study and Lessons Learned (1962 Train Collision)
4. Japanese Accident Case Study and Lessons Learned (2005 Train Derailment)
5. Accident Trends in Japan and Future Measures
6. Mission of Railway Operators
7. Summary

Purpose and Aims of this Course

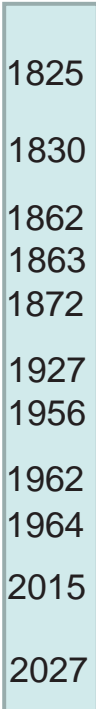
- Understand railway accidents in Japan and lessons learned
- Discuss whether lessons learned in Japan can be utilized by DMTCL

1. Worldwide History of Railways and Accidents

In this chapter, you will learn about the progress of railway technology and the history of accidents around the world.

1.1 Worldwide History of Railways

Railway technologies have continued to advance for nearly 200 years.

- 
- 1825 • The Stockton and Darlington Railway opened as the world's first public steam locomotive (England)
 - 1830 • The Liverpool and Manchester Railway became the world's first for-profit railway operator with regular operation using a timetable (England)
 - 1862 • Opened between Darshana and Jagotee (Bangladesh)
 - 1863 • The Metropolitan Railway opened the world's first subway (London)
 - 1872 • Japan's first railway opened between Shimbashi and Yokohama Station (Japan)
 - 1927 • Japan's first subway opened between Ueno and Asakusa (Japan)
 - 1956 • All lines on the Tokaido Main Line electrified (Japan, Tokyo to Osaka (550km) in 7 hours, 30 minutes)
 - 1962 • Started research into linear motor cars (levitated run successful in 1972)
 - 1964 • Started the commercial operation of the Tokaido Shinkansen (Tokyo to Osaka (550 km) in 4 hours)
 - 2015 • 603 km/h achieved by the linear motor car on the Yamanashi maglev test line (manned driving)
 - 2027 • Aiming to open the Chuo Shinkansen (between Shinagawa and Nagoya)

1.2 Worldwide History of Railway Accidents

With the progress of railway technologies, many tragic accidents have also occurred. Technological progress and employee education are being carried out from the lessons learned from these accidents.

1830

- Liverpool and Manchester railway casualties (England)
*First railway accident in the world

1817

- Derailment/fire accident at Saint-Michel-de-Maurienne (France, 543 dead)
*World's largest railway accident

1874

- Shimbashi Station Yard train derailment accident
*First accident in Japan

1877

- Tokaido Line train collision accident (3 dead)

2019

- Bangladesh Railway train head-on collision (16 dead)
- And many others.

NIPPON KOEI

Osaka Metro Group

2. Japanese Accident Case Study and Lessons Learned (1951 Train Fire Accident)

In this chapter, you will learn about the fire accident that occurred at Sakuragicho Station on the Keihin-Tohoku Line in 1951, and lessons learned.

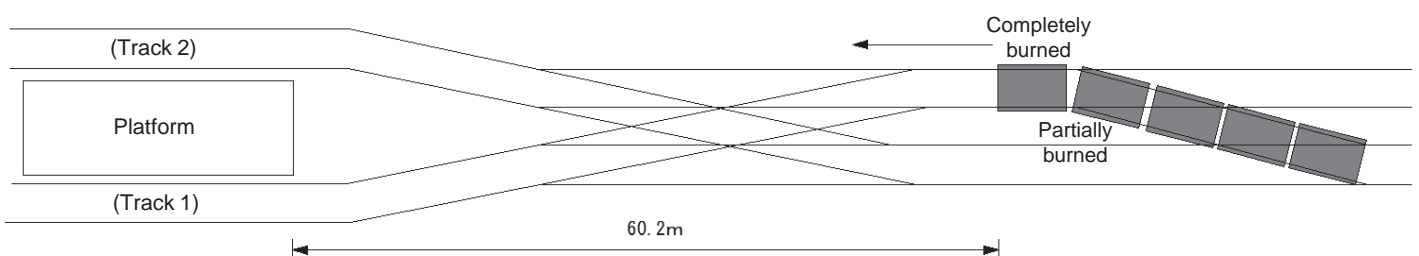
NIPPON KOEI

Osaka Metro Group

Animation

2.1 Outline of Accident

- A worker accidentally dropped a spanner which cut the messenger wire
- The messenger wire became entangled in the train's pantograph, causing a fire
- The fire spread to the cars, with the first car completely burnt out
- There were 106 dead and 92 injured



Sakuragicho Station (in 1951)

2.2 Causes of Accident and Expansion Factors

- Causes of the Accident

Human Error	<ul style="list-style-type: none"> ○ A worker accidentally dropped a spanner during insulator replacement work, cutting the messenger wire. ○ Arrangements were not made immediately to stop the outbound train after the mistake was made. ○ After the cutting of the messenger wire, the circuit breaker at the substation didn't work and power transmission continued for about 5 minutes.
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- Expansion Factors

Natural env.	○ At the time of the accident, there was a 5-6 m tailwind.
Facility specification	<ul style="list-style-type: none"> ○ The roof was made of highly flammable wood and the ceiling was painted. ○ The three-stage windows that were designed to improve ventilation efficiency only had a range of motion of 29 cm, preventing passengers from escaping. ○ Because the gangway door inside the passenger car opened inward, it couldn't be opened by the pressure of the passengers that were attempting to evacuate. ○ There was no indication of an emergency door lever to operate manually from inside the passenger car, so passengers couldn't open the door.
Human Error	○ The crew were distracted and didn't think to operate the outside door lever.

2.3 Lessons that Apply to DMTCL

Think about the lessons that can apply to DMTCL in response to the outline and factors of this accident.

2.3 Lessons Learned from the Accident

- 1) Small human errors can lead to a lot of damage.
- 2) If only performance and efficiency improvements are pursued, safety may end up being reduced.
- 3) Education and training are essential for crew members and station staff, etc.
 - Understanding the location of vehicle equipment and being familiar with handling it
 - Passenger rescue and means of guiding them to safety (top priority)
 - Skills to prevent passengers from panicking (broadcasting technologies etc.)

2.4 National Action in Response to the Accident

In response to this accident, the national government established “Driving Safety Regulations” for railway operators, specifying that employees needed to be instructed and supervised.

Ministerial Ordinance on Ensuring Driving Safety

○Ministerial Ordinance on Ensuring Driving Safety

(昭和二六年七月二日
運輸省令第五十五号)

沿革 昭和三六年運輸令二六号、四五年七九号改正

根拠法令 鉄道営業法一条及び軌道法一四条(三一条において準用される場合を含む。)

(Purpose)

Article 1 This Ministerial Ordinance establishes a code for driving safety that must always be observed by persons engaged in railway and track driving operations (hereinafter “employees”), establishing the concepts of maintaining safety with the purpose of achieving the mission of transportation.

(Code)

Article 2 The driving safety standards to be followed by employees are as shown to the left.

1 Principles

- (1) Ensuring safety is the mission of transportation.
- (2) Compliance with regulations is the basis of safety.
- (3) Strict adherence to work standards is a safety requirement.

二 一般準則

(一) 規程の携帯

従業員は、常に運転取り扱いに関する規

3. Japanese Accident Case Study and Lessons Learned (1962 Train Collision)

In this chapter, you will learn about the train collision that occurred at Mikawashima Station on the Joban Line in 1962, and lessons learned.

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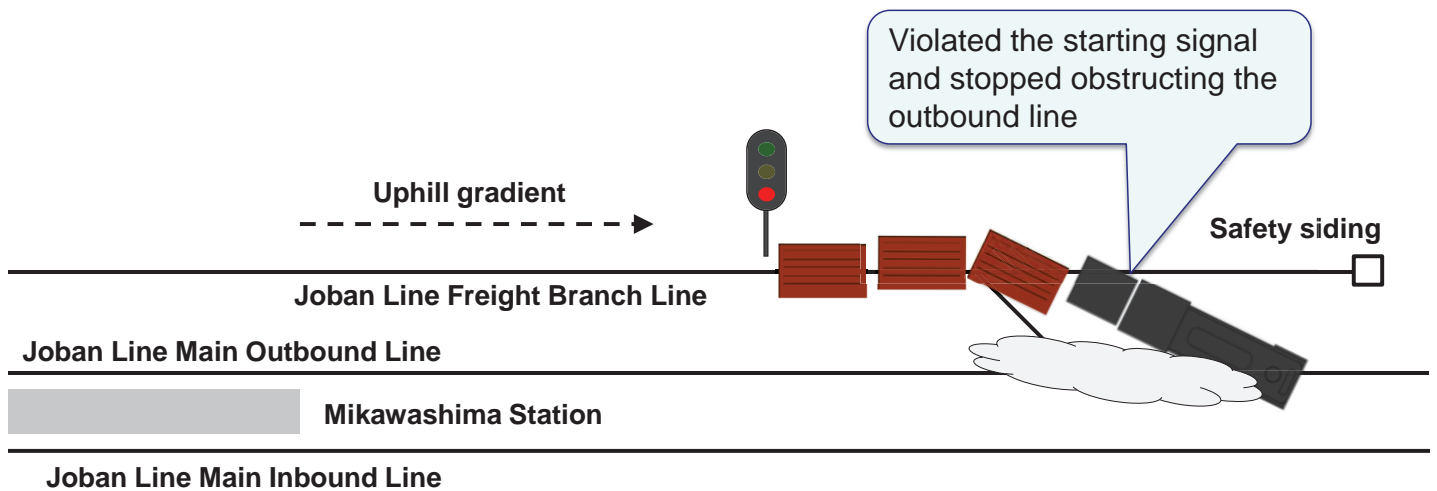


Animation

3.1 Outline of Accident

[1st Accident]

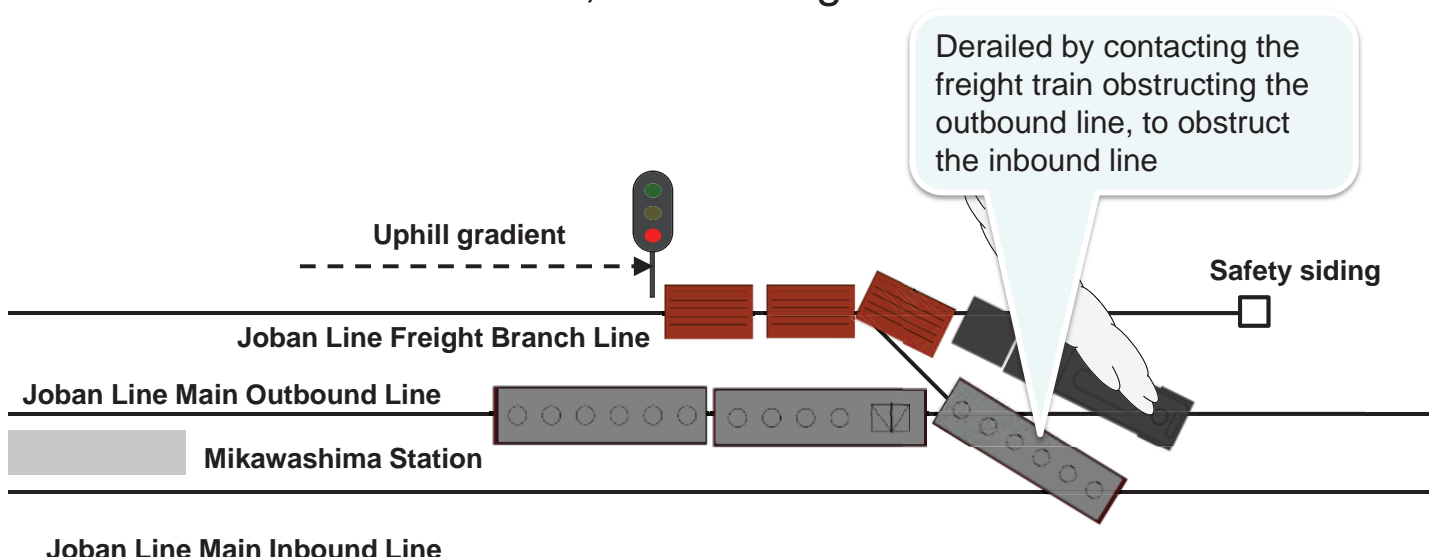
- Freight train red signal violated
- Locomotive and one freight car derailed
- Stopped obstructing the main outbound line



3.1 Outline of Accident

[2nd Accident]

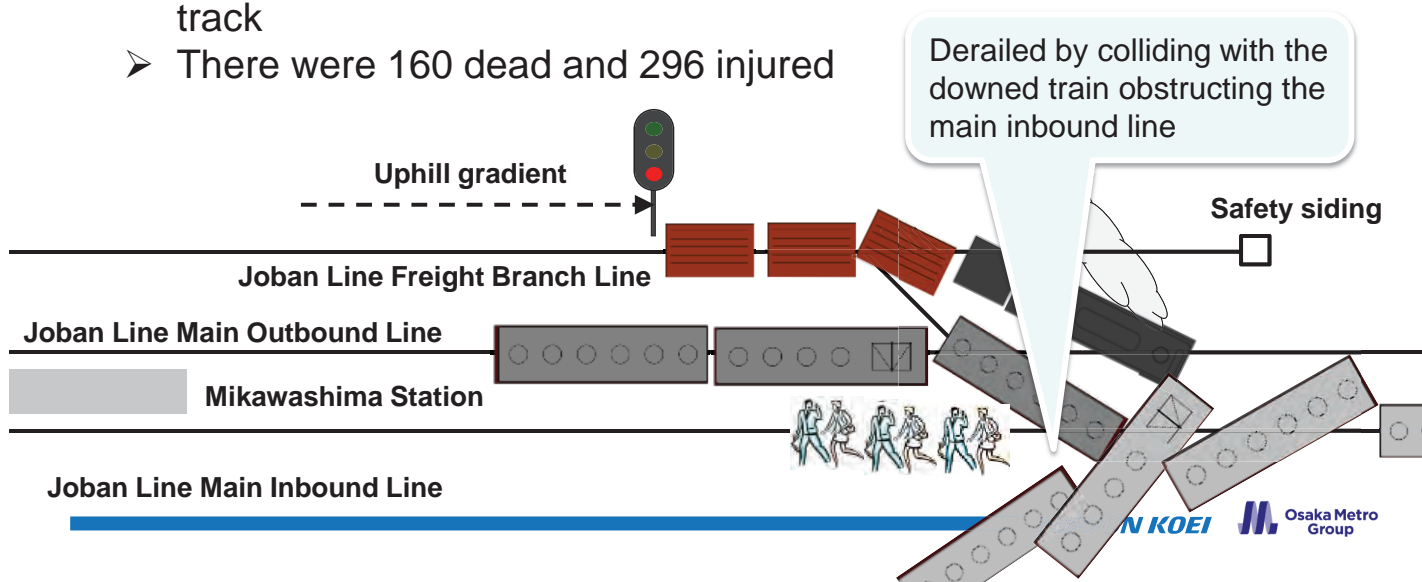
- The outbound train discovered the derailed freight train
- The emergency brake was applied, but not in time to prevent collision with the freight train
- Car 1 was derailed, obstructing the inbound line



3.1 Outline of Accident

[3rd Accident]

- Passengers from the collided outbound train evacuated to the railway tracks
- The inbound train approached the accident site
- Collided with the outbound train, ploughing through passengers that had evacuated onto the railway track
- The leading car was crushed and cars 2-4 fell under the railway track
- There were 160 dead and 296 injured



3.2 Causes of Accident and Expansion Factors

[Accident 1]

Human Error	<ul style="list-style-type: none">The freight train engineer had the illusion of the block signal (progress indicator) on the main line catching the eye first instead of the entering signal (stop indicator) on the main line.
-------------	--

[Accident 2] - [Accident 3]

Human Error	<ul style="list-style-type: none">Over about 6 minutes <u>the crew did not make arrangements for the approaching train to stop (train protection).</u>
Natural env.	<ul style="list-style-type: none">The staff at the signal cabin delayed reporting because of the darkness which caused them to not be able to confirm the second accident.
Management system	<ul style="list-style-type: none"><u>Passengers freely used the emergency door lever in the car and evacuated onto the railway track, walking in the direction of Mikawashima station.</u>The staff at the signal cabin <u>did not have the authority to stop the train.</u><u>Education and training assuming accidents were not carried out on a regular basis.</u>

3.3 Lessons that Apply to DMTCL

Think about the lessons that can apply to DMTCL in response to the outline and factors of this accident.

3.4 Lessons from the Accident

Caused by human error and organizational structures.

- 1) Human beings can make errors based on their belief or illusions.
- 2) When driving trains, be sure to confirm signals, markers and signs etc., without assumption.
- 3) If the adjacent line is obstructed etc., quickly and reliably arrange for other approaching trains to stop (train protection).
- 4) Guide passengers from the train only after fully understanding the surrounding situation and confirming its safety.
- 5) Establish a communication and reporting system between relevant parties.
- 6) Repeatedly train crew members on the arrangement of train protections, contacting and reporting etc. to respond to emergencies.
- 7) Grant appropriate authority and responsibility to personnel.

3.5 Accident Factors at the Early Stages of Railway Operation

At the early stages of immature infrastructure there are some accidents due to “human error.”

Percentages of accident factors in the early stages of railway operation (1840-50)

- (1) Train collisions (56%)
- (2) Damage to axles and wheels (18%)
- (3) Rail damage (14%)
- (4) Railway worker mistakes (6%)

4. Japanese Accident Case Study and Lessons Learned (2005 Train Derailment)

In this chapter, you will learn about the train derailment that occurred on the Fukuchiyama Line in 2005, and lessons learned.

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Animation

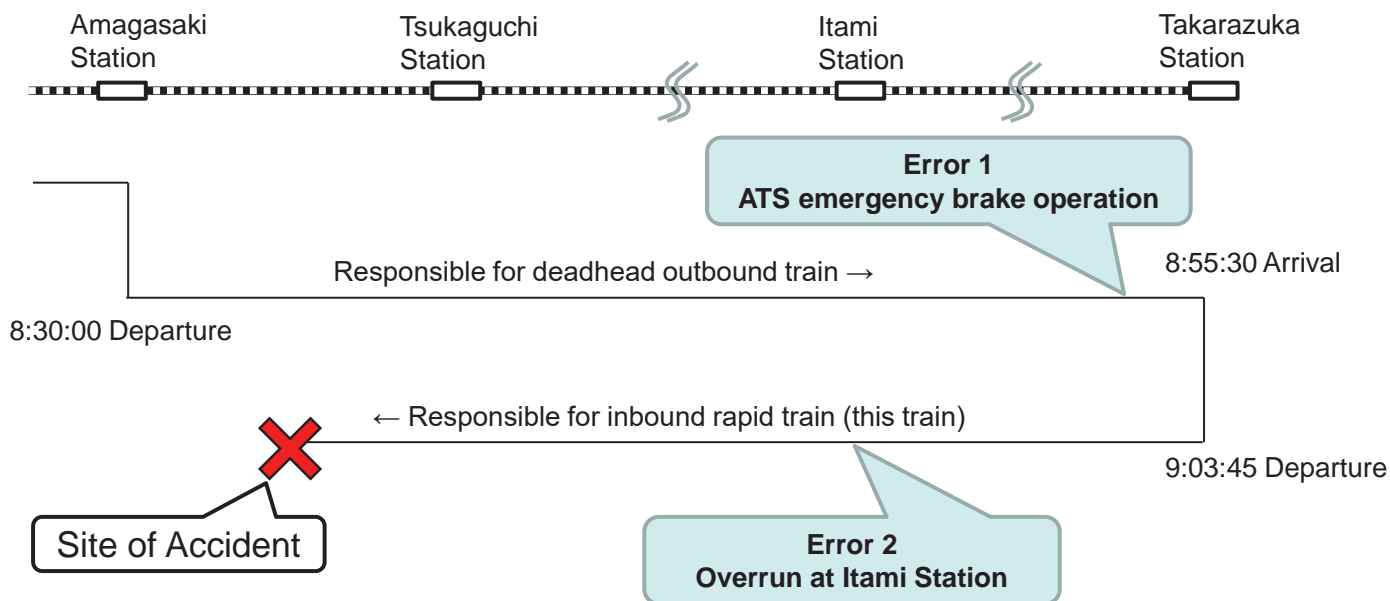
4.1 Outline of Accident

- The train exceeded the speed limit of 70 km/h on the right curve, entering at about 116 km/h
- The first car was derailed and fell to the left
- Cars 2-5 were derailed, and the first two cars then crashed into a building beside the railroad track
- Cars 1-2 were wrecked
- There was a possibility of causing a second accident when the conductor did not protect the train
- A local resident pushed the railroad crossing emergency button and the approaching train stopped
- There were 107 dead (including 1 driver) and 562 injured



4.2 Outline of Accident (Background)

Two small “human errors” caused a major accident.



4.2 Outline of Accident (Background)

[Error 1]

- When arriving at the station as a deadhead train, the procedure of pressing the confirmation button was not completed with the brake applied, and so the emergency brake was activated, stopping the train.
- Following this, ATS return operation was performed without contacting the transport commander, and operation re-started.

[Error 2]

- Upon arrival at Itami Station, the designated stopping position was passed by about 72 m before stopping.
- After departing from Itami Station, the conductor was contacted by internal phone to report that the excess distance should be shortened.

[Major Causal Error]

- The driver was distracted by the conductor reporting to the drive commander, and the decision to apply the brake was delayed.

4.3 Accident Causes and Background

The direct cause of the accident was the human error of the driver, but it was concluded that it was likely that a background factor causing the driver's human error was the driver management method of the company (organization).

- Education and training etc.
 - Day shift education was not perceived as practical driving skill education but as a penalty that was not effective in improving technology.
- Incident reports etc.
 - If drivers caused incidents there was a fear that this would lead to day shift education or disciplinary action etc., and this led to incidents not being reported to the company and no measures being taken.
- Ignoring unsafe incident information
 - No measures were taken in response to unsafe incident information from drivers and this information was not shared.
- ATS development
 - In spite of the risk at the curve, the new ATS was undeveloped at the time of the accident due to delays in decision making etc.
- Train operating plan
 - The operating plan was excessive. (excessive schedule with an emphasis on management efficiency)

4.4 Measures to be Taken (for “Staffs”)

- Improvement of driving skill education
 - (1) Analyse information on incidents etc., and educate on knowledge regarding the obtained attention distribution
 - (2) Educate with the proper use of documents that are easy to use and visualize and driving simulators etc.
 - (3) Enhance and strengthen practical education on the full awareness of risks of exceeding speed limits

◎ The enhancement of education for practical driving skills which were perceived as a penalty of day shift education, should not be biased towards psychological education but to effective accident prevention suitable to re-education

4.4 Measures to be Taken (for “Hard” element)

- Improvement of braking device
 - Minimize differences in braking performance based on different vehicle models and reduce the burden on drivers
- Establishment of markers
 - Improve and enhance markers such as curve posts etc. so that they can be reliably and easily recognized
- Operation management with the highest priority on the safety of human life
 - Promptly shut down power in the event of a train derailment accident. Also create a manual defining the safest means of response

4.5 Lessons that Apply to DMTCL

Think about the lessons that can apply to DMTCL in response to the outline and factors of this accident.

4.6 Comments from Industry Authority



Japan Society of
Civil Engineers HP

Lessons and thoughtful comments were obtained from Professor Hitoshi Ieda, Professor at the University of Tokyo and President of the Japan Society of Civil Engineers.

Regarding the accident on the Fukuchiyama Line, as to whether there was a major deviation from the normal treatment of human action or a change in the quality of labour, the result was quite shocking.

I was also asked about what the relationship should have been between the people, machinery, society and organizations.

First of all, I think that all technical systems, including the railway, were “incomplete”, and the “ethical action” and “continuous improvement efforts” of engineers are essential.

5. Improvements and Initiatives based on Lessons Learned from Accidents

Learn about safety efforts for past serious accidents in Japan and their effectiveness.

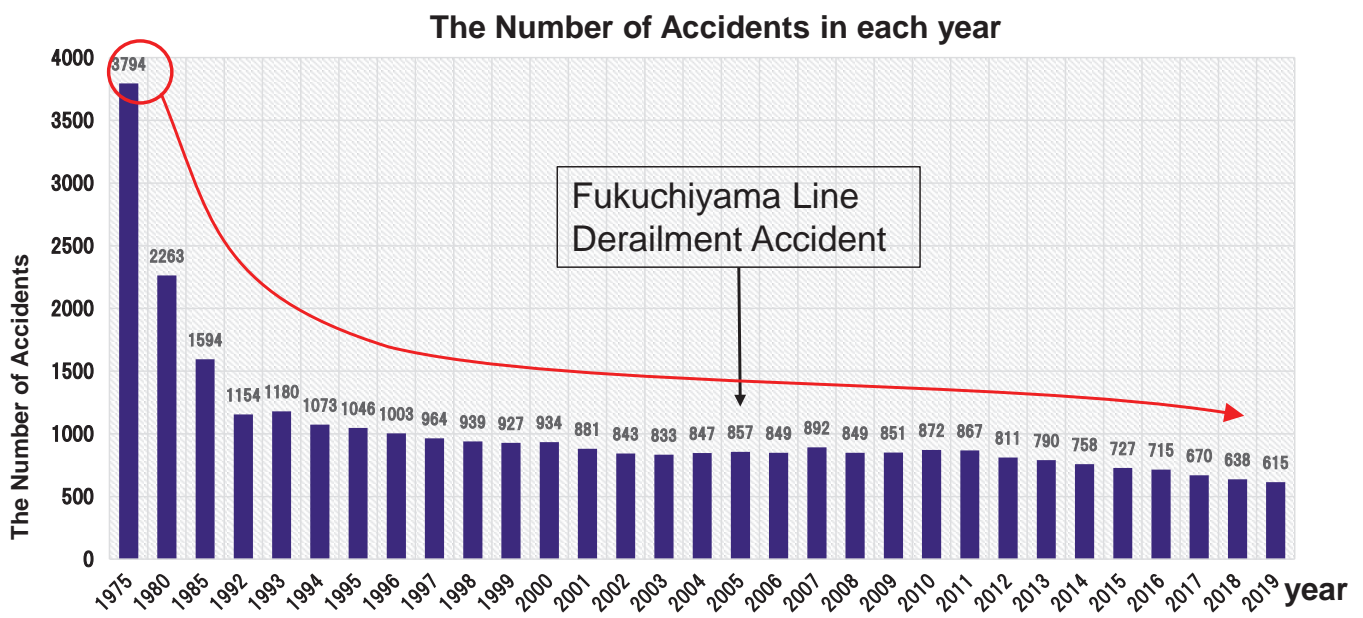
5.1 Safety System Improvements in Response to Accidents

Safety systems and technologies to respond to accidents have evolved, but railway systems that are operated by people cannot be perfect. The pursuit of safety requires constant effort and initiatives

- Installation of braking devices on locomotives (1870s)
- Time interval method (method of running trains at regular time intervals)
- Distance interval method (method of securing a certain distance or more)
- Automatic signals (detects the presence of trains and automatically controls traffic signals)
- Interlocking devices (a device that does not convert points while trains are in progress)
- **ATS** (Automatic Train Stopping device)
- **ATC** (Automatic Train Control device)
- **ATO** (Automatic Train Operation device)

5.2 Trends in the Number of railway Accidents in Japan

The incidence of large-scale accidents is on a downward trend due to technical improvements and employee education, but many accidents still occur every year.



6. Mission of Rail Operators and Expectations for DMTCL

Learn about the mission imposed on railway operators and the expectations for DMTCL from JICA experts. Also consider the mission of DMTCL.

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6.1 Mission of railway Operators

Over the history of railway safety, improvements have been made to safety by taking advantage of lessons from the many accidents that have occurred in the past.

However, it is true that major accidents that overturn our current thinking about safety still occur because of a failure to take advantage of past experience.

As railway workers, it is important that we keep coming back to the basics of safety and continue to pursue safety and security without wasting the valuable lessons learned from past accidents.

The mission of railway operators is to “ensure safety.” We must work to understand past accidents, learn the basic rules of train operation, and strive to prevent accidents, and then when accidents occur, give top priority to safely rescuing our passengers.

6.2 Expectations for DMTCL

DMTCL is a new railway operator, but there is a possibility that unfortunate accidents may occur after beginning operations.

In preparation for this, it is necessary to learn the lessons of railway accidents not just internally, but from home and abroad.

It is very important to take the lessons learned into the company, develop basic rules for accident response etc., and to ensure that necessary personnel understand these rules.

DMTCL is expected to prevent accidents, and also to prepare appropriate responses in the event that an accident takes place.


Think about what the mission of DMTCL is.

7. Summary

Summary of this training.

7.1 Summary

- What was the background and factors surrounding accidents in Japan?
- Could such accidents occur in Dhaka?
- What lessons can be learned?



Thank you very much for your kind attention
আপনাদের সবাইকে ধন্যবাদ

The Project on Technical Assistance for MRT Safety Management System on Line 6

Training in Dhaka 3: Development of Safety-First Corporate Culture

22nd /Apr./2021

JICA Expert Team (JET)

Outline

1. Transportation Safety and Factors that Threaten Safety
2. Human Error
3. Building Safety Culture in the Organization
4. Safety Awareness and Environmental Diagnosis
5. Impact of Ignoring Safety
6. Summary

Purpose and Aims of this Course

- Understand the factors that threaten transportation safety and its background and tragedy
- Understand the current safety awareness/environment within DMTCL
- Understand how organizations engage in building a safety culture

1. Transportation Safety and Factors that Threaten Safety

In this chapter, you will learn about the concepts of transportation safety and the factors that pose a threat to safety.

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1.1 Firstly...

How do you all feel about the current situation?

- What is your awareness of the issues?
- Why is that?
- What are the solutions?
- What are the challenges to be solved?



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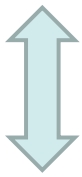


1.2 What is Transportation Safety?

Where there is a combination of safety and peace of mind, built on mutual trust.

○ What is Safety?

- 1) A state in which it can be objectively determined that there is no damage or injury to people, organizations or property
- 2) A state in which safety is fully considered at the design stage to ensure safety under human operation
- 3) A state in which individuals have a knowledge and awareness of safety and act accordingly
- 4) A state in which measures are taken against risk both before and after the fact, and both are minimized to acceptable levels



Trust

- 1) A state of belief that unanticipated events will not occur and that they can be acceptable if they happen
- 2) A state in which it is believed between those involved that there is a mutually agreed level of safety assured

○ What is Peace of Mind?

- 1) A state of peace and calm without cause for worry

1.3 What is Transportation Safety?

Built on the mutual trust of passengers and railway operators.

Passengers

“Trusting that when they are on the train they are not in physical danger”



Railway Operators

“Obligation to maintain safe conditions”

1.4 Factors that Threaten Railway Safety

From the training received so far, think about the factors that threaten railway safety.

1.4 Factors that Threaten Railway Safety

The eradication of human error and fostering a safety culture within the organization can be carried out by railway companies themselves.

- Fires – Facility fires, train fires, fires at facilities along railways lines, etc.
- Natural disasters – Earthquakes, tsunami, wind and flood damage caused by cyclones, etc.
- Infections – Unknown infectious diseases, re-emergence of infectious diseases, food poisoning
- Computer crimes and faults – Cyber-terrorism, system failure, communication failure
- Crimes/terrorist acts – Explosives, chemical weapons, firearms, knives
- ◎ Human error → Can be stopped by the safety climate of the organization

2. Human Error

In this chapter, you will learn about human error, which is the main factor threatening transportation safety, and will understand how to think about and the factors that cause human error.

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2.1 Thinking about Human Error (1/6)

Please answer “Yes” or “No”.

Accidents happen because of human “laziness”.

2.1 Thinking about Human Error (2/6)

Please answer “Yes” or “No”.

People should be able to work with correctly anywhere, anytime.

2.1 Thinking about Human Error (3/6)

Please answer “Yes” or “No”.

People always have a high level of attention in all directions around them.

2.1 Thinking about Human Error (4/6)

Please answer “Yes” or “No”.

Accidents won't happen if the people that make errors are severely punished.

2.1 Thinking about Human Error (5/6)

Please answer “Yes” or “No”.

It can't be helped if it is usually safe, but dangerous things happen occasionally.

2.1 Thinking about Human Error (6/6)

Please answer “Yes” or “No”.

I can't understand how nobody else causes accidents but you.

2.1 Thinking about Human Error

How many times did you respond “Yes”?

2.2 Wrong Way of Thinking about Human Error

Leaders and managers tend to fall into mistaken thinking about human error

- Accidents happen because of human “slackness”.
- People should be able to work with precision anywhere, anytime.
- People always have a high level of attention in all directions around them.
- Accidents won’t happen if people are severely punished.
- It can’t be helped if it is usually safe, but dangerous things happen occasionally.
- I can’t understand how nobody else causes accidents but you.

2.3 Basic Understanding of Human Error

It is important for individuals to understand for themselves and for organizations to make sure that they understand that there is a possibility of serious accidents while they are working.

- Human error is mistakes that people make, and everyone makes them in their daily lives.
- It is not overstating things to say that “all humans make mistakes!” No-one can say that they have never made a mistake.

2.4 Causes of Human Error (1)

Humanity have the characteristic of causing human error. This is unavoidable.

○ Human characteristics

- ✓ Can't see if it is too dark or bright
- ✓ Can't hear because of noise
- ✓ Error or misjudgement due to mistakes, misunderstanding or incorrect thinking
- ✓ Misunderstood or overlooked due to absentmindedness or carelessness
- ✓ Preconceptions

2.4 Causes of Human Error (2)

If an organization doesn't work properly together there is a risk of human error. This is a management responsibility.

○ Lack of education and training

- ✓ Don't know how to operate equipment
- ✓ Lack of understanding of work procedures, complicated work procedures
- ✓ Not understanding the laws and regulations, standards, or internal rules required for business

2.4 Causes of Human Error (3)

Human error can result when individuals violate rules and take “unsafe behaviour”. It is important to foster an organizational culture in which unsafe behaviour is not acceptable.

○ Violating rules

- ✓ Taking shortcuts or omitting action due to familiarity with work etc.
- ✓ Not following set rules or procedures. Change the rules.

3. Building Safety Culture in the Organization

In this chapter, you will learn the background for building a safety culture and the characteristics of organizations with high levels of safety, and how organizations and individuals should think about building culture.

3.1 Background to the Importance of Safety Culture

Safety culture is emphasized in Japan because of the following background. This is a common concept in railway as well as all industries.

- 1) Changes in disaster conditions
 - Disasters reduced due to equipment mechanization
 - On the other hand, accidents happen due to worker error are increasing
- 2) Decreases worker risk awareness and danger awareness
 - Fewer accidents and less experience
 - Equipment is automated, so it is difficult to see points of danger
- 3) Changes in working environments
 - Many changes to workers
 - Need a mechanism to maintain safety even when employees are replaced
- 4) Changes to the form of accidents
 - Recognized change from individual to organizational accidents
 - Need to work on safety measures for the organization as a whole

3.2 Definition of Safety Culture

Safety culture is “a state in which continuous efforts are being carried out to ensure safety.”

- 1) Maintain a condition in which risks are minimized. Also, if risks become apparent, the impact can be partially stopped without the loss of function.
- 2) There is always a flexible mechanism in place even when things happen that are beyond expectations.
- 3) Individuals have a knowledge and awareness of safety and continue to play their required roles.
- 4) A relationship of trust is built with passengers through continuously ensuring safety.
- 5) The organization needs to reasonably determine to what extent it should be seeking to achieve safety.

**Need to be an organization with a continuous understanding that
“Safety is independently protected by ourselves.”**

3.3 Organizations with a High Level of Safety

What kind of organization do you think is an “organization with a high level of safety”?

3.3 Organizations with a High Level of Safety (1/2)

- ◎ Communication
 - ✓ Top management are aware of the issues within the organization.
 - ✓ All employees receive accurate information about the issues within the organization.
 - ✓ All employees are aware of organizational objectives.
- ◎ Failures reported and analysed
 - ✓ Always expect failures to occur.
 - ✓ Prepared with what to do in the event of a failure.
 - ✓ Accidents and errors are analysed and are reflected in safety education.
- ◎ Strict on itself and others
 - ✓ Not tolerate violations or unsafe behaviour.
 - ✓ Pay attention to each other.

3.3 Organizations with a High Level of Safety (2/2)

- ◎ Self-management
 - ✓ Means of achieving objectives are not forced. A certain degree of independence is respected.
- ◎ Full participation
 - ✓ All departments and levels participate in safety management
- ◎ Focus on the site
 - ✓ In an emergency, you are not tied to the manual but can respond flexibly. Also have the capability to do so.
 - ✓ Appropriate authority is given to the person on charge on site.
- ◎ Continuous check
 - ✓ The PDCA cycle (Plan, Do, Check, Action) is always operating, with operations continuously being reviewed etc.

4. Safety Awareness and Environmental Diagnosis

In this chapter, you will make a diagnosis of your safety awareness and the DMTCL safety environment, and think about what improvements are necessary.

4.1 Safety Awareness and Environmental Awareness (1/2)

- 1) Exceptions are unlikely to occur in everyday work
- 2) The problems and issues that you face every day are all the same
- 3) It is difficult for staff to obtain all of the information that they need for their work
- 4) Staffs are required to comply with certain methods in executing their work responsibilities
- 5) Quotas are imposed on staff in relation to time, costs, growth rates and profits etc.
- 6) Staff often try to take shortcuts in pursuit of achieving their quotas

4.1 Safety Awareness and Environmental Awareness (2/2)

The following situations are not favourable. It is important that such things do not occur.

- 7) There is an atmosphere of hesitance to report workplace mistakes.
- 8) Staff have little authority to take action when something unexpected happens
- 9) Many staffs has lack of skills and expertise that needed to respond to unforeseen circumstances
- 10) During discussions, it is uncommon for people to question the basis of the discussion
- 11) People are often blamed for their mistakes
- 12) There is an atmosphere in which it is difficult to ask others for help

4.2 Safety Climate of the Field Department (1/2)

It is necessary that the following be practiced on site.

- 1) Have good communication about work on site
- 2) Site managers call each worker by name and talk to them
- 3) Opinions can be expressed regarding work or safety, regardless of rank or level
- 4) Site managers are not only concerned with productivity and safety, but also pay attention to the issues of each worker
- 5) There are site specific safety systems and activities

4.2 Safety Climate of the Field Department (2/2)

- 6) The site is thoroughly organized and tidy
- 7) Danger prediction training and education is carried out assuming various accident patterns
- 8) Not only are compliance manuals prepared, but safety measures are actively carried out
- 9) The abilities of workers are respected
- 10) Procedures are well considered about the human characteristics of making visual errors and hearing errors and misunderstandings etc.

4.3 Safety Awareness and Environmental Diagnosis

Please answer “Yes” or “No”.

“It is possible with some effort to ensure that accidents and disasters don’t happen again.”

Depending on technical levels, they will happen even if you make effort

4.3 Safety Awareness and Environmental Diagnosis

Please answer “Yes” or “No”.

“The main cause of accidents and disasters is people”

Accidents and disasters are not only caused by “people” but are also caused by “technology and organizations”

4.3 Safety Awareness and Environmental Diagnosis

Please answer “Yes” or “No”.

“Safety can be ensured by establishing management systems, educating and training people, and having tight regulations.”

Recognizing that “people make mistakes”, it is necessary to improve technical capabilities and manage the organization wellbeing

4.3 Safety Awareness and Environmental Diagnosis

Please answer “Yes” or “No”.

“It doesn’t cost anything in terms of equipment to ensure safety”

Safety measures are generally costly

4.3 Safety Awareness and Environmental Diagnosis

Please answer “Yes” or “No”.

“Safety can be ensured by eliminating dangers as they are discovered.”

It is necessary to unearth lurking dangers, and not only dangers that have already been discovered

5. Impact of Ignoring Safety

In this chapter, you will learn about the impacts if safety is ignored.

5.1 Impact of Ignoring Safety

Not only the victims themselves, but also family members and local residents will be concerned. There is also a negative impact on the transportation industry and nation as a whole.

- ◎ There is a possibility of death or injury.
- ◎ Sadness of bereaved families.
- ◎ People who did not encounter an accident will also worry.
- ◎ The lines (railway companies) that caused accidents may not be used by people.
- ◎ There is a psychological impact on employees.
- ◎ There is a significant impact on the management of operators.
- ◎ There may be an impact on the entire railway industry.
- ◎ There may be an impact on the national economy.

6. Summary

Summary of this training.

6.1 Who is Safety for?

Who do you think safety is for?

6.1 Who is Safety for?

- Is safety what the company organization and employees think?



What the customer themselves think is that

“OK”, “comforting”, and “reliable” is “SAFETY”

6.2 Lastly...

How do you all feel about the current situation?

- What is your awareness of the issues?
- Why is that?
- What are the solutions?
- What are the challenges to be solved?



Thank you very much for your kind attention
আপনাদের সবাইকে ধন্যবাদ



The Project on Technical Assistance for MRT Safety Management System on Line 6

Training in Dhaka 4: Introduction of Safety Management System in Japan

22nd /Apr./2021

JICA Expert Team (JET)

Outline

1. Background to the Introduction of the Transportation Safety Management System in Japan
2. Guidelines for Building Japan's Safety Management System
3. Summary and Pending Issues

Purpose and Aims of this Course

- Understand Japan's transportation safety management system
- Understand an outline of the approach of the guidelines
- Pending issues for considering adaptation for DMTCL and Bangladesh

1. Background to the Introduction of the Transportation Safety Management System in Japan

In this chapter, you will learn about the history and background of the introduction of Japan's transportation safety management system and understand its importance.

NIPPON KOEI



1.1 Background to the Introduction of the Transportation Safety Management System

- Consider why Japan decided to introduce a transportation safety management system in 2006, more than 100 years after rail transportation commenced in Japan in 1872.

1.2 Railway Accident that Triggered the Introduction of the Transportation Safety Management System

JR West Fukuchiyama Line
Derailment Accident

- Date and Time
Around 9:18 am, April 25, 2005
- Damage
107 dead (including 1 driver),
and 562 injured
- Causes
Excess speed, inadequate ATS,
crew management methods etc.



1.3 Transportation Accidents that Triggered the Introduction of the Transportation Safety Management System

● March 2005 **Railway**



Level crossing accident
(2 dead, 2 injured)

● April 2005 **Automobile**



Bus overturn accident (3 dead, 20 injured)

● May 2005 **Shipping**



Ferry breakwater collision (23 injured)

● April 2005 **Railway**



Train derailment
accident (107 dead,
562 injured)

● April 2005 **Automobile**



Truck railway crossing collision accident
(drunk driving)

● March 2005 **Airline**



Cabin attendant forgot to operate the
emergency exit door

1.3 Transportation Accidents that Triggered the Introduction of the Transportation Safety Management System

Many accidents and problems caused by human error in the transportation industry in 2005. The nation had a sense of crisis.

Background factors thought to be common

- Insufficient involvement of management in ensuring safety
- Insufficient communication and sharing of information between management and work sites

The direct causes were human error, but it was identified that behind this was problems with how organizations interacted with their employees.

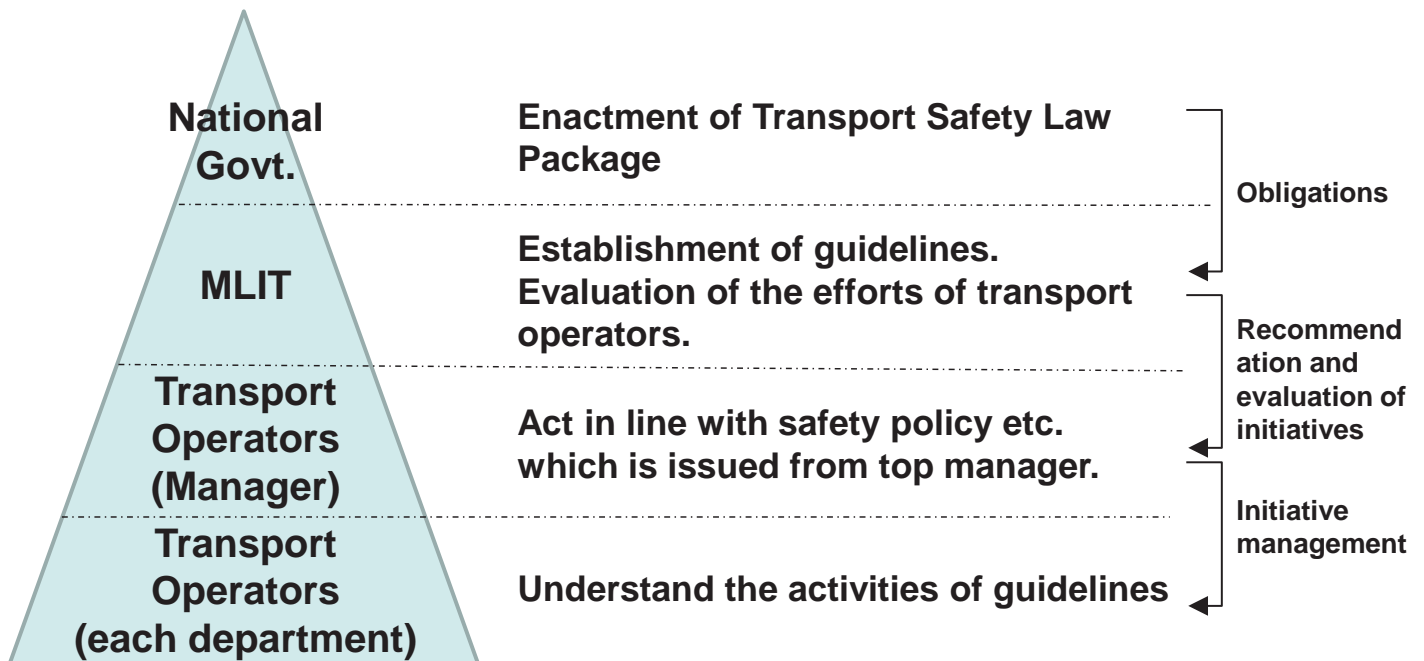
1.4 Introduction of the Transportation Safety Management System

Established a system over a year and a half from the Fukuchiyama Line derailment accident in April 2005. The government took the lead in analysing the causes, setting laws and regulations, and establishing a new Secretariat organization etc.

April/May 2005	Many transportation accidents due to human error
June 14, 2005	1 st <u>Public Transport Human Error Accident Prevention Measures Review Committee meeting</u> held (Consisting of Administrative Vice-Minister Sponsors and Directors of Related Bureaus etc., private sector experts)
August 4, 2005	Interim Report of the Public Transport Human Error Accident Prevention Measures Review Committee ➢ <u>Operators need to build a safety management system</u> ➢ <u>National government sees the need to evaluate safety management systems</u>
March 31, 2006	Promulgation of package of Transport Safety laws
From April 1, 2006	Established new secretariat organization
From October 1, 2006	Start of the transportation safety management system

1.5 Overview of the Transportation Safety Management System

Transport operators are required to continue operation in accordance with guidelines.



2. Guidelines for Building Japan's Safety Management System

In this chapter, you will learn the underlying meaning behind the guidelines for building Japan's safety management system and understand the important details.

2.1 Positioning and Purposes of Guidelines

Guidelines must be worked out by transportation operators.

◎ Positioning

- Sets out reference examples of the aims and procedure for initiatives related to the construction and improvement of safety management systems
- Do not deny voluntary and proactive efforts by methods other than those set out in guidelines

◎ Purposes

- 1) Autonomous and continuous realization and review/improvement of appropriate safety management systems
- 2) Provide persistent motivation for the thorough sharing and realization of compliance with laws and regulations and the principle of safety first with all employees of operators
- 3) Build and establish a safety culture within operators

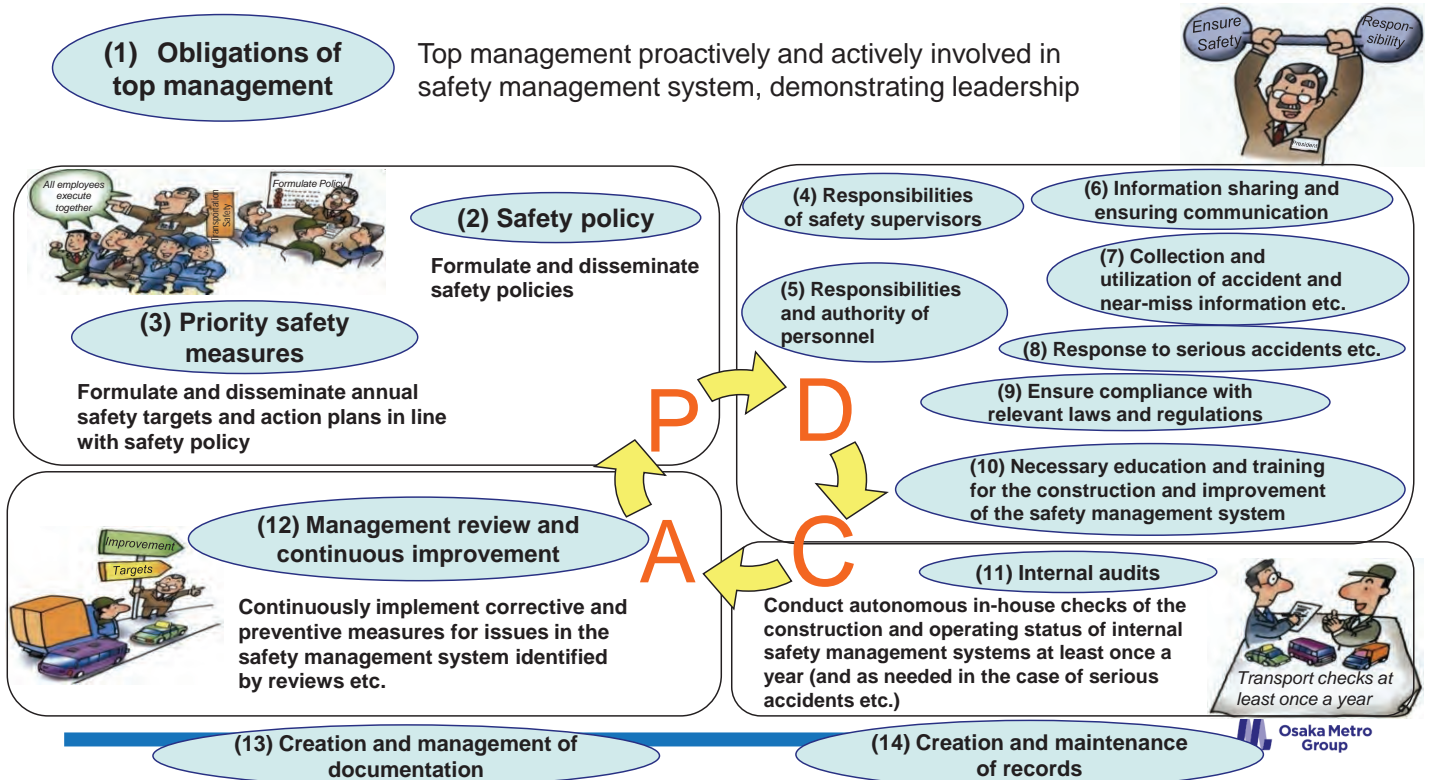
2.2 14 Examples of Guidelines

There are 14 safety management initiatives that are expected of transportation operators, which they need to work on at autonomously.

- | | |
|---|--|
| (1) Obligations of top management | (8) Response to serious accidents etc. |
| (2) Safety policy | (9) Ensure compliance with relevant laws and regulations |
| (3) Priority safety measures | (10) Necessary education and training for the construction and improvement of the safety management system |
| (4) Responsibilities of safety supervisors | (11) Internal audits |
| (5) Responsibilities and authority of personnel | (12) Management review and continuous improvement |
| (6) Information sharing and ensuring communication | (13) Creation and management of documentation |
| (7) Collection and utilization of accident and near-miss information etc. | (14) Creation and maintenance of records |

2.2 14 Examples of Guidelines

The 14 measures follow the PDCA cycle, and none can be omitted.



3. Summary and Pending Issues

Summary of this training. Also includes future issues, as this course only introduces the Japanese system.


3.1 Summary

In Japan, while the system was promoted at the initiative of the national government, each operator works on their own initiatives with a high level of safety awareness. This mechanism is the basis of transportation safety.

- What is the background of the introduction of the transportation safety management system?
- What action has the national government taken?
- What actions are required of operators?
- What actions are required of workers?

3.2 Pending Issues for DMTCL

1. Consider the challenges for the introduction of a transportation safety management system to transport operators in Bangladesh.
2. Also consider your own opinions regarding measures to address these challenges.
3. Consider the possibility of adapting the 14 examples of initiatives from Japan for introducing a safety management system by DMTCL. Also list any possible initiatives other than these 14.
4. Consider how DMTCL supports the introduction of safety management system to BR if BR introduces in future.



Thank you very much for your kind attention
আপনাদের সবাইকে ধন্যবাদ

2nd Training (Dhaka)

1st Batch: 8 – 9 October 2021

2nd Batch: 21 October 2021

3rd Batch: 24 October 2021

The Project on Technical Assistance for MRT Safety Management System on Line 6

Training in Dhaka 1: Review of 1st Training

October/2021

JICA Expert Team (JET)

Outline

1. Summary of the 1st Training
2. Safety Assurance Mechanism
3. Prevention of Human Error (Punishment)
4. Open discussion regarding the Homework

Purpose and Aims of this Course

- To review the 1st training especially important items to understand properly
- Discuss the submitted homework and understand the hazard items on operation stage

1. Summary of 1st Training

In this chapter, you will review the contents of 1st training and learn again the essence of 1st training.

1.1 Program

Session	Title
1 st session	Railway Characteristics and Safety Assurance Mechanism
2 nd session	Japanese Railway Accidents and Lessons Learned
3 rd session	Development of Safety-First Corporate Culture
4 th session	Introduction of Safety Management System in Japan

Batch	Nos. of Participants	Submission of All Small tests	Submission of Homework
1 st Batch	18	13	12
2 nd Batch	17	13	8
3 rd Batch	20	17	14
Total	55	43	34

1.2 1st Session (Railway Characteristics and Safety Assurance)

[Main Topic]

- Characteristics of railway transportation and railway features
- Railway system configuration and safety assurance mechanism
- Implementation of maintenance for safety assurance

[Discussion Point]

- Roles of railways (metro rail)
- Features of railways
- Safety mechanism
- Importance of maintenance activities

1.3 2nd Session (Japanese Railway Accident and Lessons Learned)

[Main Topic]

- World History of Railways and Accidents
- Japanese Accident Case Study and Lessons Learned
 - Train fire accident (1951)
 - Train collision accident (1962)
 - Train derailment (2005)
- Mission of Railway Operators

[Discussion Point]

- Reasons of each accident
- Lesson learned of each accident and applicability to DMTCL

1.4 3rd Session (Development of Safety-First Corporate Culture)

[Main Topic]

- Transportation safety and factors that threaten safety
- Human error
- Building safety culture in the organization
- Safety awareness and environmental diagnosis
- Impact of Ignoring safety

[Discussion Point]

- Wrong way of thinking about human error
- Safety level of organization

1.4 3rd Session (Development of Safety-First Corporate Culture)

- Do you think this situation is safe?
“Yes” or “No”



1.4 3rd Session (Development of Safety-First Corporate Culture)

- Who has responsibility?
“BR” or “Passengers” or “Both”



1.4 3rd Session (Development of Safety-First Corporate Culture)

- What are the solutions?



1.5 4th Session (Introduction of Safety Management System in Japan)

[Main Topic]

- Background to the introduction of the transportation safety management system in Japan
- Guidelines for building Japan's safety management system

[Discussion Point]

- Why Government of Japan decided to introduce SMS in 2006.
- Applicability of 14 examples of guidelines to DMTCL.

1.6 Necessary Review Items in Detail

By reviewing small tests, pending issues and homework, following two topics should be reviewed.

- Safety assurance mechanism
- Prevention of human error (Punishment)

2. Safety Assurance Mechanism

In this chapter, you will review the basic safety assurance mechanism to keep safety.

2.1 Facilities for Safety

DMTCL has various types of high level facilities and system.

- ATO (Automatic Train Operation)
- ATS (Automatic Train Stop)
- CBTC (Communication-based Train Control)
- PSD (Platform Screen Door)
- Anything else?

Do you think those facilities can prevent accidents?

What kind of elements do need to prevent accidents?

2.2 Safety Assurance Mechanism

Safety railway operation is secured by “Hard” and “Soft” element. All elements are indispensable.

“Hard”

- (1) Appropriate maintenance
- (2) Investment in “Hard”

“Soft”

- (3) Safety awareness
- (4) Investment in “Soft” (Education & Training)

- (5) Creation of rules and manuals, and its compliance

3. Prevention of Human Error

In this chapter, you will learn the method of prevention of human error and its bad example.

3.1 Prevention of Human Error

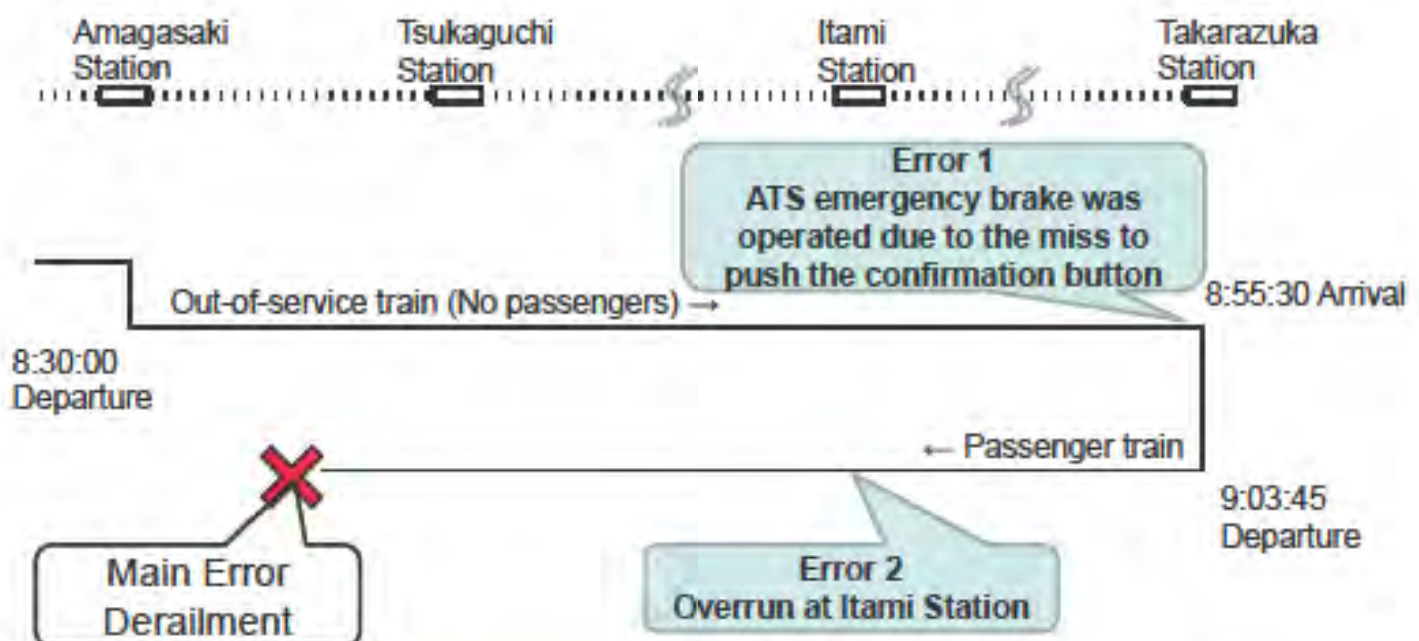
We got a lot of comments/opinions in 1st training regarding the prevention of human error.

- Training, education
- Careful work, awareness for work
- Familiarization with equipment
- Formulation of manuals and rules
- **Punishment**

What do you think punishment is important to prevent human error? Yes or No
-> If yes, strict punishment or soft punishment?

3.2 Review of Fatal Accident in Japan (2006)

Derailment accident was happened in 2006 in Fukuchiyama Line.



3.2 Review of Fatal Accident in Japan (2006)

Derailment accident was happened in 2006 in Fukuchiyama Line.

Error 1: ATS emergency brake was operated due to the miss to push the confirmation button.

Human error

Error 2: Overrun at a station.

Human error



Main Error: Driver did not operate break properly at the curve section.

Human error

Why do you think the driver caused such human errors several times?

3.3 A Bad Example of Strict Punishment

When subordinate report the accidents...



What are you doing!!

This accident was very minor things, but boss is very strict...

Subordinate becomes nerves day by day for his work..

3.4 A Bad Example of Strict Punishment

Re-education training had been conducted, but...

Isolation...



Cleaning...



Write reports of the accidents...



The trainings are not for operation technical skills.. This is punishment!!

Subordinate doesn't want to report any mistakes to boss..

3.5 A Bad Example of Strict Punishment

Overrun occurred

The delay time is only 1 min. 8 sec.




Even the delay time is very short, but the boss will angry...


Subordinate afraid and think about overrun too much ..

3.6 A Bad Example of Strict Punishment

When entering the curve...



Overrun, Overrun, Overrun••
Punished, punished, punished••



He forgot to handle the brake before the curve section...

3.6 A Bad Example of Strict Punishment

When entering



Overrun••
Punished, punished••



handle the brake before the curve section...

3.7 How to Keep High Safety Awareness?

Ask a same question.

What do you think punishment is important to prevent human error? Yes or No
-> If yes, strict punishment or soft punishment?

- Should keep some punishment, but should not be strict.
- In stead of strict punishment, "Award" is alternative solution to keep high motivation and safety awareness.

3.8 Alternative Solutions to be High Awareness

Not only soft punishment, **Positive activities** such as "Praise", "Competition", "Small group activities" and "Education" are alternative solutions to keep high motivation.



Education



Training



Competition



Praise

3.8 Alternative Solutions to be High Awareness



Comments from Osaka Metro

4. Open Discussion regarding the Homework

In this chapter, you will learn some risks on commercial operation your colleagues are thinking about.

4.1 Summary of Homework

The contents of homework from 1st training participants can be possible to divide following 2 types.

Realization in Construction Site

- **Risks of “Construction Phase”**
 - Risk in working environment
 - Risk of operating machine
- **Risks on “Construction Phase” and “Railway Maintenance” (Common Issue)**
 - Risk in working environment
 - Risk of facing by worker

Anticipated Risk on Operation

- **Risks of “Commercial Operation”**
 - Harm from Nature Disaster
 - Harm from Third Party
 - Train Operation Error
 - Malfunction of Facility and System
 - Passenger Behavior

4.1 Summary of Homework

Some realization in construction site will be helpful for DMTCL’s railway maintenance work.

What should DMTCL do to prevent accident on maintenance work? (countermeasure)

Your realization in construction site	Application of risk to railway maintenance
Work at dark place	Railway maintenance is usually conducted at midnight after stopping the operation. How to prevent accidents when working in dark place?



4.1 Summary of Homework

What should DMTCL do to prevent accident on maintenance work? (countermeasure)

Your realization in construction site	Application of risk to railway maintenance
Electric Shock (Electrification)	High voltage electricity is used for railway operation. How to prevent electric accident of maintenance staff?



Photos were provided by Mr. Ahmedul Hassan

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Osaka Metro Group

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4.1 Summary of Homework

A lot of staffs are concerned about harm from nature disaster, harm from third party, train operation error, malfunction of facility and passenger safety on commercial operation

What should DMTCL do to prevent accident on commercial operation? (countermeasure)

● Harm from Nature Disaster

- Malfunction of electrical equipment by rainwater (Leakage, Flood etc.)
- Effectiveness of fire alarm
- Fire at substation etc.
- Flood on track (Driving fault)
- Lightning

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4.1 Summary of Homework

What should DMTCL do to prevent accident on commercial operation? (countermeasure)

● Harm from Third Party

- Terrorism
- Throwing garbage etc. from adjacent building to railway facility
- Cyber attack to OCC or other equipment
- Interface with wireless device



Photo 1



Photo 2



Photo 3



Photo 4

Photo 1: JR West, https://www.westjr.co.jp/press/article/2018/04/page_12364.html Photo2: Provided by Mr. Rid Al Rahman
Photo 3,4: Osaka Metro, https://www.osakametro.co.jp/safety/safety_take/safe_transportation/safety_transportation1.php

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4.1 Summary of Homework

What should DMTCL do to prevent accident on commercial operation? (countermeasure)

● Train Operation Error

- Ignoring railway signal of train driver
- Speed excess of train driver (Curve spot etc.)
- Human error by train driver
- Switching mistake of railway track points
- Lack of experience as railway operator



Photo 1



Photo 2



Photo 3

Photo1: Provided by Mr. Ahmedul Hassan Photo2: Provided by Mr. Md. Nazmul Alam

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4.1 Summary of Homework

What should DMTCL do to prevent accident on commercial operation? (countermeasure)

● Malfunction of Facility and System

- Flatness of railway track
- Malfunction of escalator
- Abnormality of Feale-safe system on railway track
- Abnormality of ATS system
- Power Outage



Photo 1



Photo 2

Photo1: Provided by Mr. Md. Uzzal Hossian

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4.1 Summary of Homework

What should DMTCL do to prevent accident on commercial operation? (countermeasure)

● Passenger Behavior

- Raiding rule
- Using escalator and elevator
- Seat priority for elderly and woman etc.
- Beautification of inside of train



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4.2 Example of Good Findings (1)




By Mr. Md. Nazmul Alam

4.2 Example of Good Findings (1)



In commercial operation of MRT 6 if the situation is same as the photos, what will happen?



By Mr. Md. Nazmul Alam

4.2 Example of Good Findings (1)

POSSIBLE RISK/ACCIDENTS

Loose material can fall over the track which may cause train derailment

It may create blockage of water flow during rain which will cause unsafe train running

Plastic cover may fall over the point machine by air blow, which will cause hamper point machine operation. As a result, train derailment will occur

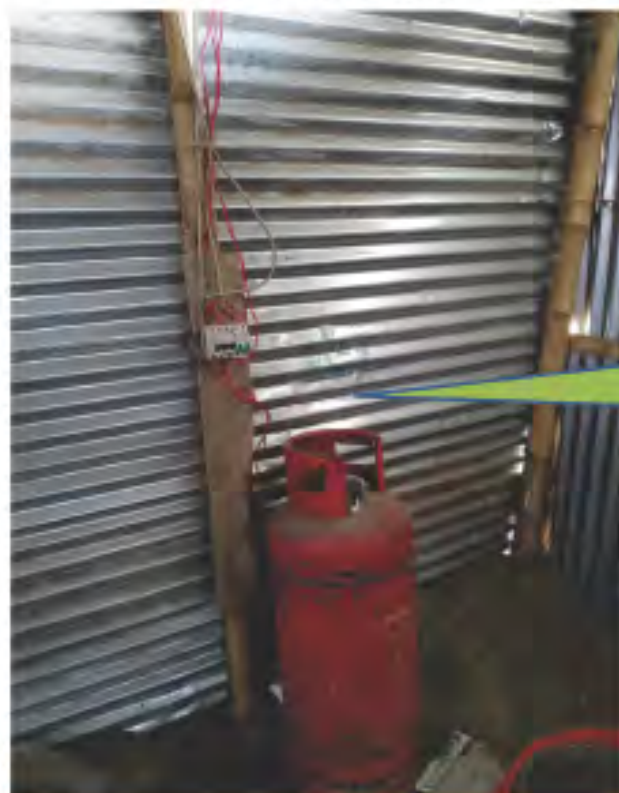
Plastic cover may fall over the wayside radio equipment, PSD, Axle Counter, Wayside Signal, Turn Out, Position Balise, Stopping Balise etc. which will cause serious trouble of Train Signaling Operation resulting in risk/accident

Cable over the track may create short circuit problem

By Mr. Md. Nazmul Alam

4.2 Example of Good Findings (1)

Electric connection and gas cylinder on the site area



In a working shade gas cylinder placed just beside the electrical switches . If any sparking happen on the switches, a big explosion may happen.

By Mr. Muhammad Shahjahan

4.2 Example of Good Findings (1)

Electric connection and gas cylinder on the site area



In a working shade gas cylinder placed just beside the electrical switches . If any sparking happen on the switches, a big explosion may happen.

In commercial operation if the situation is same as the photo, what will happen?



By Mr. Muhammad Shahjahan

4.2 Example of Good Findings (2)

Rebar fixing work in retaining wall



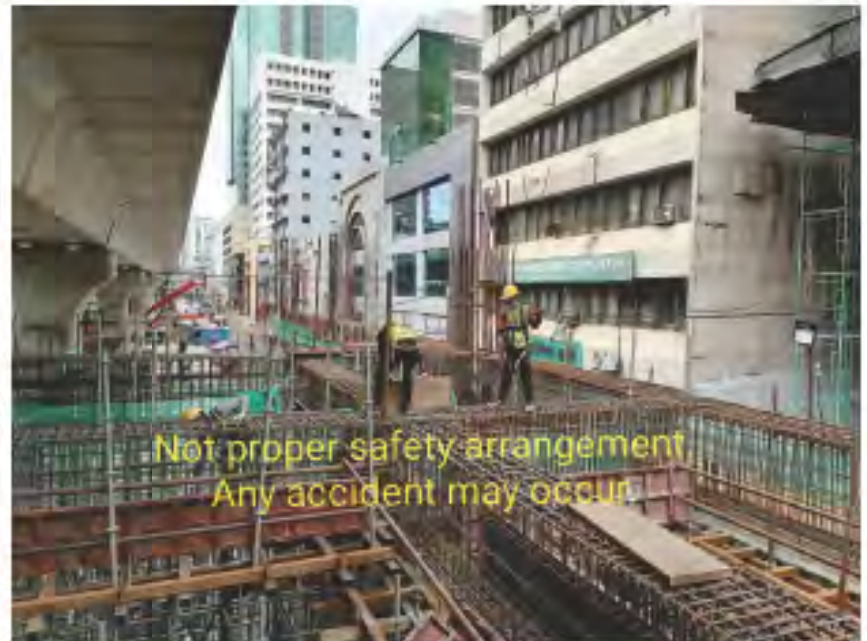
This labor is doing rebar fixing work in a very unsafe way. There are many metal pipe below the scaffolding, any time accident may happen by fallen from the scaffolding.

In commercial operation if the maintenance work situation is same as the photo, what will happen?



By Mr. Muhammad Shahjahan

4.2 Example of Good Findings (3)



In commercial operation if the maintenance work situation is same as the photo, what will happen?



By Mr. Md. Al Amin Mollik

4.2 Example of Good Findings (4)



Manhole is insecure without cover

In commercial operation if the situation is same as the photo, what will happen?



By Mr. Md. Ridwan Hossain

4.2 Example of Good Findings (5)

1. Ni-Cd Battery rack is placed very close to 33KV switchgear in the substation room. Generally, battery is installed in a separate room out of substation room to ensure safety. There is chance of leaking hydrogen gas from the batteries.
Possible Risk –Fire Accident in Substation Room .



Fig: Battery rack is located near 33KV Switchgear inside ASS/TSS room

By Mr. Shahriyar Kabir

4.2 Example of Good Findings (5)

2. No Lighting/ Illumination in the Viaduct:

LED Lights will be installed at the curved sections and turn-outs in the viaduct. But there is no illumination in the straight line of viaduct. **Possible risk-** If accident happens in the viaduct at night, it will be difficult to evacuate passengers at night due to low illumination.



Fig: No Lights in the straight line of the viaduct

By Mr. Shahriyar Kabir

4.2 Example of Good Findings (5)

4. Water Leakage: Water leakage in electrical equipment room can damage critical equipment and cause accident



Fig: Water Leakage

By Mr. Shahriyar Kabir

4.2 Example of Good Findings (6)

This picture indicates that there is insufficient space to walkway at inspection area in the workshop.

Obstacle Walkway

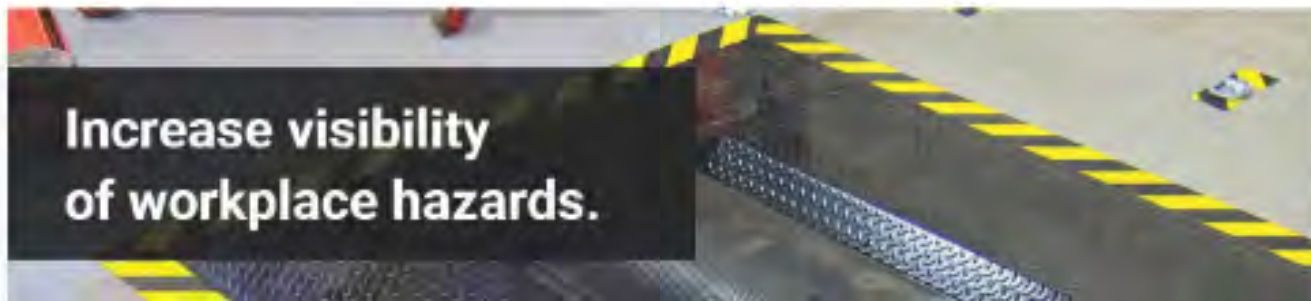
Possible Risk / Accident related to the scene:

1. During moving on the walkway people has to face difficulty due to insufficient space.
2. Persons who are working in the inspection site area may fall due to pushing as it is narrow space in somewhere.
3. It can create slips, fall, slippery and many other uneven situation¹
4. Possibility of obstacle of structural member in walkway cause serious problem such as head injury, broken arm, twist of the ligament of a joint etc.



By Mr. Horypoda Roy

4.2 Example of Good Findings (6)



<https://www.creativesafety.com/Caution-Tapes/>

By Mr. Horypoda Roy

4.2 Example of Good Findings (7)

If the side of track is disclose and damage because all electrical and communication line.



By Mr. Md. Rasidul Hassan

4.2 Example of Good Findings (7)

Train's momentum greater than buffer stop's capacity; possibility of derailment and structure damages



By Mr. Md. Rasidul Hassan

4.2 Example of Good Findings (7)

There is a risk of falling over parapet wall during maintenance work



By Mr. Md. Rasidul Hassan

4.2 Example of Good Findings (8)



Fig: OCS-1

Risk of electrocution during maintenance of cables/OCS if the system is not properly discharged



Fig: OCS-2

By Mr. Md. Rakibul Islam

4.2 Example of Good Findings (9)



Location: Mirpur-10 Station Area
Photo taken date: 15-8-2021

By Mr. Sakibul Hasan

4.2 Example of Good Findings (10)



Heavy risky pipe cutting work in the building. Even the labor having no sufficient protection.

In commercial operation if the situation is same as the photo, what will happen?

By Mr. Rocky Kumar Das

4.3 Example of Good Findings

- Missing of safety chain-link fence



- OCS, high voltage



- Underneath the rolling stock



Mr. Md. Millon Al-Mamun

4.3 Example of Good Findings

- Risk of derailment at curve point
- Risk of Cyber attack to OCC from third party
- Risk from passenger

System Architecture – OCC & Maintenance Base



Figure 2: F-SCADA and BMS Architecture – OCC & Maintenance Base



Mr. Riad Al Rahman

4.3 Example of Good Findings

- Risk from the insiders of DMTCL
- Risk from third party



Photo : JR West,
https://www.westjr.co.jp/press/article/2018/04/page_12364.html

Mr. Riad Al Rahman

4.4 Importance of “Risk Prediction”

Finding/Imaging potential risk



- Sharing and Discussion on the risk
- Taking precautionary measures



Prevent accidents





The Project on Technical Assistance for MRT Safety Management System on Line 6

Training in Dhaka 2: Roles and responsibility of each position in SMS

October, 2021

JICA Expert Team (JET)

Outline

1. Importance of Organizational response in SMS
2. SMS organization structure and its role/responsibility
3. Importance of Top Management
4. Efforts based on Guidelines
5. Roles of Site Managers
6. Roles of On-Site Staffs
7. Discussion

Purpose and Aims of this Course

- To understand abstract of Roles and responsibility of each position in SMS
- Discuss possible roles in your position and DMTCL on future operation stage

1. Importance of Organizational response in SMS

In this chapter, you will learn the importance of development of SMS organization to implement SMS in DMTCL.

NIPPON KOEI



1.1 Review of SMS

➤ What is Safety Management System?

- ◎ Management involves
“how to make things operate properly.”



Organizational response is important in SMS!



NIPPON KOEI



1.1 Review of SMS

➤ What is Safety Management System?

◎ In transportation businesses such as railways, automobiles, ships and aviation....

there are a lot of people and things that are requires and operations are complex, from top management to the work site.



Organizational response is important in SMS!

1.1 Review of SMS

➤ What is Safety Management System?

◎ For ensuring Safety, it is crucial for establish “Safety First” mentality and cooperate culture and spread its culture through whole company (from top management to the site)



Organizational response is important in SMS!

1.1 Review of SMS

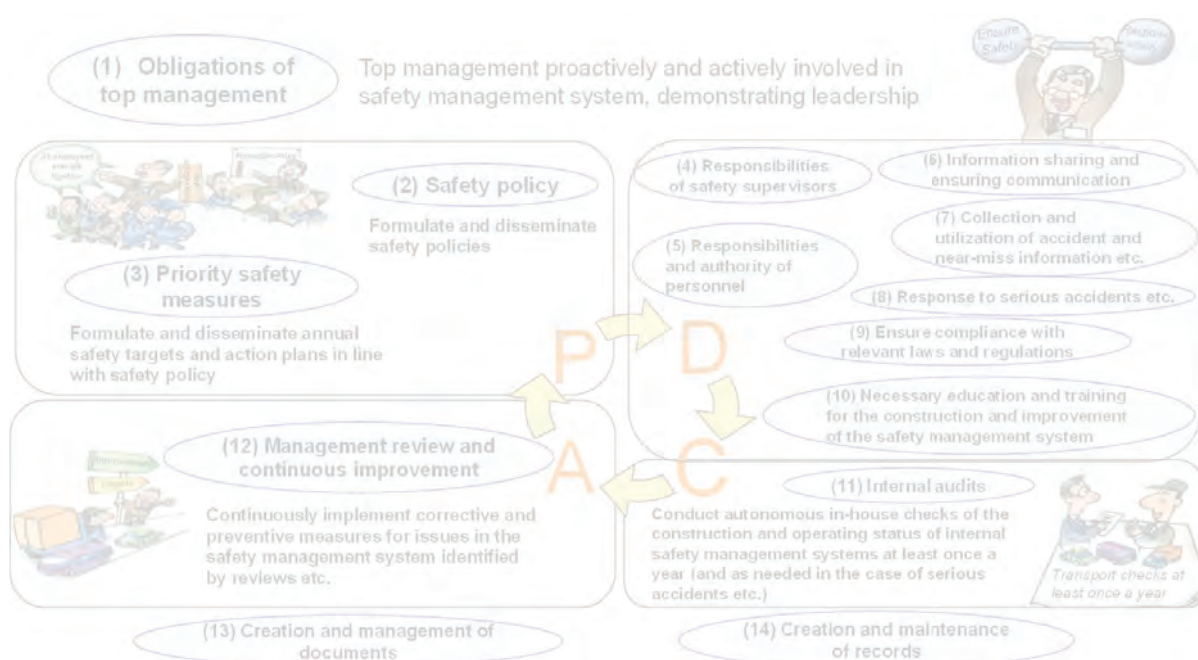
➤ What is Safety Management System?

The constant checking/improvement of SMS through the PDCA cycle, involving all sections in DMTCL is crucial for SMS implementation

Organizational response is important in SMS!

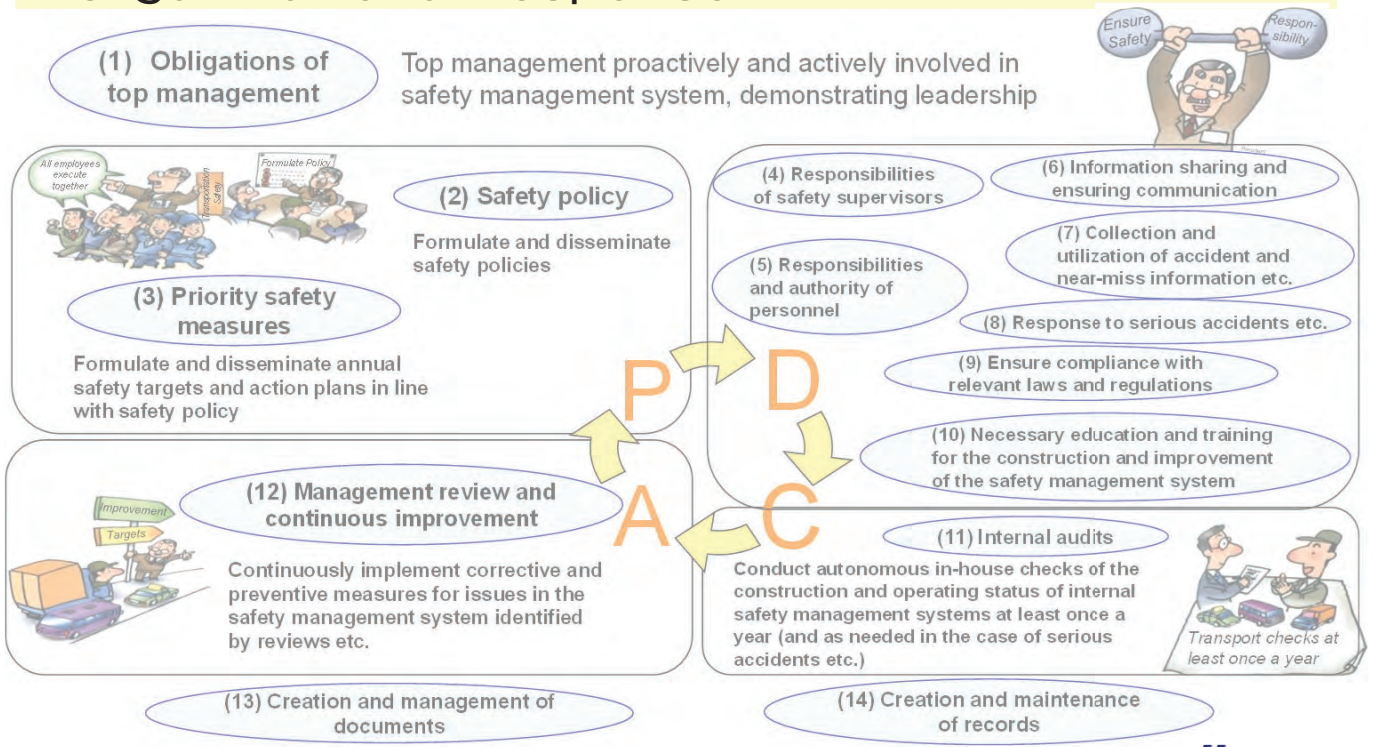
1.2 SMS Activities and Organizational response

➤ Do you remember “14 Examples in SMS”?



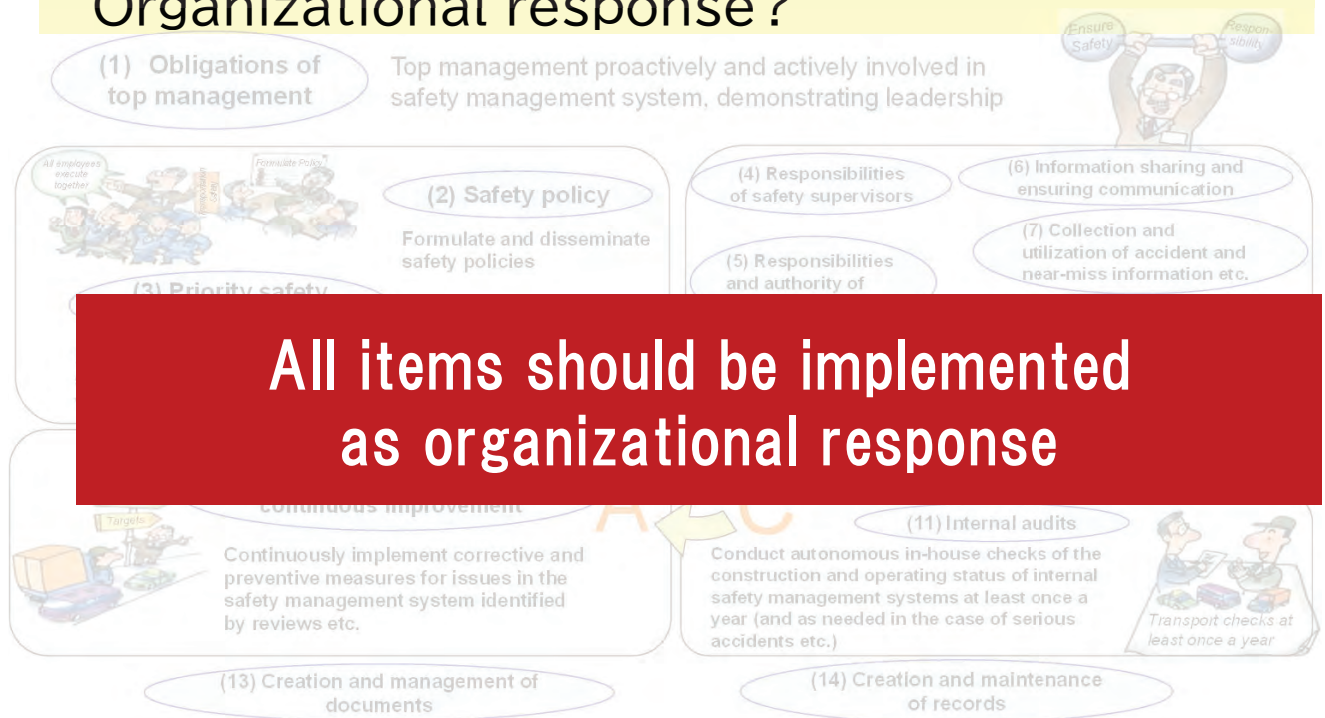
1.2 SMS Activities and Organizational response

➤ What SMS item should be implemented as Organizational response?



1.2 SMS Activities and Organizational response

➤ What SMS item should be implemented as Organizational response?

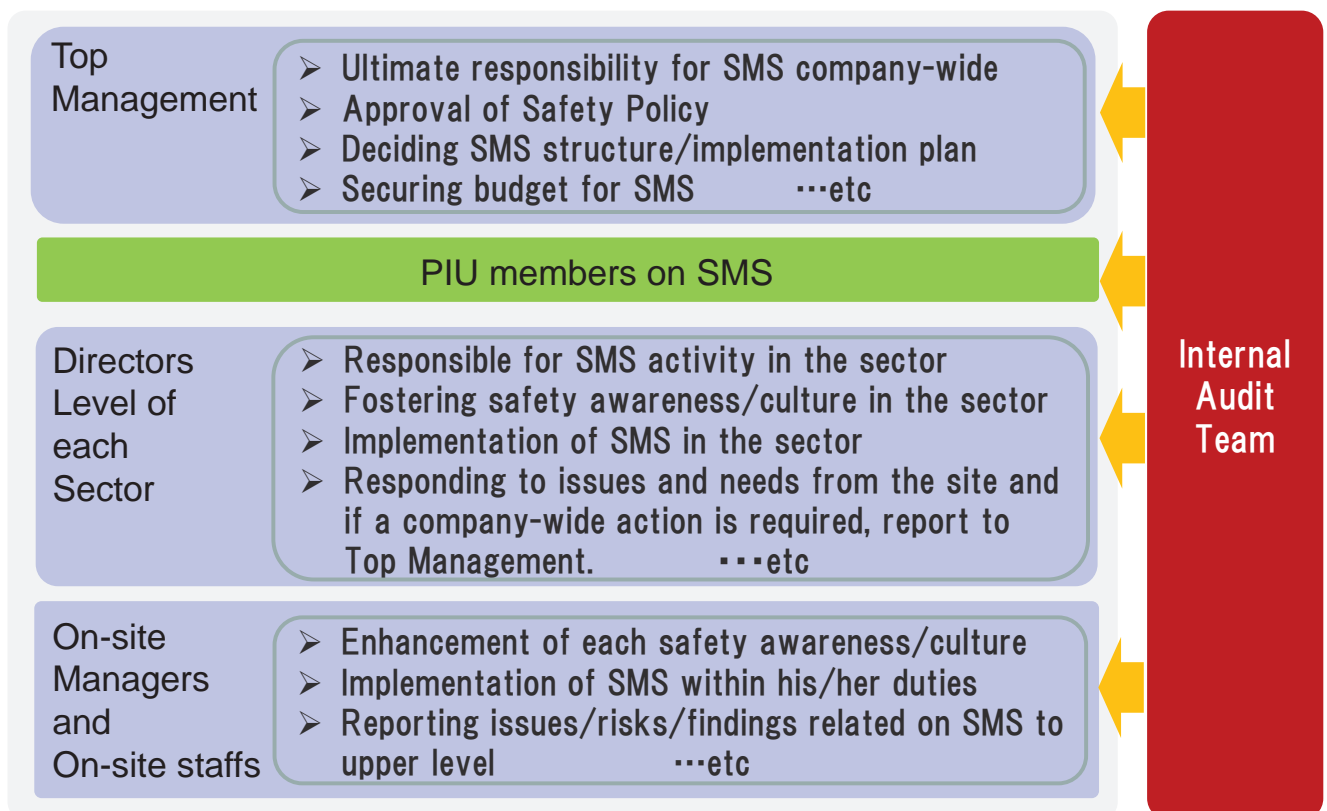


All items should be implemented as organizational response

2. SMS organization structure and its role/responsibility

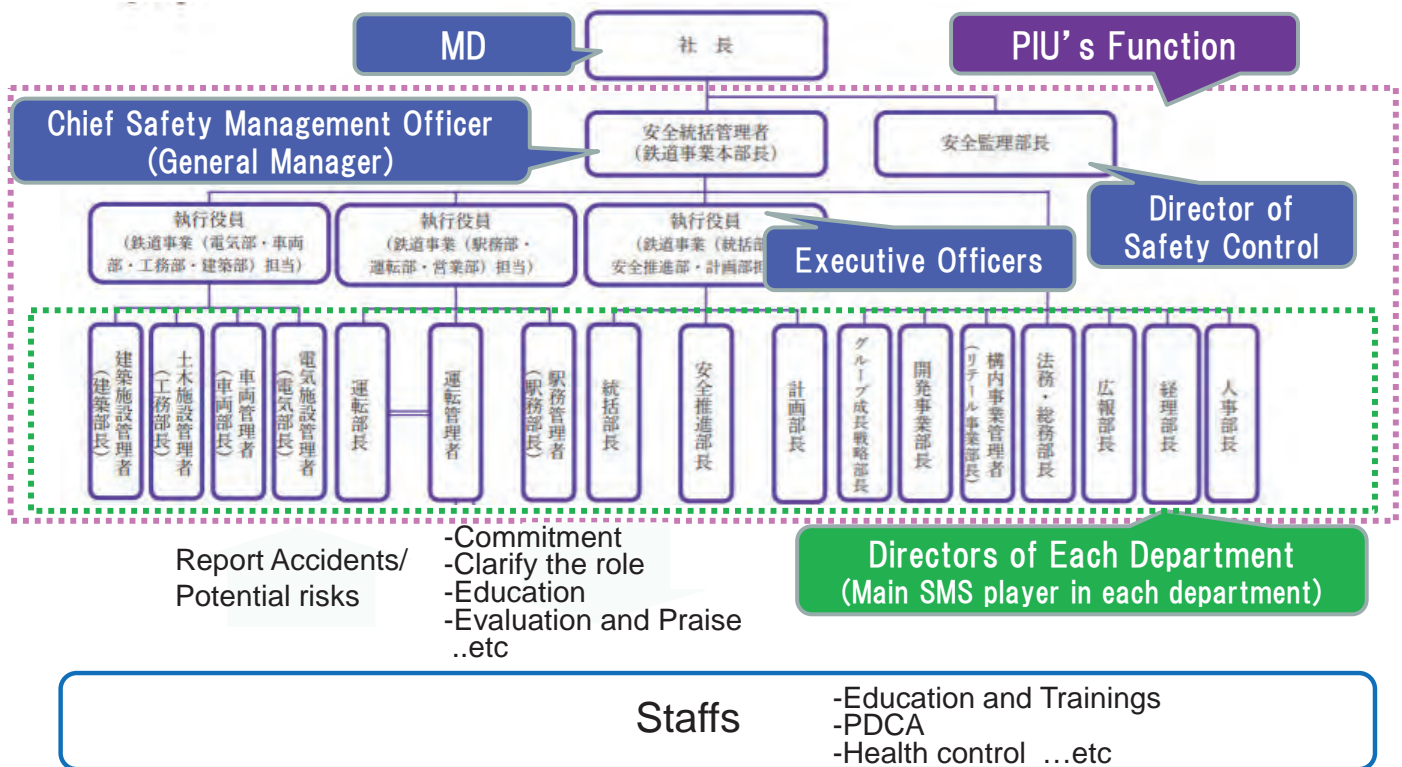
In this chapter, you will learn about SMS organization structure and the each role/responsivity.

2.1 Concept of SMS organization structure



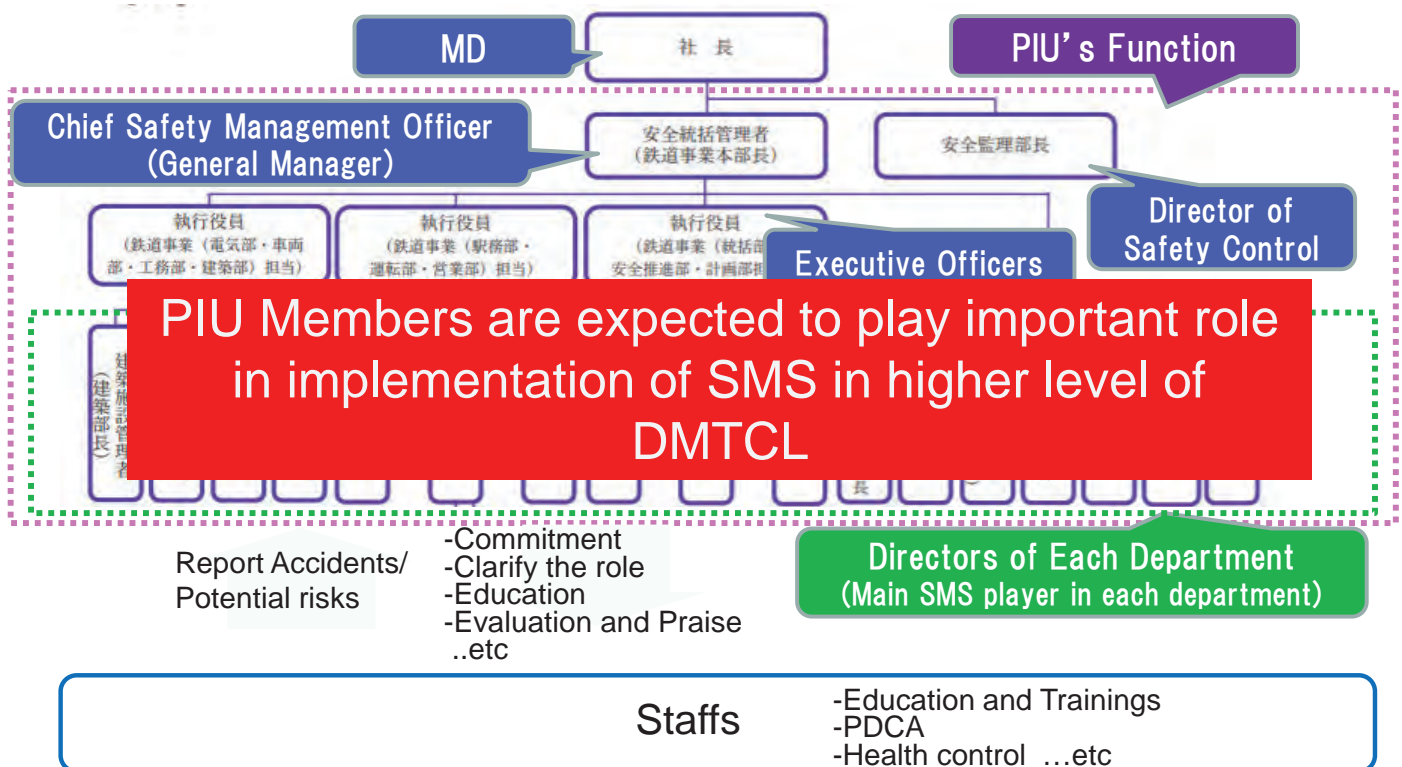
2.2 SMS organization structure (in DMTCL)

(Example of Osaka Metro SMS organization structure)



2.2 SMS organization structure (in DMTCL)

(Example of Osaka Metro SMS organization structure)



2.3 Roles and responsibility in SMS of DMTCL

- What kind of roles and responsibility in SMS is required for each position in the operational phase of MRT?

(please consider corresponding to your position)



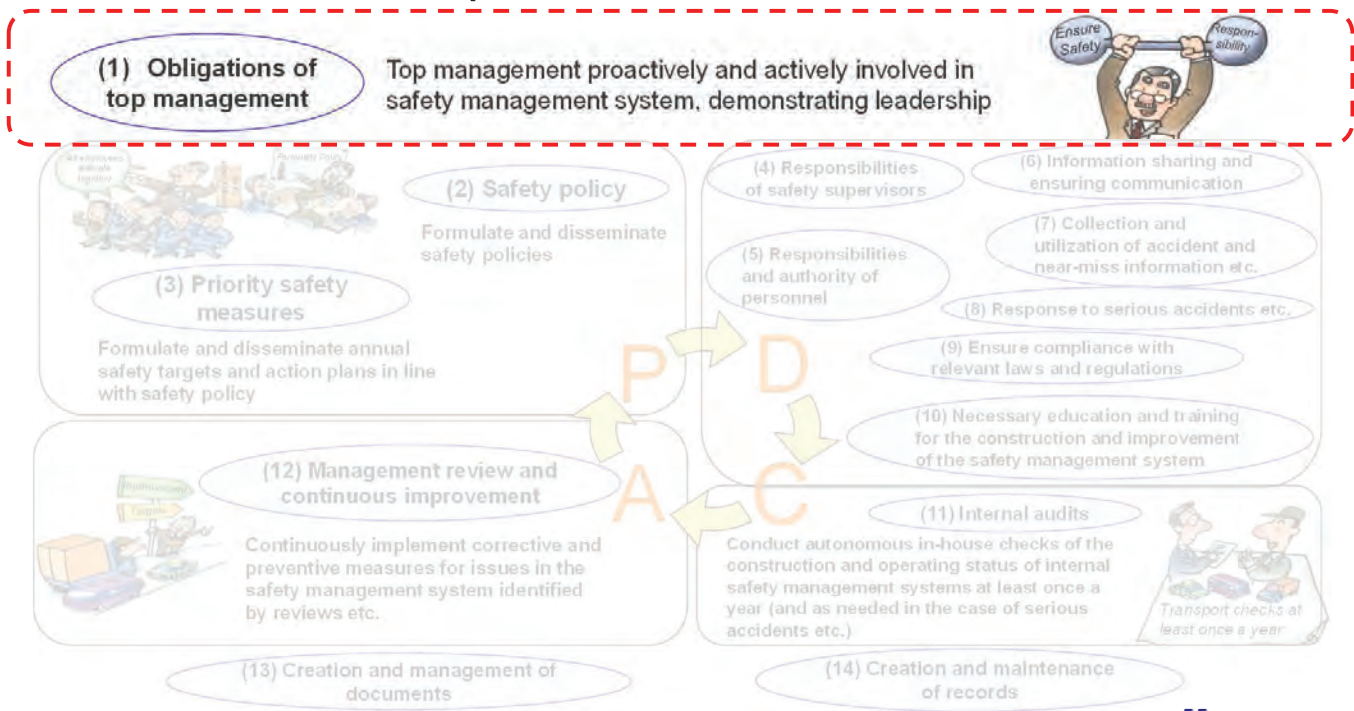
Also Comment from
Osaka Metro members

3. Importance of Top Management

In this chapter, you will learn about importance of Top Management in SMS

3.1 Importance of Top Management in SMS

Top Management leads the SMS and involved in all processes



3.1 Importance of Top Management in SMS

[Role of Top Management]

- ◆ Proactive involvement and fulfillment of responsibilities of top management in safety
- ◆ Establishment / proper operation of SMS

Follow and Implement
Top Management
of Policy/Order

Support establishment
of Safety
Policy/Safety Culture

ALL Staffs in DMTCL

3.2 Important Roles of Top Management

- (1) Development of “Safety Policy”
- (2) Establishment and improvement of SMS and Securing the personnel, information and transport facilities necessary to ensure transport safety
- (3) Commitment for “Key Safety Measures” (developed by each section)
- (4) Compliance with all relevant laws and regulations and “the principle of safety first”
- (5) Preparation for Response to Serious Accidents

3.2 Important Roles of Top Management

- (1) Development of “Safety Policy”
- (2) Establishment and improvement of SMS and Securing the personnel, information and transport facilities necessary to ensure transport safety

**Urgently needed to establish SMS
for commercial operation**

4. Efforts based on Guidelines

In this chapter, you will learn efforts based on Guidelines and how to implement it in each position

4.1 Efforts based on Guidelines (Example)

- (1) Formulation and implementation of safety policies and priority safety measures(No.2)
- (2) Ensuring two-way communication between business management departments and sites (No.8)
- (3) Collection, analysis and responding to (occurred) accident and potential accident information etc. (No.7)
- (4) Implementation of needed education/training (No.10)
- (5) Continuous improvement with the PDCA cycle (No.12)

4.2 Formulation of Safety Policy (No.2)

- Policy that clearly shows the overall intention and direction of operators concerning ensuring transport safety
- Fundamental of SMS in the Operator
- Prepared by PIU members in DMTCL, Finalized and approved by top management

For the detail, we will explain/discuss in 4th session.

4.3 Ensuring two-way communication between management level and sites (No.8)

To establish SMS, it is important to...
create a system

“Various information regarding Safety immediately shared openly in DMTCL”

- What countermeasures are required for information sharing in DMTCL?



4.3 Ensuring two-way communication between management level and sites (No.8)

[Example(1)]

- Communication of Safety issues with top management and the site
- Build a mechanism for...
 - Reporting site issues to top management etc.
 - Sharing information in the workplace
- Create an atmosphere such as “through participation in on-site meetings” ... etc.



4.3 Ensuring two-way communication between management level and sites (No.8)

[Example(2)] From top to bottom

- Post safety information in...
 - Each workplace
 - Company newsletters
 - Company intranet etc.
- Top management give instructions at site visits and in ceremonies etc.
- Sharing information at...
 - Various meetings and training
 - Roll call every morning



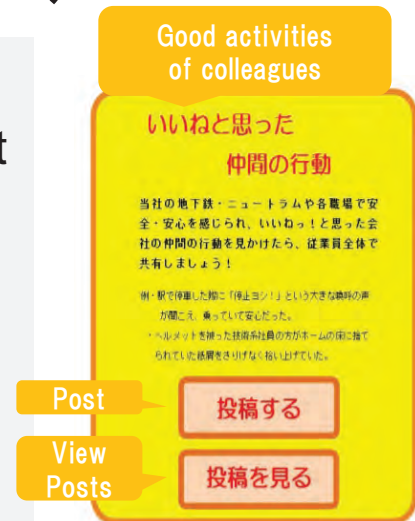
Example of Site visit report by Top management in Osaka Metro

https://www.osakametro.co.jp/safety/library/anzenhoukokusho/2021/4_anzenkanri_houhou.pdf

4.3 Ensuring two-way communication between management level and sites (No.8)

[Example(3)] From bottom to top

- Top management listen to workers at site visits and opinion exchanging meetings etc.
- Establish a helpline through the company intranet or email etc.,
- Set up opinion boxes at the workplace etc. to hear opinions
- Hear opinions by launching business improvement proposal system etc.
- Site managers accurately report on-site issues to top management etc.



Example of posting to intranet various opinion/findings in Osaka Metro

https://www.osakametro.co.jp/safety/library/anzenhoukokusho/2021/4_anzenkanri_houhou.pdf

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4.3 Ensuring two-way communication between management level and sites (No.8)

[Example(4)] within departments

- Activate communication with small group activities (case study groups etc.)
- Establish communication boards in rest areas (where group leaders and members can post opinions and information)



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4.3 Ensuring two-way communication between management level and sites (No.8)

[Example(5)] in Safety awareness activities

- Put up posters to educate the company about safety
- Publish safety information for customers
 - on the website
 - implement educational broadcasting within stations, RS, etc

“Ensuring Safety” is the life of transportation
Please see “Safety report”



Example of Fukuoka Metro

4.4 Ensuring two-way communication between management level and sites (No.8)

To establish SMS, it is important to...

Create a system
Various information regarding Safety
immediately shared openly in DMTCL

- What countermeasures are required for information sharing in DMTCL?



Also Comment from
Osaka Metro members

4.3 Ensuring two-way communication between management level and sites (No.8)

Prevent issues by...

sharing thoughts/information
“Top and Bottom”
and
“Across the organization”

4.3 Ensuring two-way communication between management level and sites (No.8)

- If you find some wrong situation that may cause serious accident (but if you report to upper level you might be punished..), what will you do?



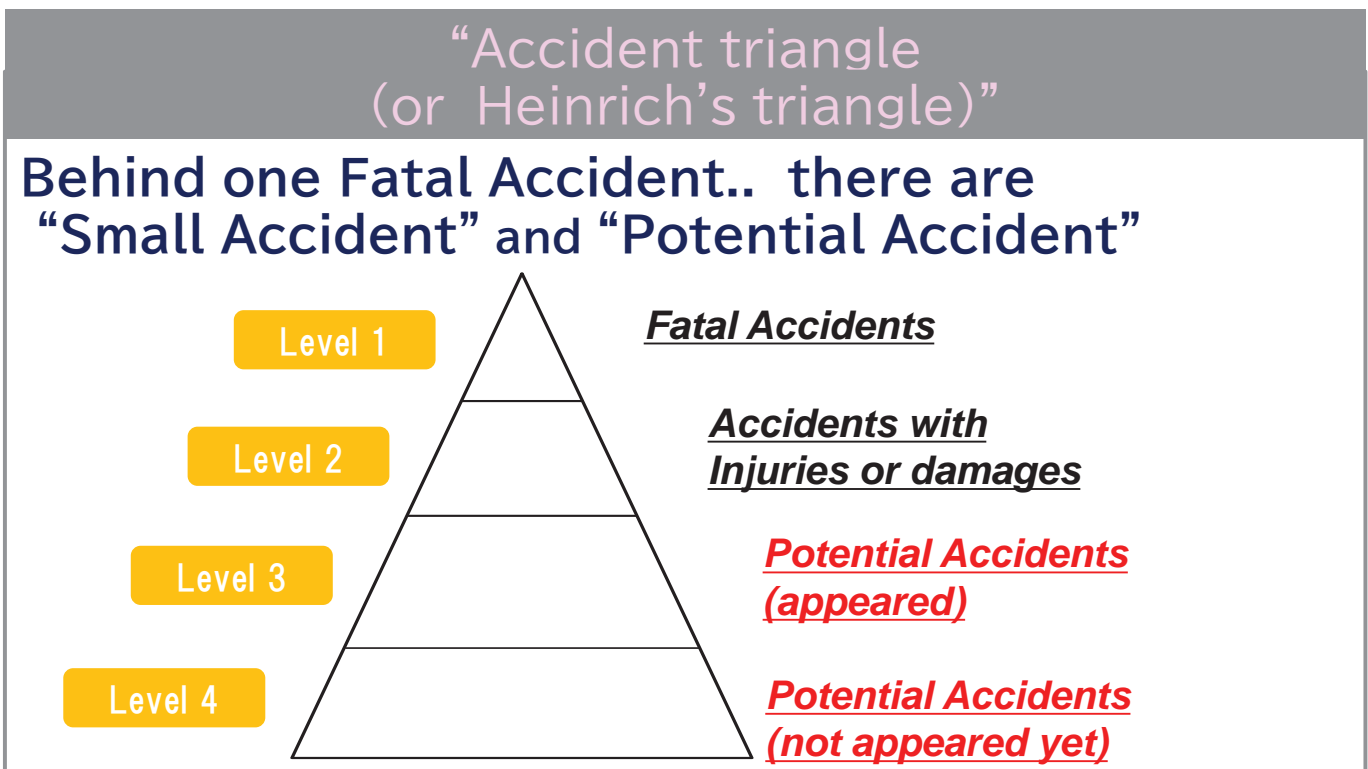
Can you report it to upper level?

Can you report it to internal audit team?

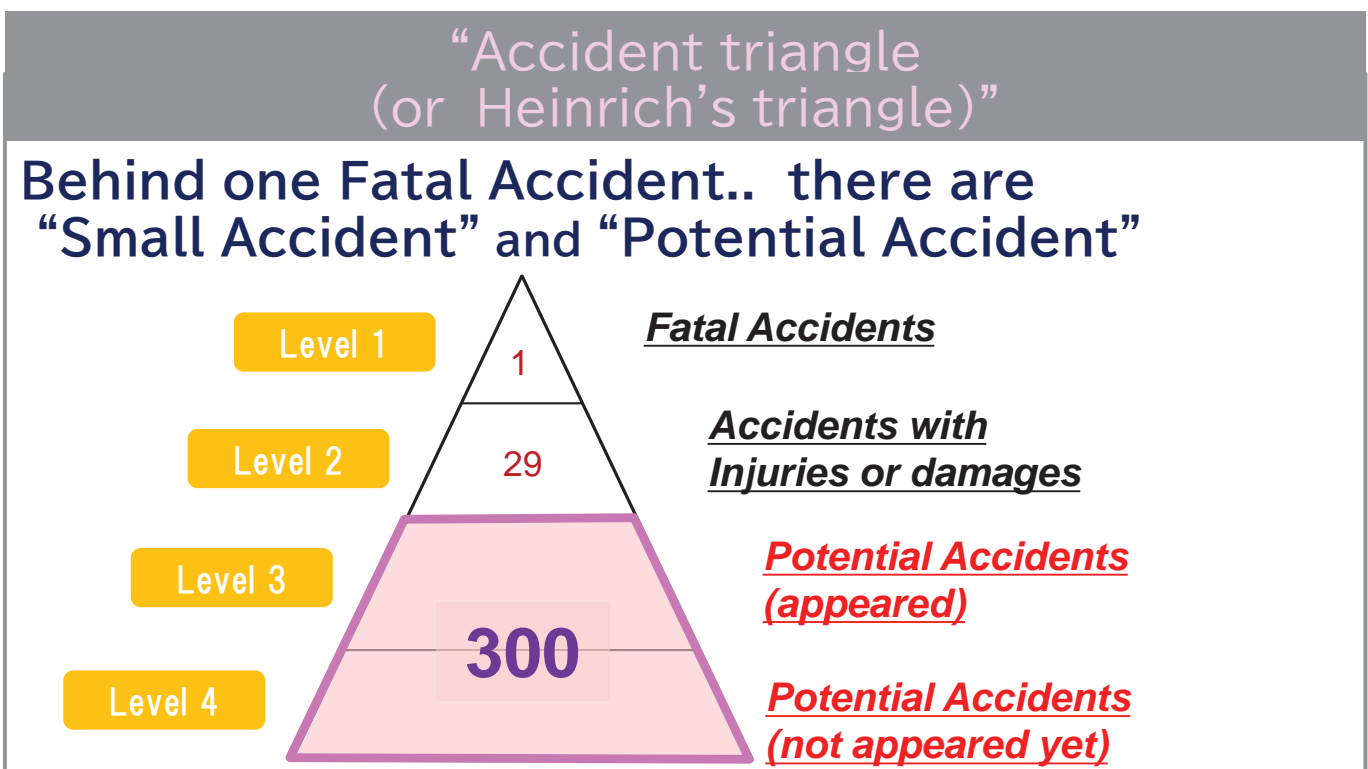
Can you request to your subordinates to response it?

Can your subordinates find it report to you?

4.4 Collection, analysis and responding to accident information etc. (No.7)

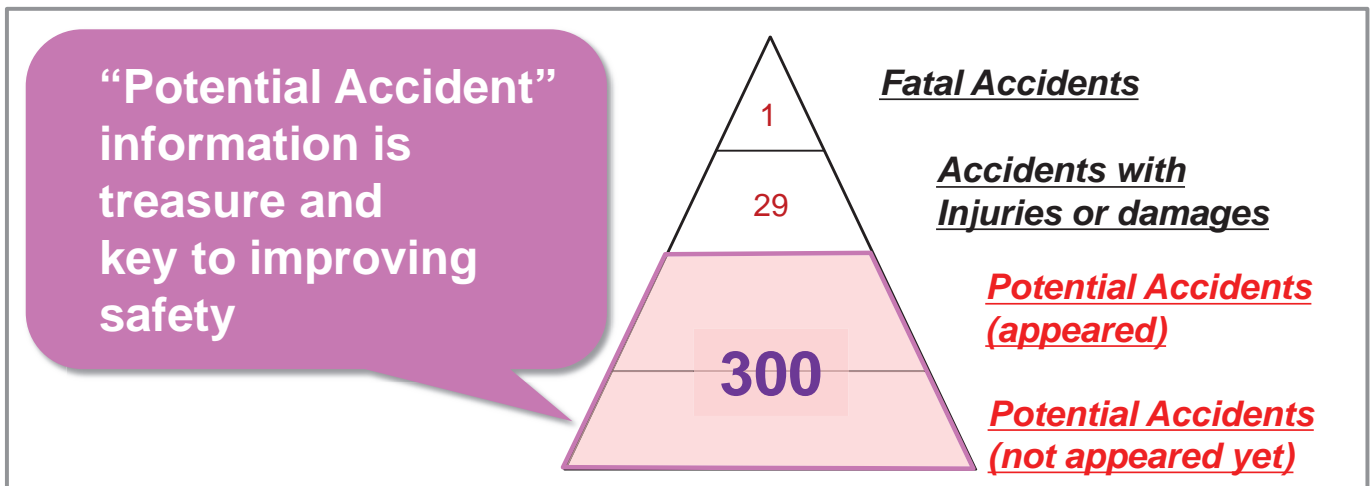


4.4 Collection, analysis and responding to accident information etc. (No.7)



It is important to...

- (1) Analyze causes of occurred accident
- (2) Take advance action against similar accidents and issues by collecting and analyzing potential accident information



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4.4 Collection, analysis and responding to accident information etc. (No.7)

➤ How to correct and analyze potential accident info?

Share

- As reports are made from on site, share promptly as caution notices with other sites
- Create a hazard map based on reported details and share this with relevant employees
- Share with relevant employees at roll calls and morning assemblies
- Create booklets to distribute on site and use in in-house training ...etc.

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4.4 Collection, analysis and responding to accident information etc. (No.7)

➤ How to correct and analyze potential accident info?

Organize and analyze

- Trend analysis (years of experience, psychological factors, place of occurrence, day of week, time range etc.)
- Organize by creating a database based on the results of analyses

4.4 Collection, analysis and responding to accident information etc. (No.7)

➤ How to prevent/response to potential accident?

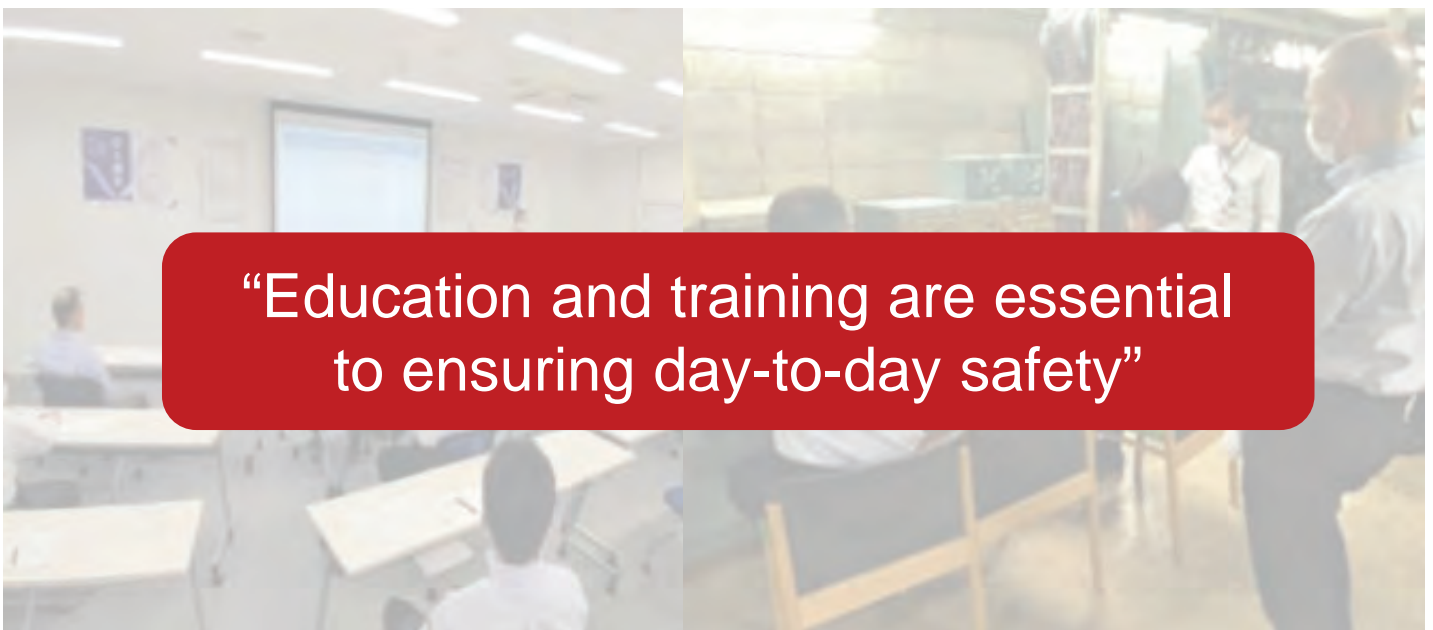
- Investigate situations of similar events at other sites and utilize for preventive measures
- Extracting issues and planning and implementing measures
- Carry out analysis and plan measures together with head office and the site
- Improve the safety awareness of employees through training utilizing potential accident information

4.5 Implementation of needed education/training (No.10)

[Example of Education/Training activities]

- ✓ Hold safety symposiums and seminars
- ✓ Training on risk analysis
- ✓ Develop personnel with knowledge, leadership and technical skills needed to hand down technology
- ✓ Consider countermeasures to prevent accidents including discussing on accidents in other operators
- ✓ Evaluate the effect of education and training by visiting workplaces afterwards

4.5 Implementation of needed education/training (No.10)



4.5 Implementation of needed education/training (No.10)

➤ What kind of Education/Training is necessary after commercial operation of MRT6?

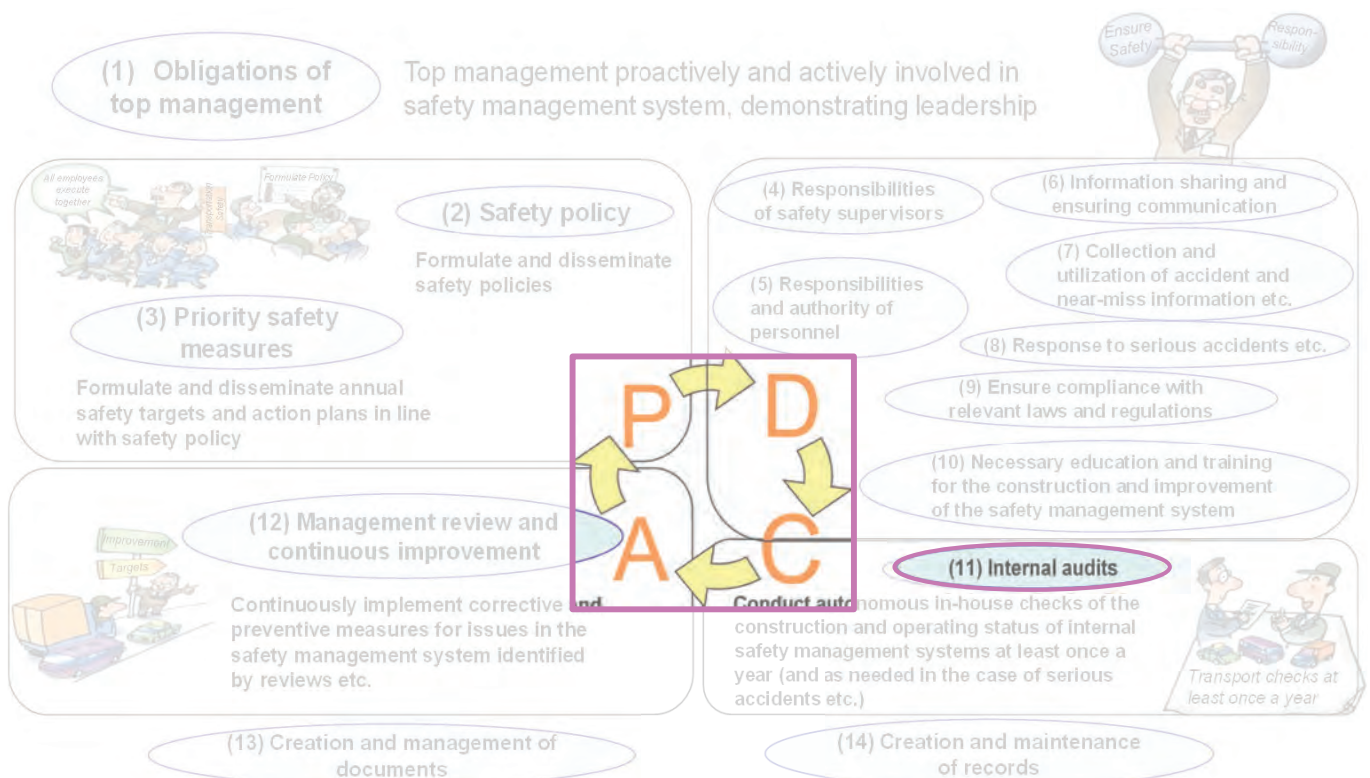


<http://dmtcl.gov.bd/>



Also Comment from Osaka Metro members

4.6 Continuous improvement with PDCA cycle (No.12)



4.6 Continuous improvement with PDCA cycle (No.12)

◎ Internal audits

Clarify issues and challenges by regularly checking various efforts related to SMS by DMTCL themselves



Example of Internal Audits (for each department) in Osaka Metro

https://www.osakametro.co.jp/safety/library/anzenhoukokusho/2021/4_anzenkanri_houhou.pdf

4.6 Continuous improvement with PDCA cycle (No.12)

[Points in Internal Audit]

- ✓ Carry out regularly to confirm that the SMS is properly established, implemented, maintained and functioning
- ✓ Conduct as appropriate in the event of serious accidents
- ✓ Ensure audit objectivity
(auditor not involved in the audited department etc.)
- ✓ Providing necessary education and training for auditors
(on SMS guidelines, relevant laws, internal regulations etc.)
- ✓ Top management express the importance of internal audits to ensure their smooth implementation
- ✓ Top management are also audited in ensuring safety

5. Roles of Site Managers

In this chapter, you will learn the roles of site managers which is essential for implementation of SMS in MRT operation.

5.1 Communications in the department

- Show manager's thinking about "safety first," seek the understanding of subordinates, and share safety awareness
- Raise and discuss opinions and concerns among all subordinate employees
- Understand the actual situation and issues on site and support the resolution of issues
- Disseminate more appropriate and effective information

It is important for managers and subordinates to have two-way dialogue and discussions and share awareness for SMS

5.2 Developing subordinates

➤ Praise

⇒ When people are praised, feel happy and think “to make that behavior a habit” and this leads to motivation and self-confidence



➤ Scolding

⇒ the purpose is to make them think about “what caused them to do it” and “Not do the same thing again”



➤ Importance of communication

⇒ The better the personal relationships and communication, the more effective the praise of good points and pointing out of bad points will be

5.3 Calm big-picture judgement and clear policies and instructions

- The roles of leaders are very important in exerting comprehensive strength in the workplace in the event of serious disaster / accident.



- In that case, as the situation changes dynamically, “calm judgement of the overall situation” and “clear instructions based on judgements” are required

5.4 Attention to detail from a broad perspective

- “Knowing the situation on site well” is a means for managers to provide proper instruction
 - Understand whether work is being carried out properly and safely
- In everyday work on site, the work environment and procedures become commonplace and miss the risk
 - Need attention to detail from the broad perspective of an administrator
- Are rules and manuals suitable for on-site work?
 - Calmly judge whether customers are safe and whether employee work and equipment are within limits

5.4 Attention to detail from a broad perspective

- “Knowing the situation on site well” is a means for managers to provide proper instruction
- In everyday work on site, the work environment and procedures become commonplace and miss the risk
- Are rules and manuals suitable for on-site work?

This kind of perspective by manager helps...

- communication with subordinates
- Improvement of work and equipment
- Big picture judgements in emergency

5.5 Improve safety awareness and employee motivation

1) Develop interest in work

→ Improve motivation by making work feel worthwhile and finding value in it

2) Follow up to make the job is done well

→ The greater their knowledge, technique and skill, the more they strive to self-improve

3) Delegate responsible work

→ Delegating responsible or high level work gives a motivation to succeed

4) Take on board the opinions of subordinates

→ When their thoughts and opinions are taken on board, this will be reflected and they will act with conviction

6. Roles of On-site Staffs

In this chapter, you will learn the roles and activities of on-site staffs related on SMS and understand how to enhance their safety awareness and safety activities in terms of SMS in MRT operation.

6.1 Roles of Site Staffs

- Enhancement of each safety awareness/culture

Action from Upper level is needed

- Implementation of SMS within his/her duties

Explained from next slide...

- Reporting issues/risks/findings related on SMS to upper level

...etc.

Action from Upper level is needed

6.2 Implementation of SMS within his/her duties ~ Conducting “Basic Action” ~

What is basic action?

- A condensed specific actions and procedures for following established rules
- Formulated for preventing accident based on lessons learned from many accidents



Example of “Basic Action”
~ “Shisha-kanko”~

6.2 Implementation of SMS within his/her duties ~ Conducting “Basic Action” ~

Example of “Basic Action” (Shisha-kanko)

1. See with your eyes
2. Stretch your arms and point
3. Open your mouth and say
“xxx, all good”
4. Listen to your own voice
with your ears



Example of “Basic Action”
~ ”Shisha-kanko”~

6.2 Implementation of SMS within his/her duties ~ Scenes of conducting “Basic Action” ~

Confirmation of....

- ✓ Railway signal position/aspect
- ✓ Train stopping
- ✓ Safety on platforms
 - before arrival of train
 - at departure
 - after departure/passing
- ✓ Number of instruments
- ✓ Operation of switches/equipment
- ✓ Materials and tools
- ✓ Work procedures
- ✓ Train approaching
when crossing railroad tracks .etc.



6.2 Implementation of SMS within his/her duties ~ Conducting “Basic Action” ~

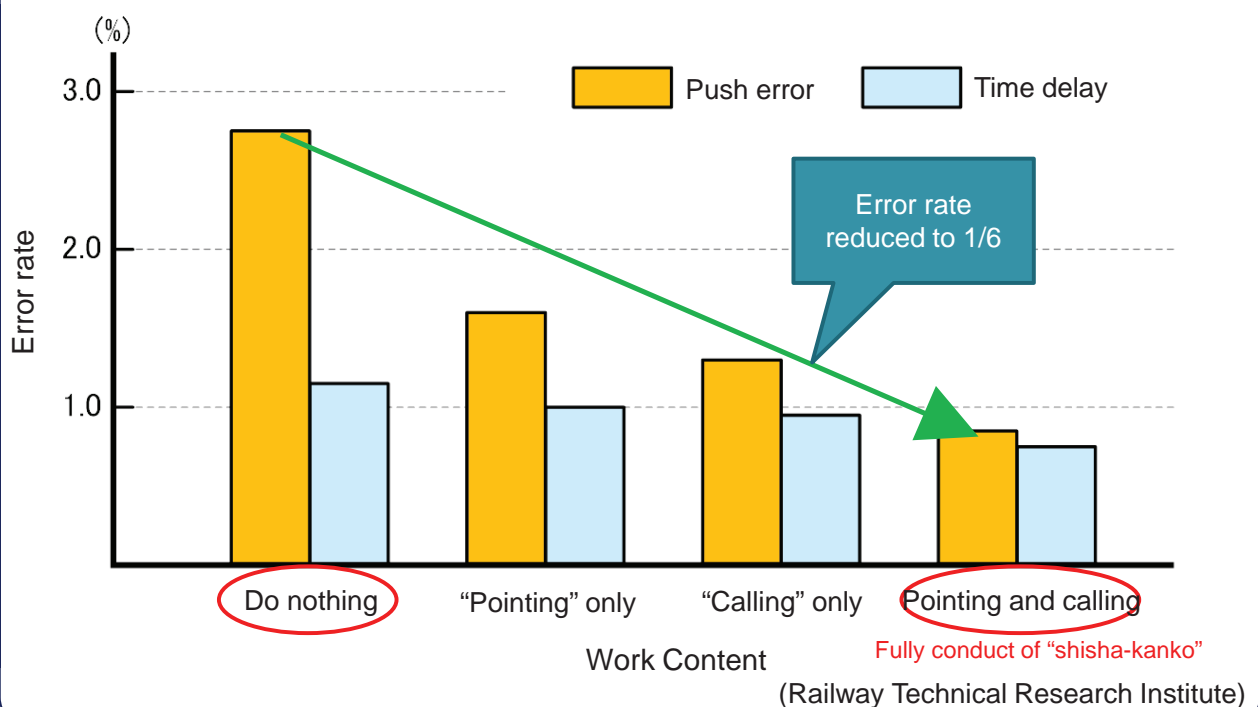
Effect of basic action

- **Don't miss important points**
(even in with little experience)
- **Prevent omissions and mistakes**
(due to getting used to work)
- **Raises overall awareness levels**
(By being aware of specific action)
- **The appearance of action gives customers a sense of security and improved reliability**



6.2 Implementation of SMS within his/her duties

Effect of basic action (Shisha-kanko)



6.3 Discussion

- How to implement/spread SMS activities to On-site staff level in DMTCL?

(please consider corresponding to your position)



Also Comment from
Osaka Metro members

7. Discussion

In this chapter, we will review the roles and responsibilities for future SMS operations.

7.1 Discussion

Based on the lecture and the discussion of this lecture...

- What of your role will be in the operational phase of MRT?

(please consider corresponding to your position)



Also Comment from
Osaka Metro members

Thank you very much for your kind attention
আপনাদের সবাইকে ধন্যবাদ



Small tests

Session1

https://docs.google.com/forms/d/e/1FAIpQLSeE_pCMpxvqcD7mGuupYZK6WJihVvw0qcHnLV288MJx1-Ofaw/viewform?usp=sf_link

Session2

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Session3

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The Project on Technical Assistance for MRT Safety Management System on Line 6

Training in Dhaka 3: Necessity of Safety Related Documents and Those Examples

October/2021

JICA Expert Team (JET)

Outline

1. Necessity of Documentation
2. Examples of Documentation in Osaka Metro
3. Detailed Examples of Documentation in Osaka Metro
4. Summary

Purpose and Aims of this Course

- To learn the necessity and positioning of documentation in Japan
- To learn the examples of documentation in Osaka Metro
- To precisely understand the aim of documentation

1. Necessity of Documentation

In this chapter, you will learn about the necessity of documentation and its importance in Japan.

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1.1 Advantage of Documentation

Proper documentation is essential to create the sustainable company.

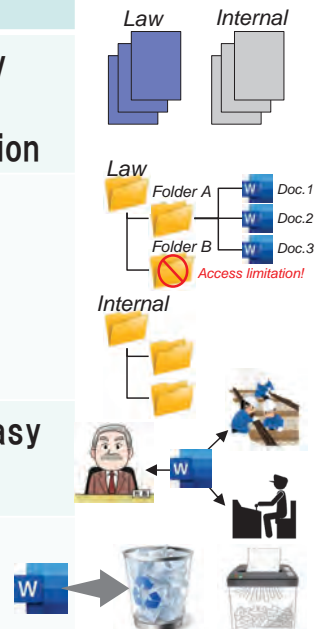
[Its benefit]

- Visualize the know-how
- Easier education than OJT (Learn to See)
- Smooth personnel change can be realized, and human resource can be utilized more efficiently.
- Employees can work quickly
 - > Become interested to work
- Revision of work procedure is easy. Easy to discuss.
 - > Becoming the high resilience corporate culture against environmental change.

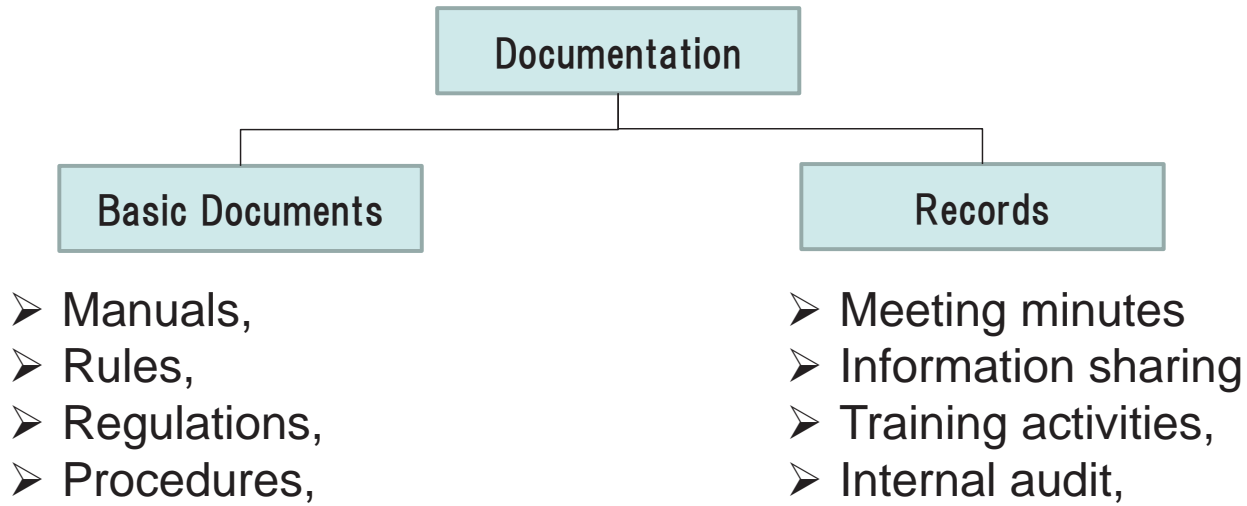
1.2 Advantage of Proper Documentation

Proper documentation is to cover the following 4 items.

Items to be done properly	Necessity & Advantage
(1) Proper classification	<ul style="list-style-type: none"> ➤ Prevent the messy storage in order to identify many documents ➤ Easy to find the necessary documents and information
(2) Proper storage	<ul style="list-style-type: none"> ➤ Human error by mistake will be decrease by clear storage ➤ Prevent the information leak, lost and stolen by the access limitation ➤ Easy to share the information
(3) Proper distribution	<ul style="list-style-type: none"> ➤ Distribute the necessary documents to users, and easy to read
(4) Proper disposal	<ul style="list-style-type: none"> ➤ No risks to be disposed by non-authorized persons. ➤ Easy to disposal of non-necessity documents.

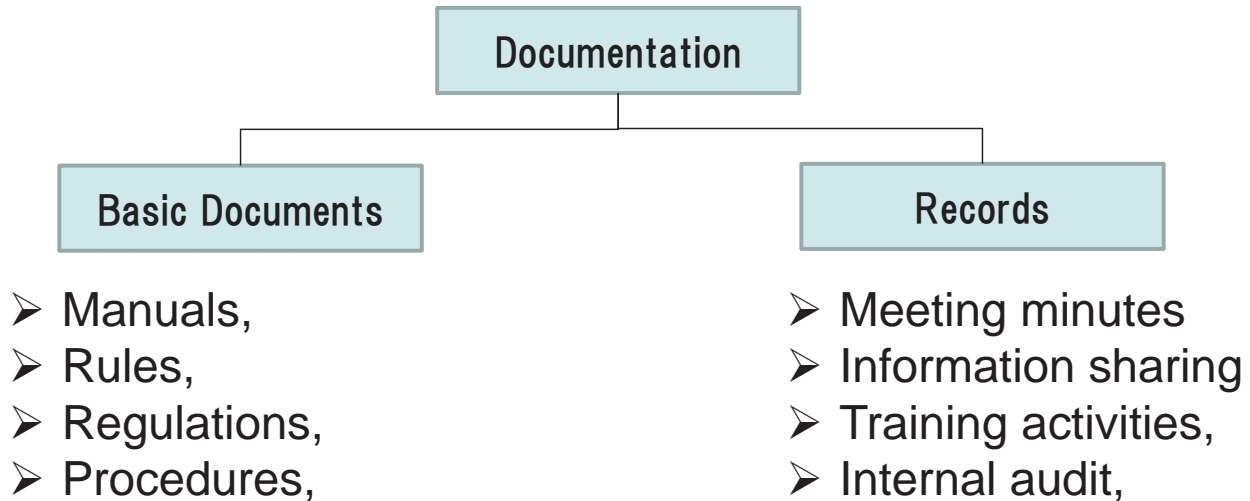


1.3 Classification of Documentation



Which documentation can you revise/update the contents?

1.3 Classification of Documentation

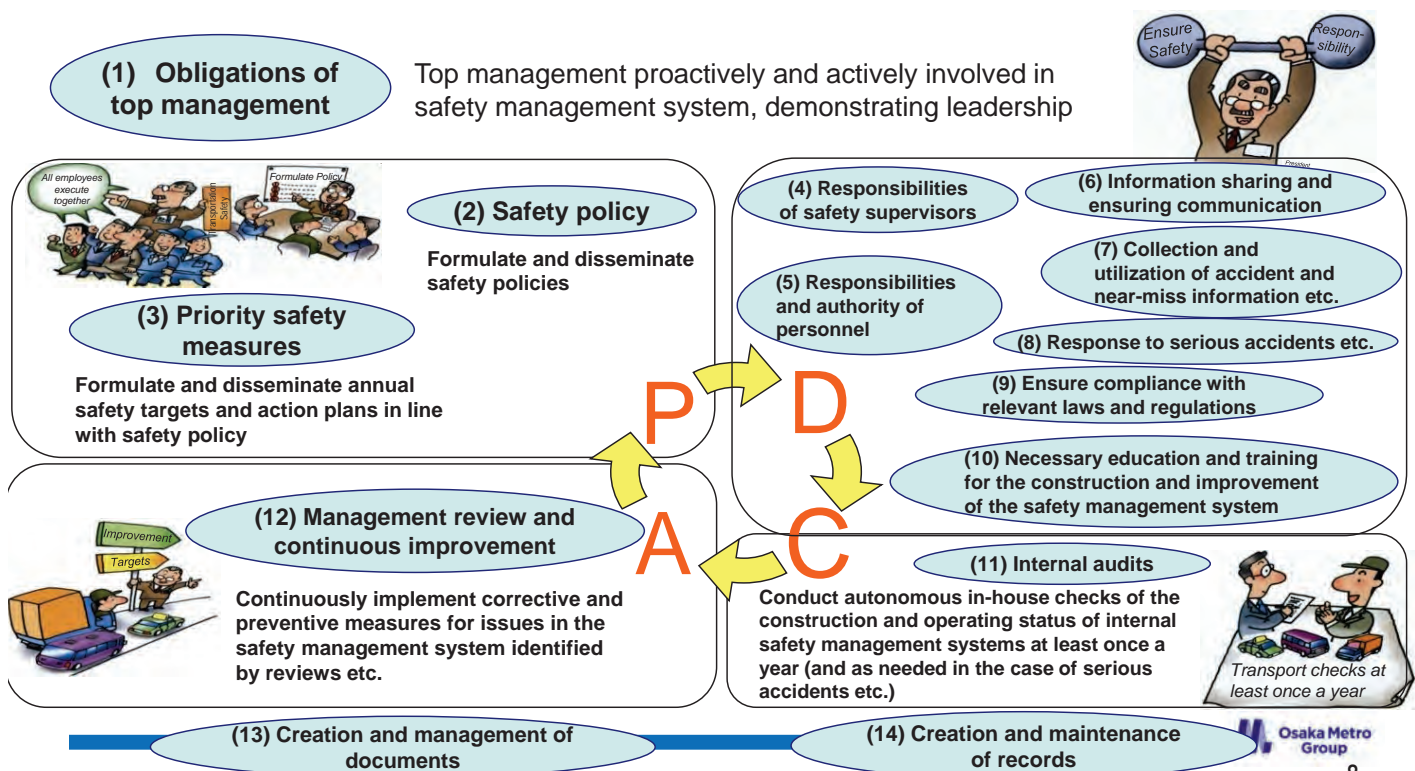


Need improve and update if you find some difficulties, old information, old idea, etc.

If you modify, it is tampering (cheating), because those documents are past fact.

1.4 Positioning of Document Management in Japan

Review: "14 examples" of Guidelines in Japan.



1.4 Positioning of Document Management in Japan

Document creation and its management is mandatory by the guideline in Japan.

(1) Obligations of top management

(2) Safety policy

(3) Priority safety measures

(4) Responsibilities of safety supervisors

(5) Responsibilities and authority of personnel

(6) Information sharing and ensuring communication

(7) Collection and utilization of accident and near-miss information etc.

(8) Response to serious accidents etc.

(9) Ensure compliance with relevant laws and regulations

(10) Necessary education and training for the construction and improvement of the safety management system

(11) Internal audits

(12) Management review and continuous improvement

(13) Creation and management of documents

(14) Creation and maintenance of records

1.4 Positioning of Document Management in Japan



Comments from Osaka Metro

2. Examples of Documentation in Osaka Metro

In this chapter, you will learn about the examples of documentation and its structure in Osaka Metro.

NIPPON KOEI



2.1 Creation and management of documents (Guideline No.13)

The operator shall produce the necessary documents to establish and improve the SMS and manage them appropriately.

There are three types of documents;

- (1) Documents of basic procedure for SMS establishment and improvement
- (2) Obligated documents by laws (guidelines)
- (3) Other necessary documents which is decided by the railway operator

2.2 Creation and maintenance of records (Guideline No.14)

The operator shall create and appropriately maintain the necessary records to keep the results of the SMS operation.

There are three types of documents;

- (1) Records of basic procedure for SMS establishment and improvement
- (2) Obligated records by laws (guidelines)
- (3) Other necessary records which is decided by the railway operator

2.2 Creation and maintenance of records (Guideline No.14)

What do you think the aim of records?
Why do you need to keep records?

2.2 Creation and maintenance of records (Guideline No.14)

The aims of records are **appeal for safety as a railway operator.**

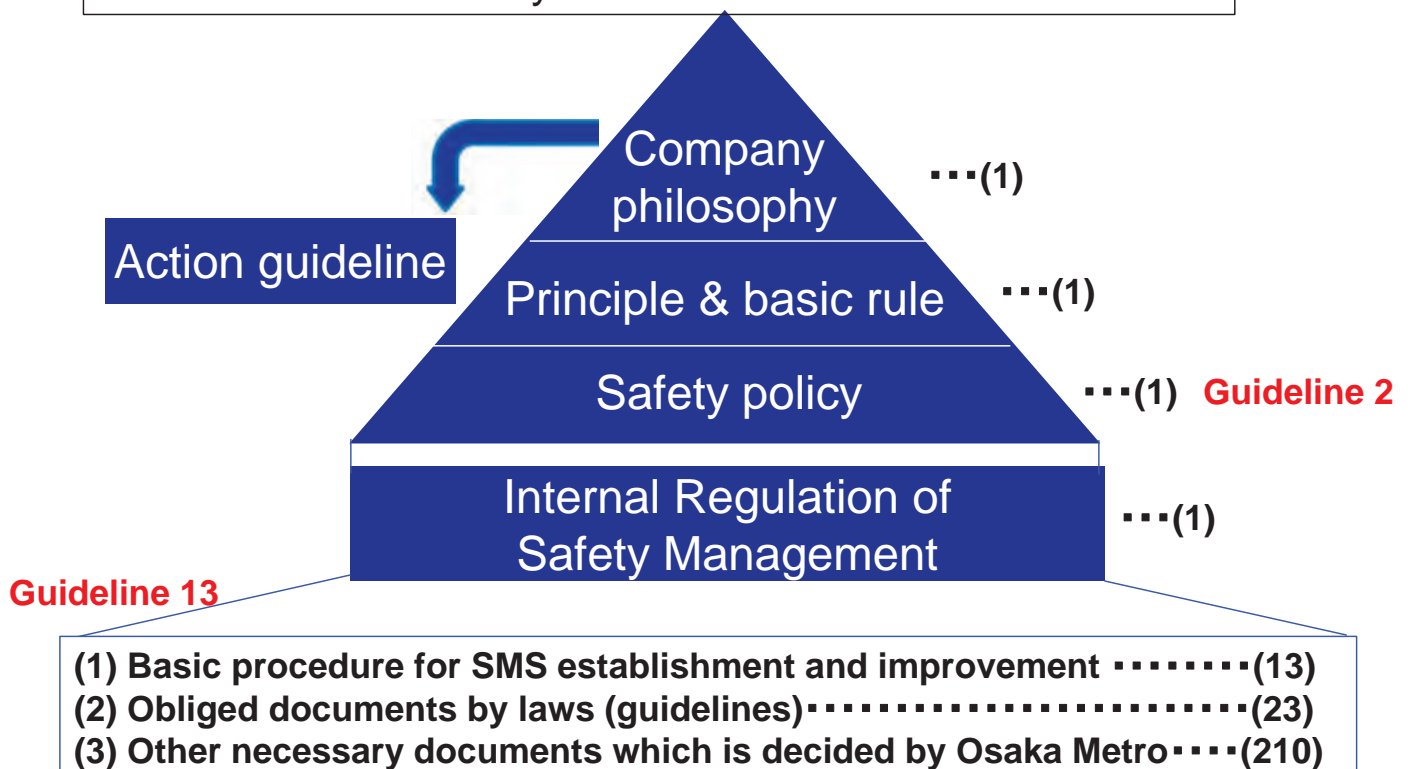
- To identify the results of implementing the SMS and to be able to demonstrate its achievements both internally and externally
- This will allow for the evaluation of the results of implementation and “continuous improvement,” etc.
- To store data with the aim of further improving the efficiency of operations

2.3 Document Structure in Osaka Metro

How many documents do you think Osaka Metro have in total?

2.3 Document Structure in Osaka Metro

Osaka Metro has totally 250 documents as follows.



2.4 Examples of Osaka Metro Documents

(1) Basic procedure for SMS establishment and improvement(13)
 (2) Obligated documents by a law (guideline).....(23)
 (3) Other necessary documents which is decided by Osaka Metro.....(210)

- **Manual** of document management procedures relating to safety management
- **Manual** of records management procedures relating to safety management
- **Manual** of procedures for reporting information on accidents, etc.
- **Basic regulations** for emergency situations
- **Action mechanisms** based on the basic regulations for emergency situations
- **Manual** of procedures for conducting internal audits of transportation safety
- **Outline** of the establishment of the Metro and New Tram Safety Committee
- **Manual** of procedures for holding meetings of the Metro and New Tram Safety Committee

2.4 Examples of Osaka Metro Documents

(1) Basic procedure for SMS establishment and improvement	(13)
(2) Obligated documents by a law (guideline).....	(23)
(3) Other necessary documents which is decided by Osaka Metro.....	(210)

- **Internal regulation** of safety management of Osaka Metro
- **Rules** for ensuring safe driving
- **Guidelines** for operating high-speed electric railways
- **Technical standards** for electrical equipment for railways
- **Technical standards** for rolling stocks
- **Technical standards** for civil engineering facility, etc.

2.4 Examples of Osaka Metro Documents

(1) Basic procedure for SMS establishment and improvement	(13)
(2) Obligated documents by a law (guideline).....	(23)
(3) Other necessary documents which is decided by Osaka Metro.....	(210)

- **Regulations** on aptitude tests and education and training for persons engaged in train operation-related work
- **Work plan** for measures to new Influenza virus, etc.
- **Standards** for training operation-related personnel and maintaining and managing their qualifications
- **Guidelines** for self-audit implementation
- **Guidelines** for safe work implementation, etc.

2.5 Summary of Documents of Osaka Metro

(1) Basic procedure for SMS establishment and improvement(13)

- (a) **Manual** of document management procedures relating to safety management
- (b) **Manual** of records management procedures relating to safety management
- (c) **Manual** of procedures for reporting information on accidents, etc.
- (d) **Basic regulations** for emergency situations
- (e) **Action mechanisms** based on the basic regulations for emergency situations
- (f) **Manual** of procedures for conducting internal audits of transportation safety
- (g) **Outline** of the establishment of the Metro and New Tram Safety Committee
- (h) **Manual** of procedures for holding meetings of the Metro and New Tram Safety Committee

(2) Obligated documents by a law (guideline).....(23)

(3) Other necessary documents which is decided by Osaka Metro.....(210)

2.6 Necessary Documents in DMTCL

Please consider which documents are necessary or not necessary in DMTCL.



Comments from Osaka Metro

3. Detailed Examples of Documentation in Osaka Metro

In this chapter, you will learn the detailed examples of documentation in Osaka Metro especially basic procedure for SMS establishment and improvement.

3.1 (a) Manual of document management procedures relating to safety management

Purpose

- To specify the procedures for managing documents relating to safety management

Applicability

- Applies to enacting, revising and repealing safety management documents

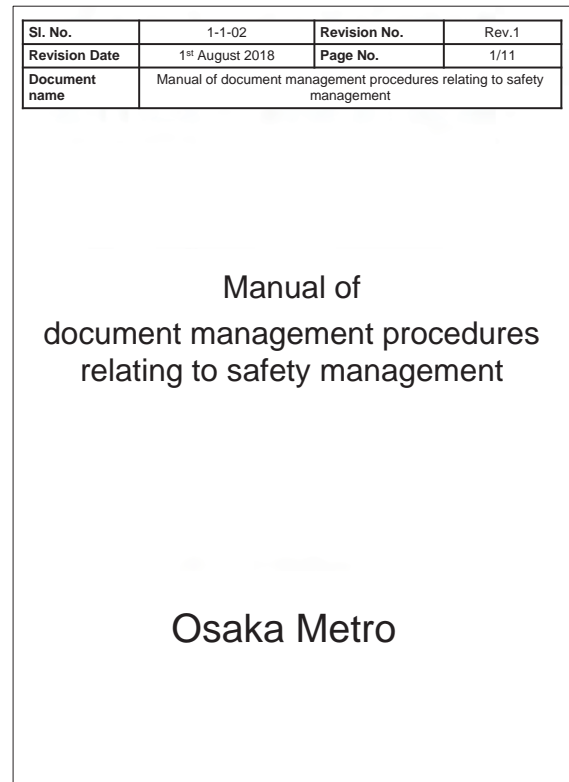
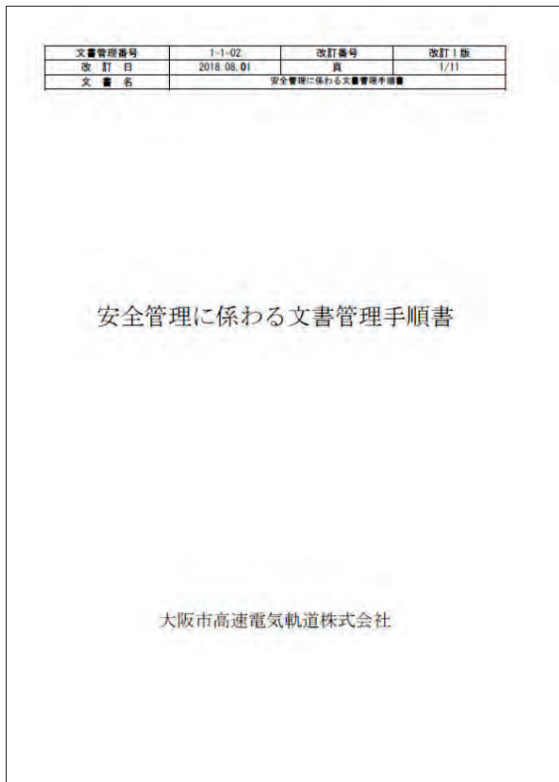
Document processing

- Decision-making procedures for documents are based on the document management rules

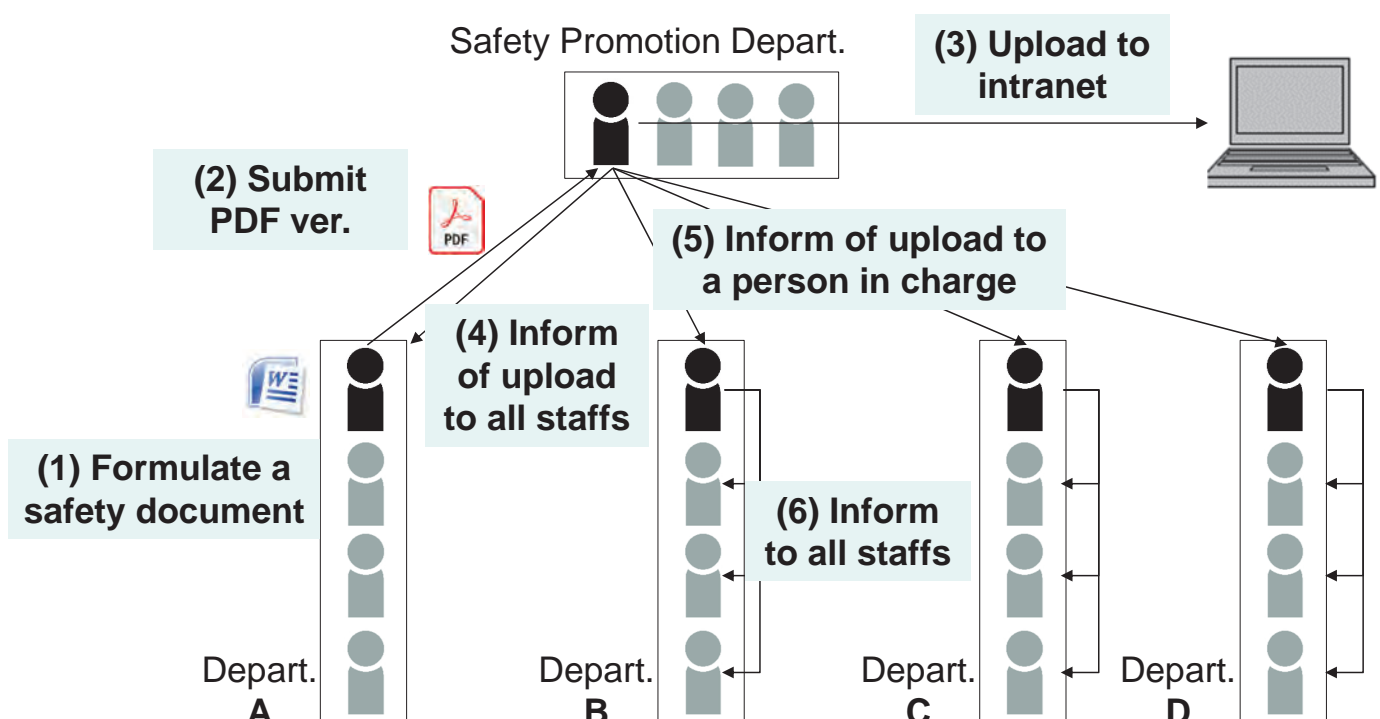
Document format

Sl. No.	AA-BB-CDEF	Revision No.	Rev.X
Revision Date	1 st January 20XX	Page No.	Y
Document name	Manual of document management procedures relating to safety management		

3.1 (a) Manual of document management procedures relating to safety management



3.1 (a) Manual of document management procedures relating to safety management



3.2 (b) Manual of records management procedures relating to safety management

Purpose

- Records management procedures relating to safety management

Applicability

- Applies when managing safety management records

Records management supervisor

- A records management supervisor is appointed for each department. They shall also be the document management supervisor for their respective department.

Document format

Sl. No.	GG-HH-IJKL	Revision No.	Rev.Y
Revision Date	1 st January 20XX	Page No.	Z
Document name	Manual of record management procedures relating to safety management		

3.2 (b) Manual of records management procedures relating to safety management

文書管理番号	1-1-05	改訂番号	改訂1版
改訂日	2018.08.01	頁	1/7
文書名	安全管理に係わる記録管理手順書		

安全管理に係わる記録管理手順書

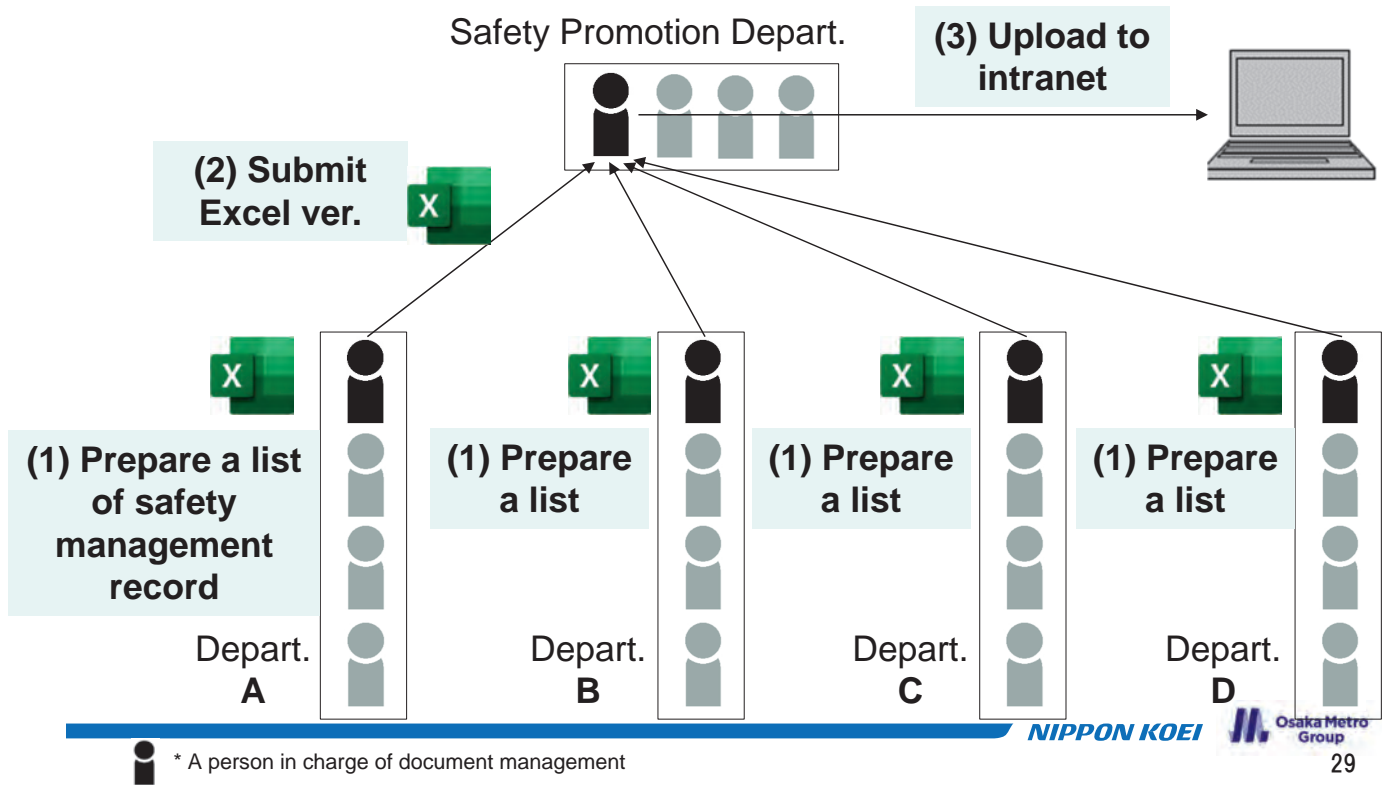
大阪市高速電気軌道株式会社

Sl. No.	1-1-05	Revision No.	Rev.1
Revision Date	1 st August 2018	Page No.	1/7
Document name	Manual of record management procedures relating to safety management		

Manual of record management procedures relating to safety management

Osaka Metro

3.2 (b) Manual of records management procedures relating to safety management

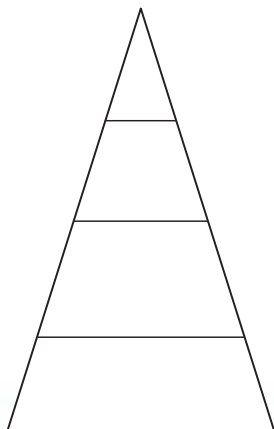


3.3 (c) Manual of procedures for reporting information on accidents, etc.

Purpose

➤ To clarify information on accidents, etc., to stipulate procedures for timely and appropriate reporting to the president, and to prevent the recurrence and prevention of accidents, etc., by taking appropriate measures.

Definitions of terms



Accidents, etc.

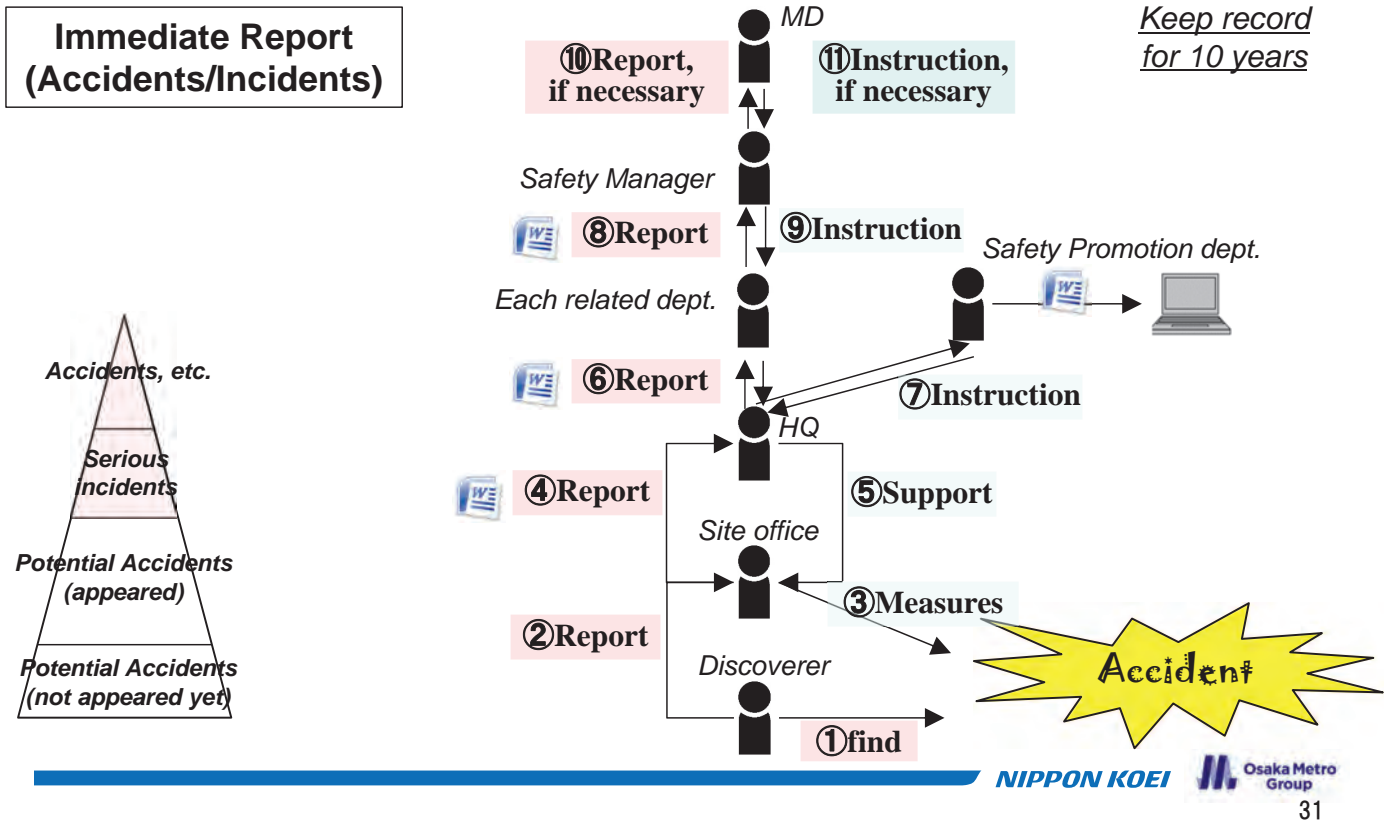
Serious incidents

Potential Accidents (appeared)

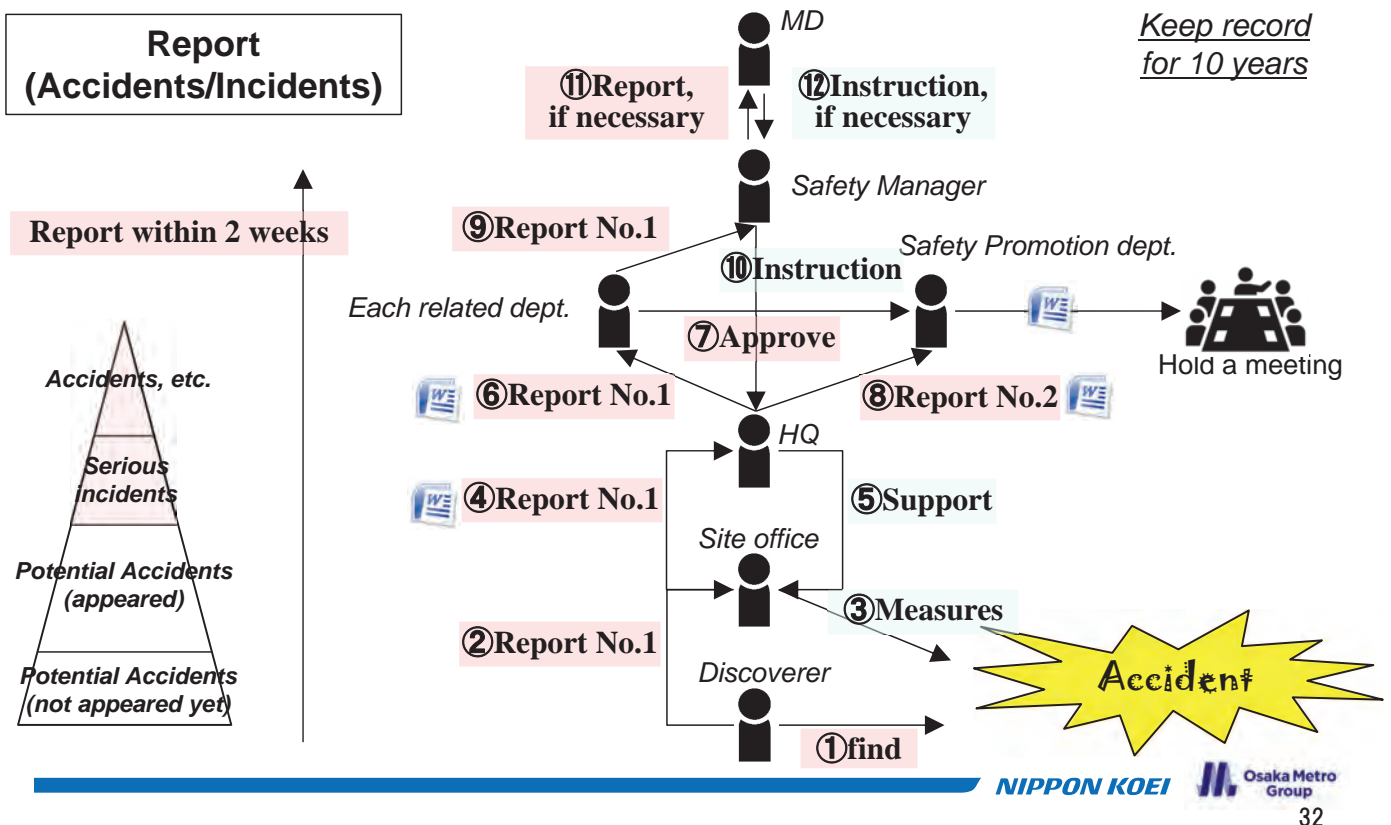
Potential Accidents (not appeared yet)

- Incidents
- Troubles
- Hiyari-hatto
- Kigakari

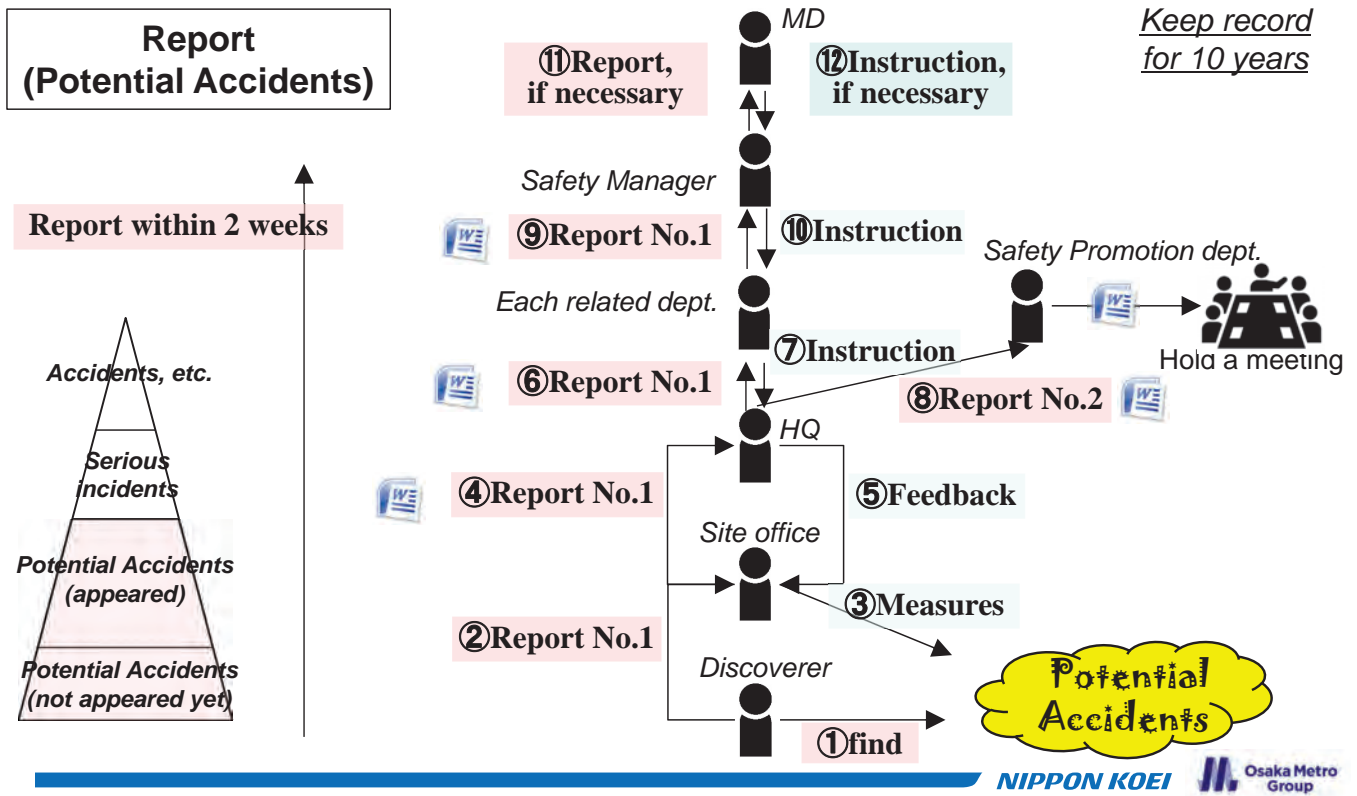
3.3 (c) Manual of procedures for reporting information on accidents, etc.



3.3 (c) Manual of procedures for reporting information on accidents, etc.



3.3 (c) Manual of procedures for reporting information on accidents, etc.



3.3 (c) Manual of procedures for reporting information on accidents, etc.



Comments from Osaka Metro

3.3 (d) Basic regulations for emergency situations

Purpose

- To prescribe responses to accidents, natural disasters, and situations that may hinder safe transportation (emergency situations), and to maintain and establish a system for prompt and accurate emergency measures and recovery.

Definitions of terms

- Emergency situations: Railway operation accidents, construction work accidents, earthquakes, wind and flood damage, fires, terrorism, etc.
- Emergency measures: Measures to prevent the spread of the situation and minimize damage

Education and Trainings

- Emergency measures for emergency situations
- Preliminary reporting and information communication regarding emergency situations, evacuation guidance and guidance for customers, etc.

3.3 (d) Basic regulations for emergency situations

Provision of necessary materials and equipment

- Prescribe the maintenance of necessary equipment and materials by the respective managers and the maintenance of rescue trains and emergency vehicles

Operation plan

- Prescribe a plan for the method of operation by the operation manager

Action to be taken when an emergency occurs

- Employees: prevention of secondary damage, first aid for passengers
- Head OCC: Request full group report and arrangements for emergency measures

3.3 (d) Basic regulations for emergency situations

Accident and Disaster Countermeasures Team

- Accident/Disaster Countermeasure HQ systems
- Establishment of Accident and Disaster Countermeasures Team
- Duties of the headquarters and its members
- HQ Countermeasures Team
- Appoint acting personnel
- Confirmation of victims
- Preservation of evidence
- Witnessing on-site inspections

3.4 (e) Action mechanisms based on the basic regulations for emergency situations

Purpose

Based on the “Basic regulations for emergency situations”, following is prescribed;

- Disaster prevention, recovery, and disaster operation plans as a public transportation system, and evacuation guidance for passengers
- A system for prompt and appropriate action when an emergency occurs

Responsibilities of employees

- In the event of an emergency situation, conduct activities in accordance with the system

Development of the emergency situation system

- Establishment of a Head Office Countermeasures Team
- System for disasters such as earthquakes, storms, floods, severe accidents, human disasters, fires, and armed attacks
- Information transmission system: Weather information, etc., establishment of Head Office Countermeasures Team etc.

3.4 (e) Action mechanisms based on the basic regulations for emergency situations

Response and planning for emergency situations

Based on the “Basic regulations for emergency situations”, following is prescribed;

- Passenger evacuation guidance plans: Stations, between stations, flood prevention
- Disaster operation plans: For earthquakes, storms, and floods
- Facility protection plans: Earthquake countermeasures, storm countermeasures, ventilation openings, electrical equipment, station entrances and exits, construction sites

3.4 (e) Action mechanisms based on the basic regulations for emergency situations

Other items

- Measures for people who have difficulty returning home
- Confirmation of employee safety
- Business continuity and preventing employees from coming to work
- Review of commuting methods during disasters
- Employee training and drills
- Provision of equipment and materials
- Provision and management of emergency stockpiles
- Coordination with relevant agencies

Who will be the relevant agencies in DMTCL in case of emergency?

3.4 (f) Manual of procedures for conducting internal audits of transportation safety

Purpose

- To specify the procedures, responsibilities, and management methods for internal audits of the SMS
- To ensure that such internal audits are conducted appropriately and reliably.

Applicability

- Applicable to the system for ensuring safety in the company's railway businesses to which the Internal Regulation of Safety Management apply

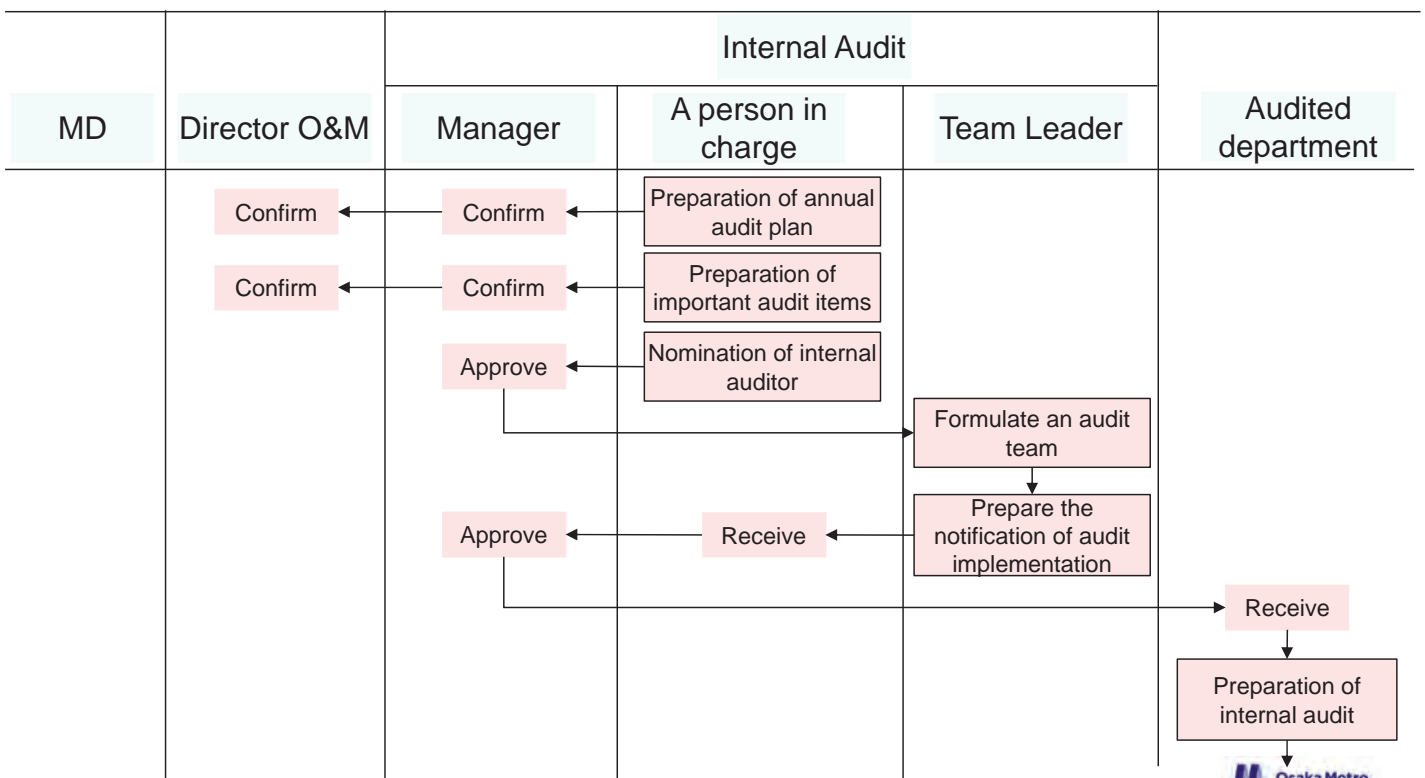
Key related documents

- Relevant laws, regulations, guidelines, safety management documents and safety management records

Responsibility

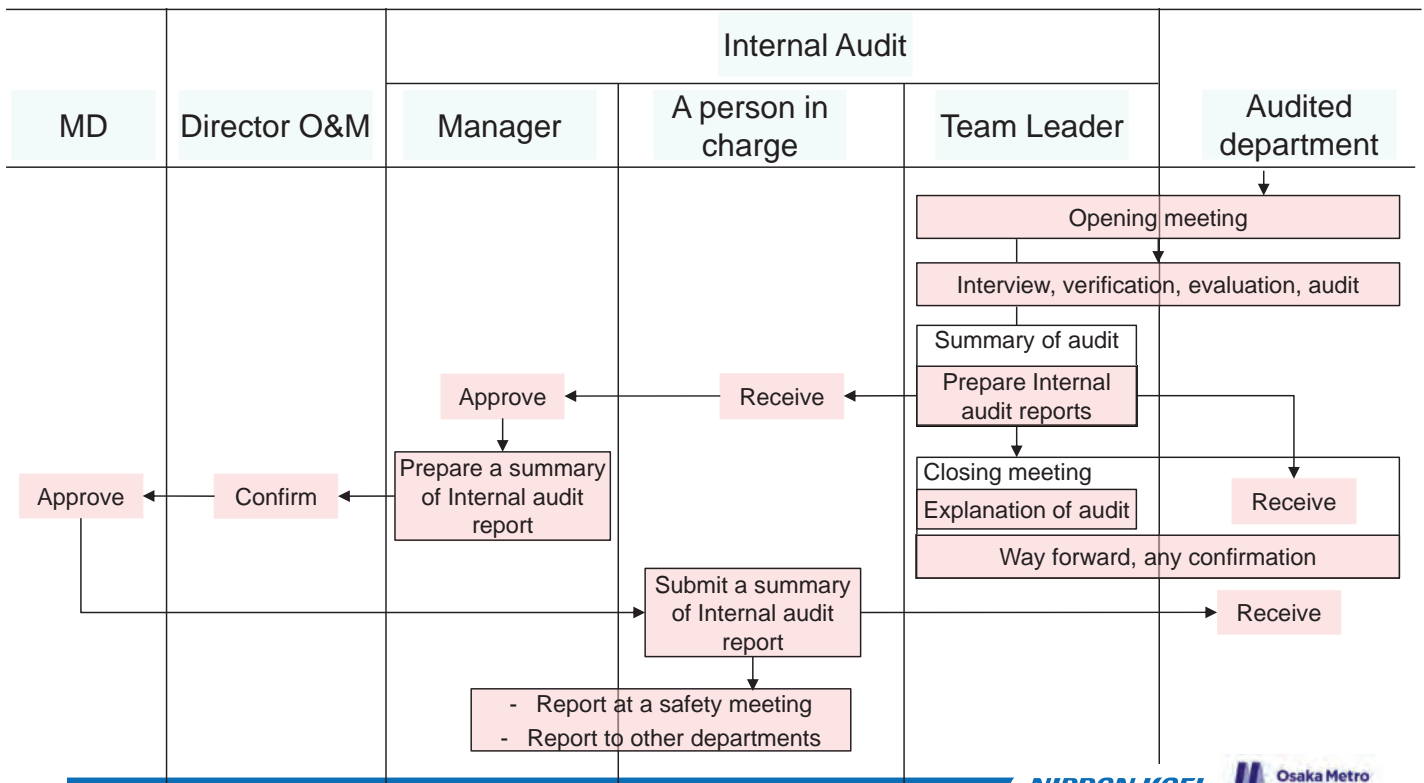
- Specify who is responsible for key activities relating to the implementation of internal audits

3.4 (f) Manual of procedures for conducting internal audits of transportation safety



*In case of no correction/improvement treatment shall be required.

3.4 (f) Manual of procedures for conducting internal audits of transportation safety



*In case of no correction/improvement treatment shall be required.

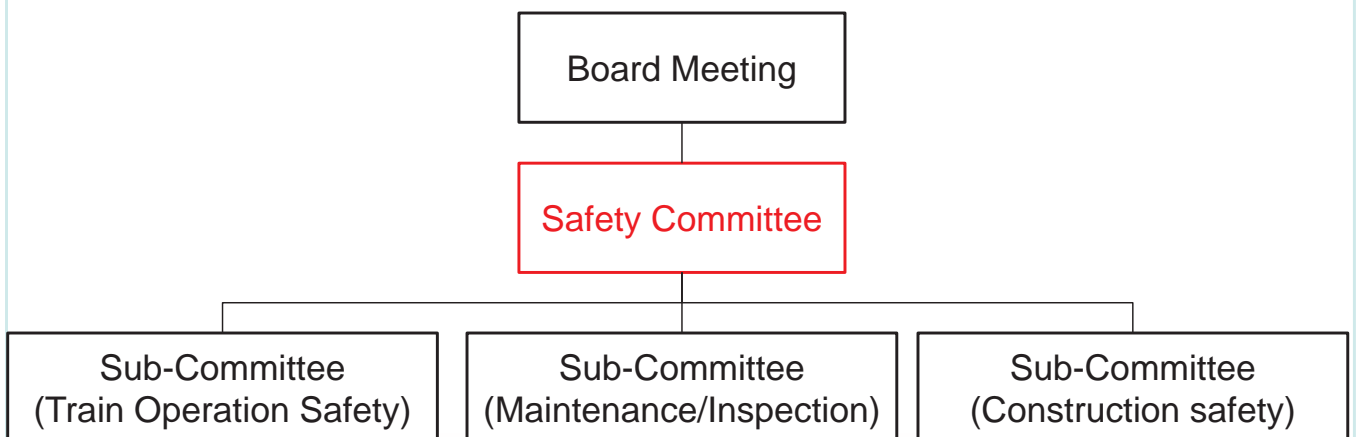
3.4 (g) Outline of the establishment of the Metro and New Tram Safety Committee

Establishment

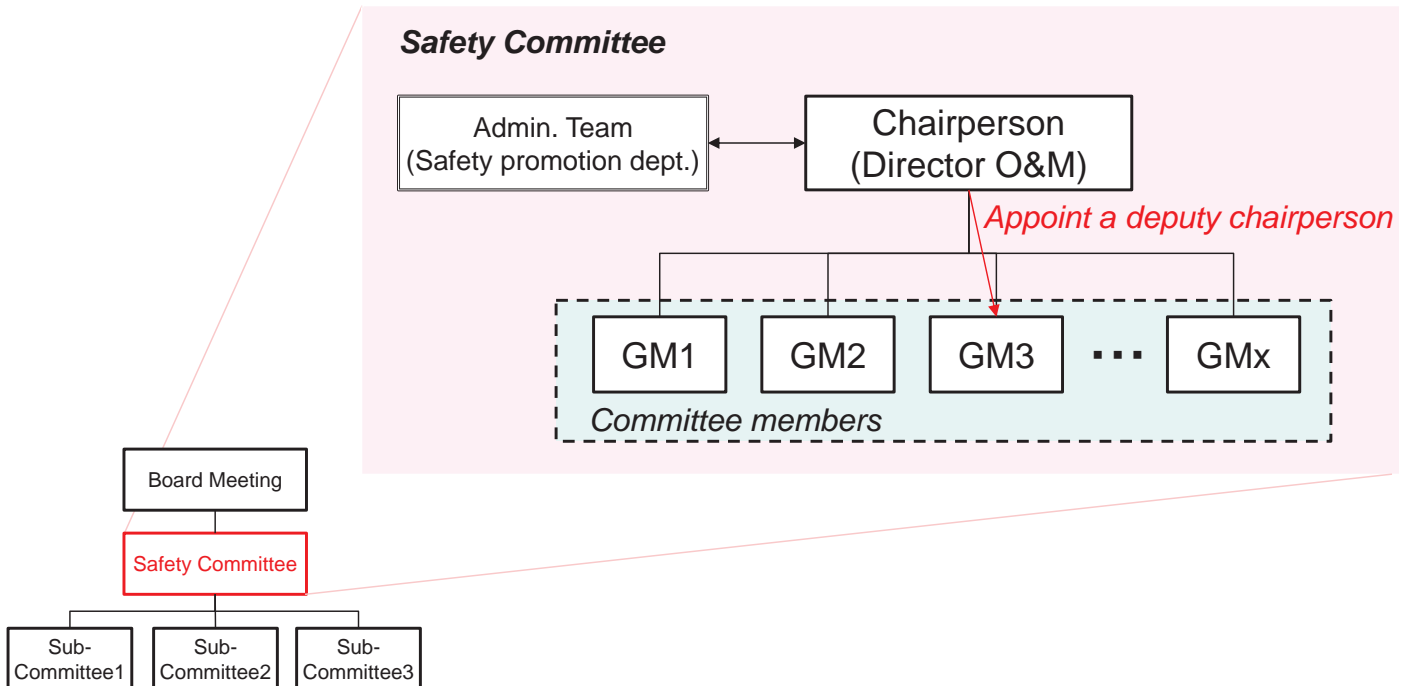
- Establish the “Metro and New Tram Safety Committee” in Osaka Metro

Purpose

- To promote further safety by establishing and improving SMS



3.4 (g) Outline of the establishment of the Metro and New Tram Safety Committee



3.4 (h) Manual of procedures for holding meetings of the Safety Committee

Purpose

- To specify the implementation framework and procedures, etc. holding meetings of the Subway and New Tram Safety Committee, and to ensure that the committees are conducted appropriately and reliably.

Key related documents

- Establishment guidelines, safety management regulations, relevant laws and regulations, guidelines

Committee

- Safety Committee
- Safety Committee (Information sharing)
- Sub-committee (technical)

3.4 (h) Manual of procedures for holding meetings of the Safety Committee

Safety Committee

*Frequency: 5 times a year

1 st time	<ul style="list-style-type: none"> Report the formulation of safety priority measures and action goals
2 nd time	<ul style="list-style-type: none"> Report the stats of potential accidents Report the progress update of safety priority measures Formulation of comprehensive training plan
3 rd time	<ul style="list-style-type: none"> Report the progress update of safety priority measures Interim verification report of the review plan of the SMS
4 th time	<ul style="list-style-type: none"> Report the progress update of safety priority measures Report the comprehensive training activities
5 th time	<ul style="list-style-type: none"> Report the internal audit result Report the progress update of safety priority measures Formulate the review plan of the SMS

*In case of serious situation, additional committees shall be held as required.

3.4 (h) Manual of procedures for holding meetings of the Safety Committee

Safety Committee (Information sharing)

*Frequency: every month

- Information sharing on accidents, incidents, potential incidents, etc.

No.	Title	Date	Location	Overview	Cause	Interference	Measures	Result on Committee
1	Derailment of freight train	21 st Sep. 2021	Around Tongi area	Freight train between Dhaka and Chattogram was derailed. No dead persons.	Due to the lack of maintenance	Suspend the train operation between Dhaka and Chattogram	Recover the derailed coaches, fix the tracks	Continuous monitoring shall be required. Check next month.
2	---	---	---	---	---	---	---	---

3.4 (h) Manual of procedures for holding meetings of the Safety Committee

**Sub-Committee
(Technical)**

*Frequency: as required

- Information correction and analysis of accidents to deliberate the accidents given from Committee (information sharing)
- Deliberation for cross-departmental issue resolution
- Report the stats of potential accidents
- Measures for serious accidents (Plan of comprehensive training and its report)

3.4 (h) Manual of procedures for holding meetings of the Safety Committee

Preparation of documents

Specify materials related to agenda items to be discussed in meetings of the committee and specialized subcommittees

- Key safety measures (progress, review, achievement), points for improvement to the safety management system, corrective and preventive measures, internal audit results

Creation and distribution of minutes

- Creation and approval of minutes and publication on the company intranet

Report on the results of deliberations

- Committee reports on deliberations by the specialized subcommittees, and President's reports on the results of deliberations by the committee

Record

- Meeting minutes: reserve 10 years
- Meeting notices: reserve 1 years

4. Summary

Summary of this session.

4.1 The Aim of Proper Documentation and Records

For documentation

Make clear the work contents



Staffs can understand the work contents



Enable reliable reproduction of procedures



For records

Identify the results of implementation



Easy to perform assessments



Lead to continuous improvement



Establishment and improve the SMS



Thank you very much for your kind attention
আপনার সবাধিকৈ কৃতজ্ঞতা

3rd Training (Dhaka)

1st Batch: 12 – 13 April 2022

2nd Batch: 18 – 19 April 2022

The Project on Technical Assistance for MRT Safety Management System on Line 6

Practical Daily SMS Activities

- Session 1 – Training in Dhaka

12nd /APR/2022 (1st Batch Training)

18th /APR/2022 (2nd Batch Training)

JICA Expert Team (JET)

Outline

1. Fundamental Awareness and Communications for Keeping Safety
2. Level of Railway Accidents, Incidents, and Troubles
3. What are “Accidents” and “Serious Incidents”
4. What is “Risk of Accidents” (“Visualized Risks of Accidents” and “Non-Visualized Risks of Accidents”)
5. Safety Activities
6. What is about “Non-Visualized Risk of Accidents”
7. What is “Emergency Drills”

Purpose and Aims of this Course

- Learn practical daily safety related activities.
- Learn the level of railway accidents, incidents, and troubles, and example cases of each level.

1. Fundamental Awareness and Communications for Keeping Safety

~Cases from Osaka Metro~

In this chapter, you will learn about how important both-way communications are for keeping the motivation of each staff, and how important each staff's motivation is for keeping safety, with Osaka Metro cases.

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Very Important to Communicate for Keeping Safety

Please make “Open Communication Atmosphere”

The awareness of keeping safety for each staff leads to ensuring safety

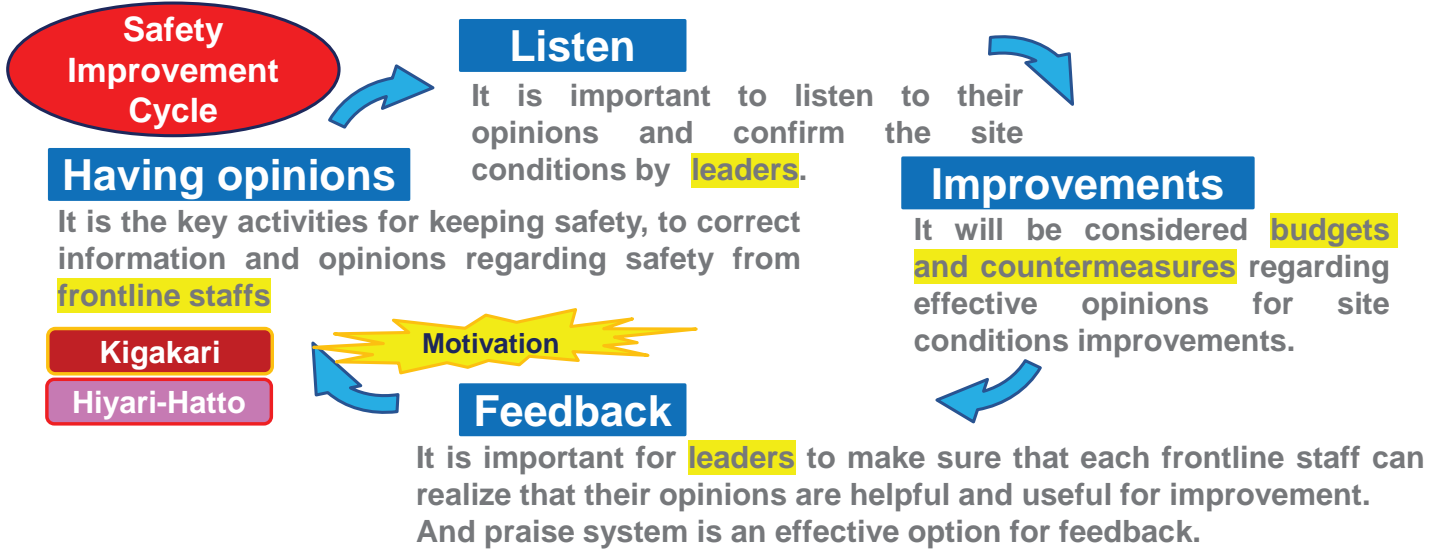
1. Open communication creates the atmosphere to make opinions and suggestions for improving safety
2. Incorporating the opinions and suggestions made to ensure safety
3. Metro operation is always required to ensure safety for being trusted transportation

It is important for each management level to take the initiative in sustaining “Respecting each other and exchanging opinions, rather than one-way communication from management, to keep safety in a better direction”.

Metro operation should be existing for all customers

How to Keep the Motivation of Frontline Staffs

If the opinions of frontline staff don't be accepted by leaders, frontline staff will never want to find their own opinions

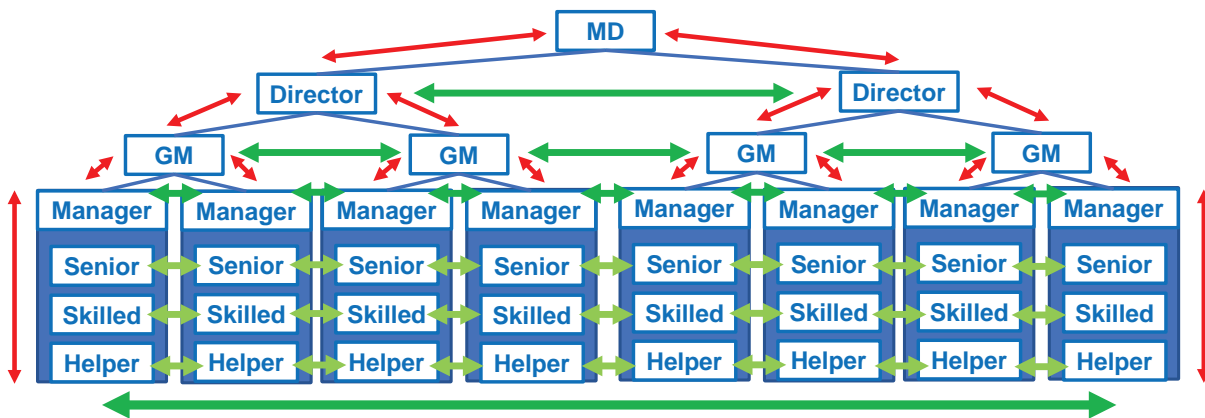


Sharing Information is the Best Way to Ensure Safety

The connections within the organization “**Vertical**”

The links between organizations are “**Horizontal**”

Both direction's communication “**Vertical**” and “**Horizontal**” is necessary to share the information to ensure safety



2. Level of Railway Accidents, Incidents and Troubles

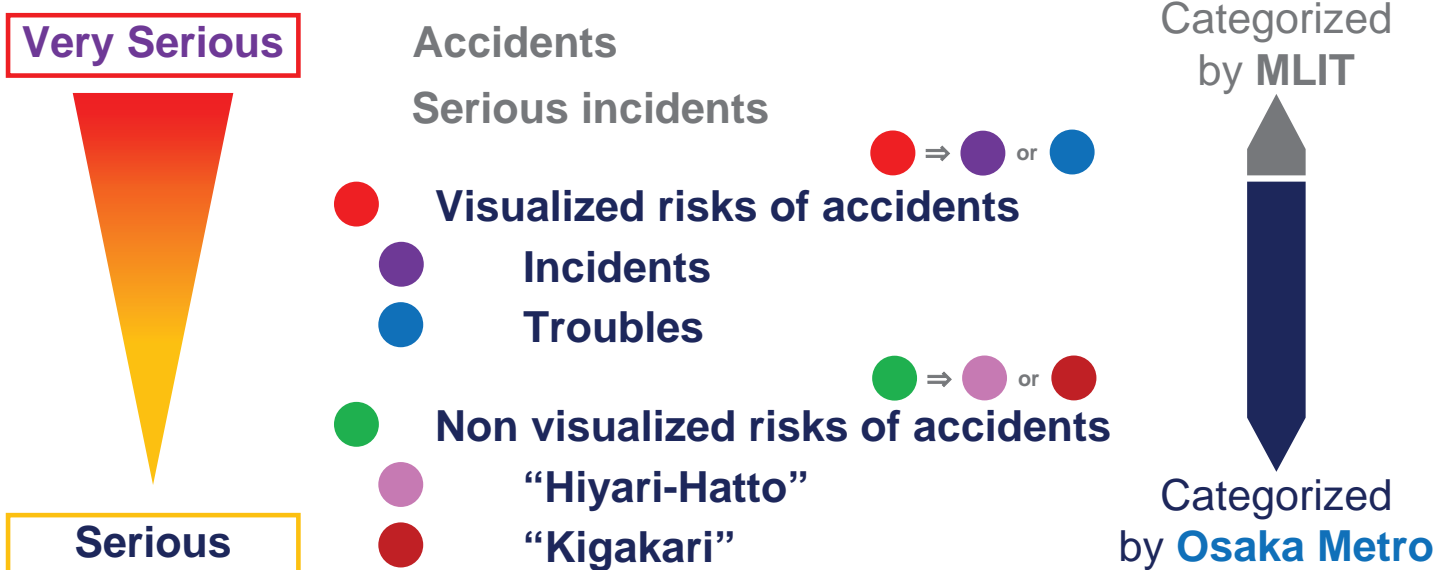
~Cases from Osaka Metro~

In this chapter, you will learn about the level of railway accidents, incidents, and trouble in the case of Osaka Metro, with Osaka Metro rules based on the “Law of railway business” in Japan.

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Category of the Information of Accidents



“Visualized risks of accidents” and “Non visualized risks of accidents” must be reported internally

Category of the Information of Accidents

Accidents

Railway accidents, emergency conditions, and disasters as defined in the law below
Reporting rules of railway accidents, incidents, and trouble (Published by MLIT in 1987)

Serious incidents

Article 4.1 on *Reporting rules of railway accidents, incidents, and troubles* mentions emergency conditions. MLIT judged the emergency conditions will be an accident or a serious incident, based on the MLIT manuals and passed examples. The level of “Serious incidents” is just under the level of “Accidents”.

If the person who is in charge of reporting is not reporting railway accidents, emergency conditions, and disasters cases, the person will be punished by the law.

NEXT

What is

“Reporting rules of railway accident, incident and trouble”

Reporting Rules for Railway Accidents, Incidents and Troubles

- This rule is based on the “*Law of railway business*” for the emergency conditions of railways and ropeways.
- This rule defines what is railway accidents, incidents and troubles.

Article 3 mentions Railway accident

-  Railway operating accidents
-  Transport disorders
-  Electric accidents
-  Disasters

Train collision accidents	Train derailment accidents	Train fire accidents
Level crossing accidents	Road obstruction accidents	Injury accidents (Railway)
Railway property damage accidents	Transport disorders	Disasters
Supply disruption accidents	Electric shock injury accidents	Electric fire accidents
Electric accidents without electric shock injury		

Reporting Rules for Railway Accidents, Incidents and Troubles

Article 4.1 mentions emergency conditions for railway incidents

Applicable conditions for incidents are “Train collisions, train derailments, fire accidents and not reached serious level of accidents”. It is a very effective thing to avoid these conditions for improving safety conditions.

⇒ 10 emergency conditions are mentioned as railway accidents in this article

Article 5, 7 & 8 mention reporting rules of accidents that are defined in

Article 3

It is defined the scale of the accidents that are necessary to report

It is defined the person to report the accidents (for Director of Regional Transport, MLIT)

It is defined the time limit from the occurrence of the accidents to report.

The contents of the reports are the date, time when the accident occurred, the location, the cause, first aid, recovery measures, and the scheduled recovery date and time.

⇒ Article 4.2 & 6 mention regarding ropeway accidents

Article 4.1: Railway accidents, emergency conditions and disasters

1. Before completed setting the block signal section's opening when the train is going inside of the section that is not opening block signal section.
2. When the train route is obstructed and the sectional signal is indicated proceed signal (blue signal), or when the train route is obstructed during indication blue signal on the route.
3. A train obstructs the route on main lines when the train ignore the stop signal (red signal) and overruns from the stop position.
4. When trains and rail vehicles run unscheduled routes, and if the unscheduled route includes main lines.
5. When a train runs a section where it is executing constructions or maintenance works that should stop the train operation.
6. Derailments in the cases below
 - a. Derailments have occurred on main lines.
 - b. Derailments have occurred on siding tracks, and the train obstructs the routes on main lines.
 - c. Derailments have occurred on siding tracks, and it is confirmed the accident's reasons except in the cases of unique facilities troubles and operational error on siding tracks.
7. Troubles (failures, destructions and damages) are confirmed in case of obstructing train operation's safety conditions on the track structures, operational safety equipment and other related equipment.
8. When devices related to running, breaking, electric, coupling, operational safety and other safety equipment get troubles (failures, destructions and damages) ⇒ “Vehicle Breakdown”
9. When dangerous goods, gunpowder and other dangerous goods leaked out from trains.
10. Situations equivalent to those contained in the above items from 1 to 9.

Visualized Risks of Accidents দুর্ঘটনার ভিজ্যুয়ালাইজড ঝুঁকি

“Visualized risks of accidents” are formed by information from “Incidents” and “Troubles”.

Visualized risks of accidents are just under the level of “Serious incidents”. This category is not secured the passenger’s safety and convenience.

It has to be reported the “Visualized risks of accidents” for each time internally.

There are internal reporting process rules and formats for reporting “Visualized risks of accidents” internally.

“Troubles” are NOT required to report to MLIT

“Incidents” are required to report to MLIT according to the serious level

⇒The examples of incidents that are classified the serious levels are mentioned by MLIT by a case studies book.

Incidents

- “Incident” is possibly able to be “Accidents” or “Serious incidents”, and not reached “Accidents” and “Serious incidents”.



- The meaning of accidents is specified in *Article 4.1 on Reporting rules of railway accidents, incidents and troubles by MLIT*, and Osaka Metro has followed the rules by MLIT.
- It is defined as “obstruction the routes on main lines by train collisions in siding lines, obstruction the train operations by mechanical troubles on rolling stocks, Ignore signals, SPAD (Signal Passed at Danger), ignore the construction rules on/near the main lines, leakage hazardous materials from trains and facilities, Facility troubles” as examples.

Troubles

- Transport disorder made less than 30 minutes.
- It can be possibly obstructed “Passenger’s safety” and “Operational Safety”.
- The abnormal and dangerous situations are decided by the operation manager, the rollingstock manager, and the other facility managers.

Non Visualized Risks of Accidents দুর্ঘটনার অদৃশ্যমান ঝুঁকি

“Non visualized risks of accidents” is formed by information from “Hiyari-Hatto” and “Kigakari”.

It is necessary to establish the system that each staff from DMTCL should report and correct information about “Hiyari-Hatto” and “Kigakari” always.

The conditions of “Hiyari-Hatto” and “Kigakari” mean that the accident can happen.

That kind of condition is necessary to remove.

We can call

“Pick up Sprouts of Accidents”

Hiyari-Hatto হিয়াড়ি-হাতে

“Hiyari-Hatto” is from Japanese words.

“Hiyari-Hatto” can be translated as “Before incidents”, “Near miss accidents”, and “Unreported accidents”. However, these are more sensory words. And all “Hiyari-Hatto” information must be reported

“Hiyari-Hatto” = “Hiyari” + “Hatto”

“Hiyari”

A word used to describe the way cold water or cool air feels on your skin.

A word used to describe a momentary feeling of anxiety or surprise, as if one's heart were being squeezed tightly.

“Hatto”

A word used to describe to be surprised by sudden unexpected events.



Kigakari কিগাকারী

“Kigakari” is a word from Japan.

“Kigakari” is a sensory word more than “concerning”.

- A word used to describe “Concerning” and “Worry”
- A word used to describe things that are bothering you

“Hiyari-Hatto” → The potential of dangerous risks happen suddenly

“Kigakari” → The potential of dangerous risks with abnormal situations

All “Kigakari” information must be reported as same as “Hiyari-Hatto”

3. What is about “Accidents” and “Serious Incidents”

- Examples of Conditions in Japan-

In this chapter, you will learn about “Accidents” and “Serious Incidents”, with cases in Japan.

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Example of Accident

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18th /APR/2022 (2nd Batch Training)

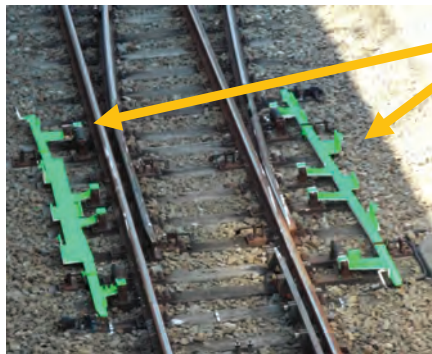
JICA Expert Team (JET)

Accident on Yokohama Municipal Subway Blue Line

Set-off turnout

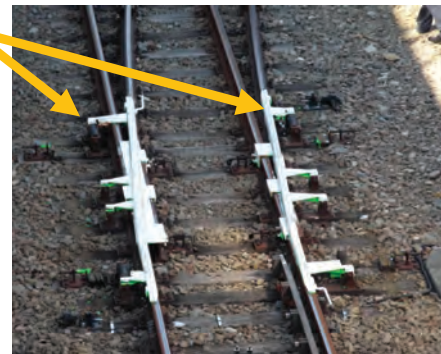
KEY POINT

Set-off turnouts are simplified turnouts that set off maintenance vehicles between mainline and siding for maintenance vehicles. The turnouts are easier to maintain than normal turnouts. However, the turnouts cannot use during the operating time for commercial trains.



Normal Position

Set-off rails



Switched in Reverse Position

Accident on Yokohama Municipal Subway Blue Line

Case	Train derailment accidents on main line
Level	Accident
Location	Yokohama Municipal Subway Blue Line from Shimo-lida to Tateba
Time & Date	5:22 AM, 6 th June 2019

Outline of the Accident

This accident is derailed the first commercial train on the mainline. The train had gotten shocked from the bottom. Then a train operator applied emergency breaks. The train operator put a handschoch for a wheel and confirm the train condition. The train operator confirmed the wheels derailed by remaining on the set-off rails on the set-off turnout. Finally, the train operator has been injured.

Cause of the Accident

Insufficient of educations and trainings for frontline staffs.

All staffs at this site forgot to set the set-off rails to the original positions.

The warning system could be turned off before the set-off rails were set to the original positions.

The staffs assume the set-off rails had been set to the original positions because of no warning.

Accident on Yokohama Municipal Subway Blue Line



No painted set-off rails
with normal position



No painted set-off rails
with switched position



Painted set-off rails
with normal position



Painted set-off rails
with switched position

Countermeasure for the Accident

Revise the manuals and specified the working process for site works

Paint the set-off rails to improve visibility of the turnout position

Improve the education system for staff and make an open communication atmosphere for safety

Source: https://www.city.yokohama.lg.jp/kotsu/kigyo/anzen/blueaccident.files/0004_20190729.pdf

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Osaka Metro Group

Example of Serious Incident

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18th /APR/2022 (2nd Batch Training)

JICA Expert Team (JET)

Serious Incident on Nankai Line

Case	Vehicle Breakdown - Damaged Bogie -
Level	Serious Incident
Location	Nankai Line - The incident were confirmed inside of a depot-
Time & Date	After the daily train operation

Outline of the Accident

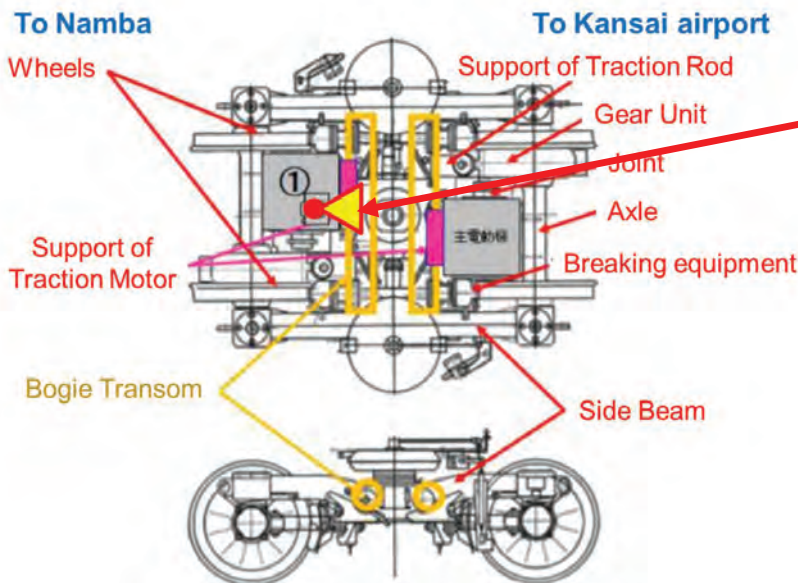
Trainmaster confirmed metal friction sounds from coupler between coaches. After the daily operation, a 140mm length crack was confirmed on the bogie when the train having inspected in a depot.

Cause of the Accident

The cause may be that the cracks by metal fatigue on a welding point reached the surface of the part. Welding work by the rollingstock produce company is not uncompleted.

The working procedure manual is also not elaborate, and frontline staff did not know the procedure. The manual did not mention the cracked part as the priority inspection point.

Serious Incident on Nankai Line



Countermeasure for the Accident
 Revise the list of the priority inspection points, inspection process, and inspection methodology on the manuals.
 Establish the cross-checking system regarding the inspection of bogies after welding work.

Source: <https://www.mlit.go.jp/jtsb/railway/rep-inci/RI2020-2-1.pdf>

4. What is “Risk of Accidents” (“Visualized ” and “Non-Visualized”)

- Examples of Conditions in Japan-

In this chapter, you will learn about “Visualized Risks of Accidents” and “Non-Visualized Risks of Accidents”, with cases in Japan.

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Examples of Visualized Risks of Accidents

Visualized Risks of Accidents is formed by **Incident** and **Trouble**

Case1: Short-circuiting of wiring during work related to a window shutter for fire fighting, resulting in the window shutter being closed.

- Wiring work is carried out at night whenever possible.
- For daytime constructions, the construction after fall protection measures have been.

Case2: Frontline staff on a patrol inspection found a broken rail part. So, a temporary signal was installed, and the train was operated at a slower speed of 30 km/h or less. After first-aid equipment was installed and slow-speed train operation was continued during the day.

- Rail replacement in the night work.

Case3: An operator fails to check for a red signal on the shunting signaling device and SPAD (signal passed at danger) was happened.

- Ensuring with “Shisa-Kanko” to signal indications for the train operator.
- The train brakes do not be released until the signal indicating progress is **YELLOW** or **BLUE**.

Examples of Non-Visualized Risks of Accidents

Non-Visualized Risks of Accidents is formed by **Hiyari-Hatto** and **Kigakari**

Case1: A customer almost touched the train as a prank and operated the emergency switch when the train is departing.

- Alerting customers and conducting awareness-raising broadcasts.

Case2: Floor tiles on the platform have become loose and floated at joints due to aging, which may cause customers to fall over.

- Emergency treatment construction
- Repair work was conducted on joints and tiles on the floor

Case3: It is difficult to see the situation of passengers boarding from the stairs near the platform entrance/exit when train operators are checking the monitoring monitors and operating the train doors to close them.

- Adjust the angle at which the camera is installed.

Case4: An operator on the route with a one-man operation might forget to operate the opening doors during an operator change.

- Ensuring with “Shisa-Kanko” during door opening operations.
- The way of changing train operators is changed from using driver’s cabin doors to using passenger’s doors.

5. Safety Activities

~Cases from Osaka Metro~

In this chapter, you will learn about the safety activities in the case of Osaka Metro, with the safety policy and the mind-set.

Shisa-Kanko 点検と点呼

“Shisa-kanko” is a “Safety Action”.

When each staff confirms each object, the staff must “Point out” and “Calling” “the item name” and “the conditions of the object” for each time.

Shisa-Kanko is a methodology of the safety-checking action by own self.

This is NOT signs and signaling actions for other staffs and passengers.



Shisa-Kanko 点検と点呼

Let's watch the video of “Shisa-Kanko”



What the purpose of “Shisa-Kanko”

Shisa-Kanko 点検 1 点検

Let's practice !!

1. Look and confirm the object
2. Make point finger
3. Point finger set your temple (next to your eye)
4. Confirming condition of the object
5. Point out the object
6. Calling the object name and the condition

The case from Osaka Metro

Train operators must hold the breaking handle for emergency cases in the operation of the running trains.

⇒ The train operator do only "**Calling**" without "**Point out**"

Point 1

Confirming is the main purpose of "Shisa-Kanko"

Point 2

Calling sentence should be decided case by case.

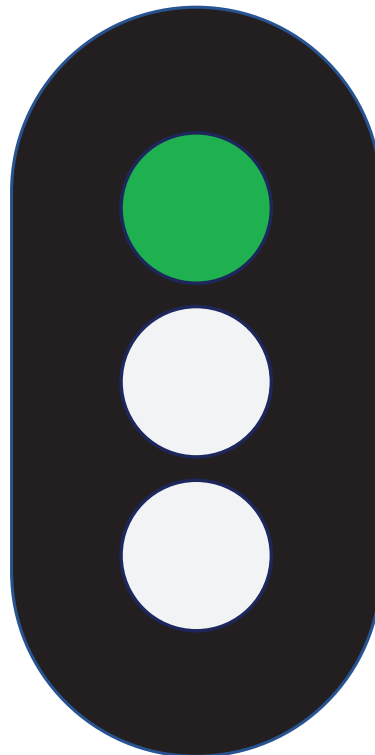
Point 3

Calling sentence should be short and easy to understand.
EX)

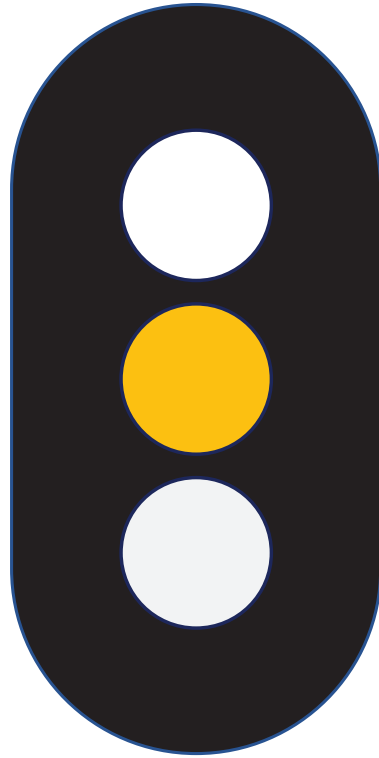
When the departure signal mentions "Green" signal.

"প্রস্থান G" is good calling.
(Prosthana)

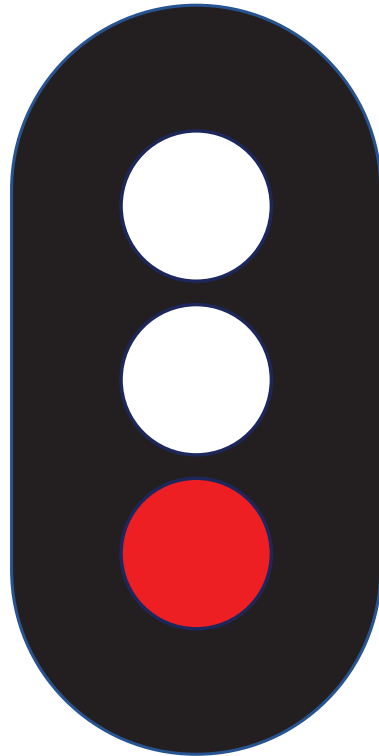
G, Yoshi !!

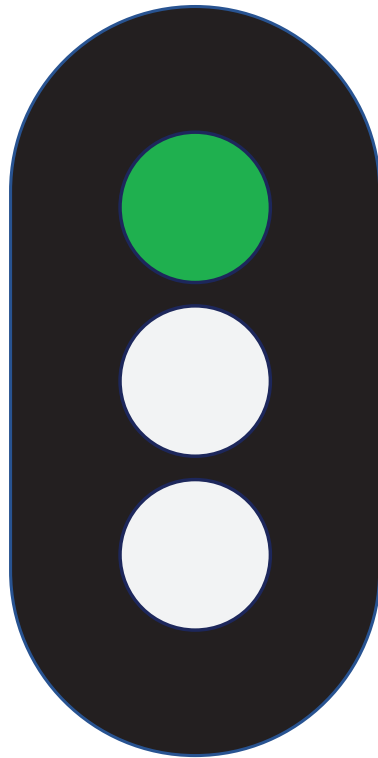


Y, Yoshi !!

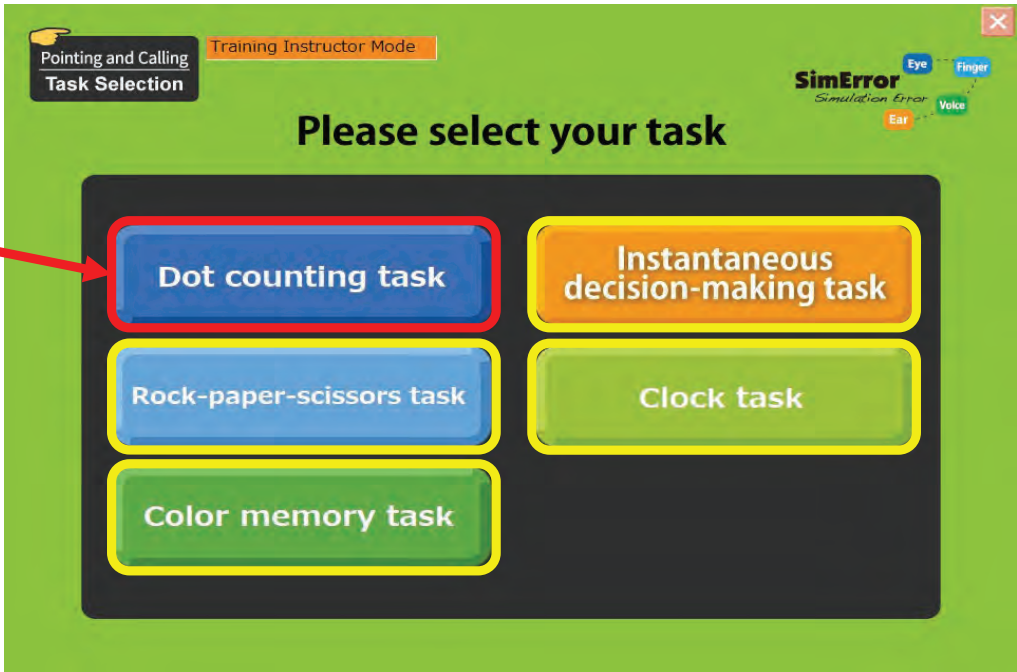


R, Yoshi !!





Introduction of “Shisa-Kanko software”



Pointing and Calling Task Selection Training Instructor Mode

SimError Simulation Error Eye Finger Ear Voice

Please select your task

Today Exercise

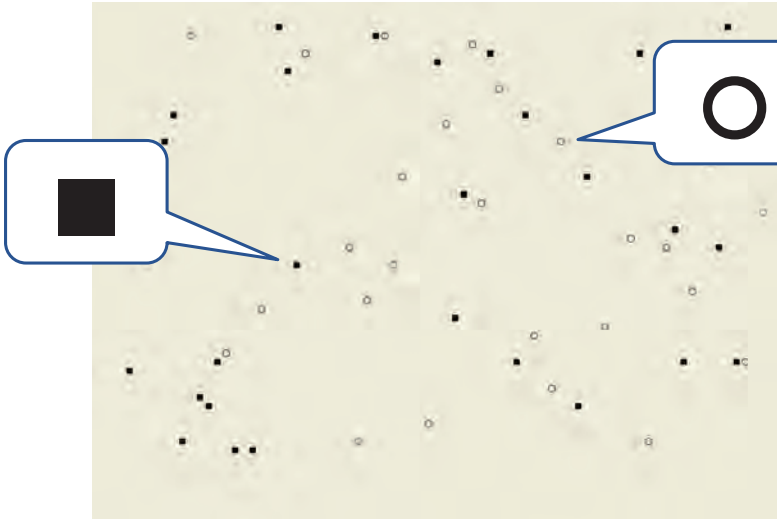
- Dot counting task
- Instantaneous decision-making task
- Rock-paper-scissors task
- Clock task
- Color memory task

5 practice cases

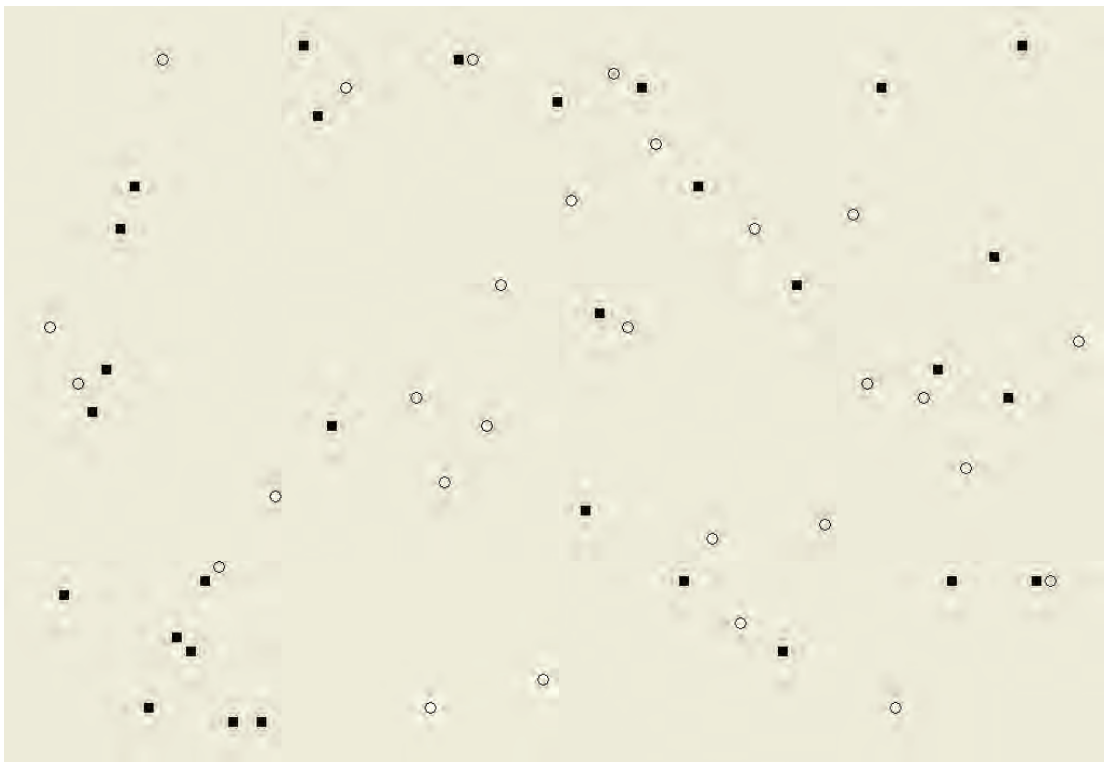
Introduction of “Shisa-Kanko software”

Dot-counting task (Fix eyes on the check target accurately)

Effect: Fix eyes on the check target accurately



- Count the white dots (○)
- Ignore the black dots (■)
- Under two conditions (pointing and not pointing)
- Participants performed five trials under each condition

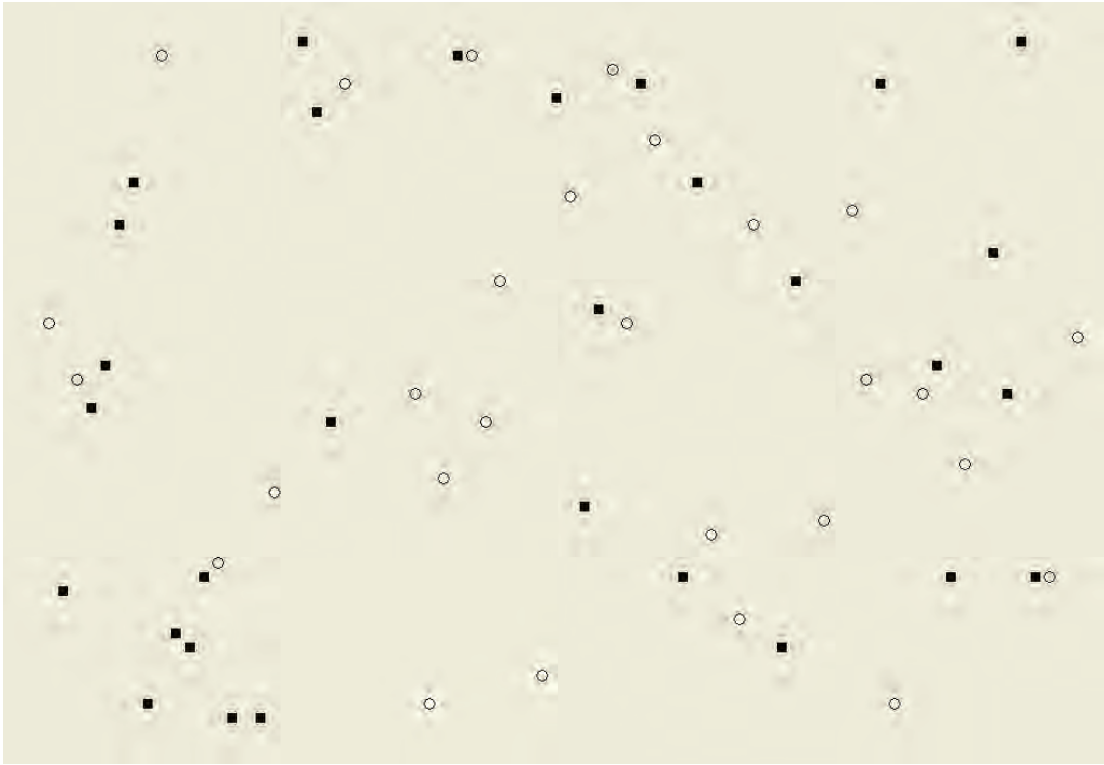


1st step

Please count dots **without** your pointing

2nd step

Please count dots **with** your pointing



Answer

○⇒28

RPA Risk Prediction Activities

RPA is an activity to predict the risks.

We all persons get “careless”, “dim” and confused and create illusions. We also take “shortcuts” and “omissions”.

These are human habits. Particularly, errors caused by these human habits tend to occur in familiar tasks.



The purpose of RPA is to prevent accidents by discussing potential risks and sharing the points of danger with the staff before starting work.



This activity also improves staff’s ability to foresee risks and become aware of potential accident risks.

Procedure of RPA

'Discuss' what dangers are potential.



Match risk point recognition

At critical points in the work process.
“Shisa-Kanko”



Every staffs practice



Aim for targets



Deciding on the measures to be implemented.

RPA Risk Prediction Activities

4 steps method

1st step: To know the situation

Identify what risks are existing as potential risks.



2nd step: To pursue the essentials

Filtering out the important risks.

3rd step: To establish the countermeasures

Discuss improvements and solutions.



4th step: To set targets

Decide on the content words of the "Shisa-Kanko" based on what was discussed in the 3rd step

Actions to counter risks

“Reporting meetings for risks” ~Case from Osaka Metro~



Chairman:

DGM Safety & Quality Audit
(Director Operation & Maintenance)

Participants:

All related Managers and Assistant
Managers

For information sharing to all frontline staffs

Frequency of meetings: Monthly

Purpose:

To share information on accidents and risks collected from each department at an early stage in order to consider the necessary countermeasures and to decide which department should implement those. To prevent similar events from occurring by sharing information on accidents and risks at an early stage.

Events that are considered by the Reporting meetings for risks to require further detailed study are reconsidered by the expert groups (Operation, Maintenance and Inspection, and Safety Measures Construction).

Supplementary Information:

Expert groups are meetings headed by the general manager of each section to examine cases of accidents, incidents and risks and to discuss countermeasures for each case. In Osaka Metro, the Operation Safety Group, the Maintenance and Inspection Group and the Safety Measures Construction Group are held.

6. What is about “Non Visualized Risk of Accidents”

- Examples of “RPT” *Risk Prediction Training* -

~Cases from Osaka Metro~

In this chapter, you will learn about “Non Visualized Risk of Accidents”, with drills on photos of Osaka Metro.

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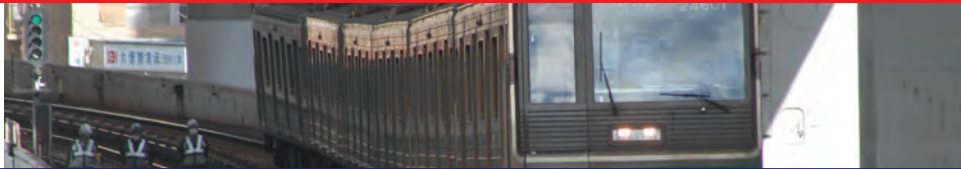
Photo 1: Patrols and Inspections during Operating Hours
What dangers and potential risks do you think in this picture?



Photo 1: Patrols and Inspections during Operating Hours

Point

- ✓ Attention to the footing as there are no footpaths for inspection.
- ✓ There are risks of contact power transmission if the inspector falls over.
- ✓ The direction of the inspection is opposite of the train operating direction.



Osaka Metro has regulations when it comes to patrol and inspection work during train operating hours.

- ✓ At least 3 persons, including 1 full-time observer, to inspect the turnout parts.
- ✓ In the case of a two-person patrol outside of the turnout parts, mutual train observation is required.
- ✓ Inspector must go heading the opposite of the train operating direction. etc.

⇒ **Safety training including these topics are also provided.**

Photo 2 : Potential Risks of One-man Operation

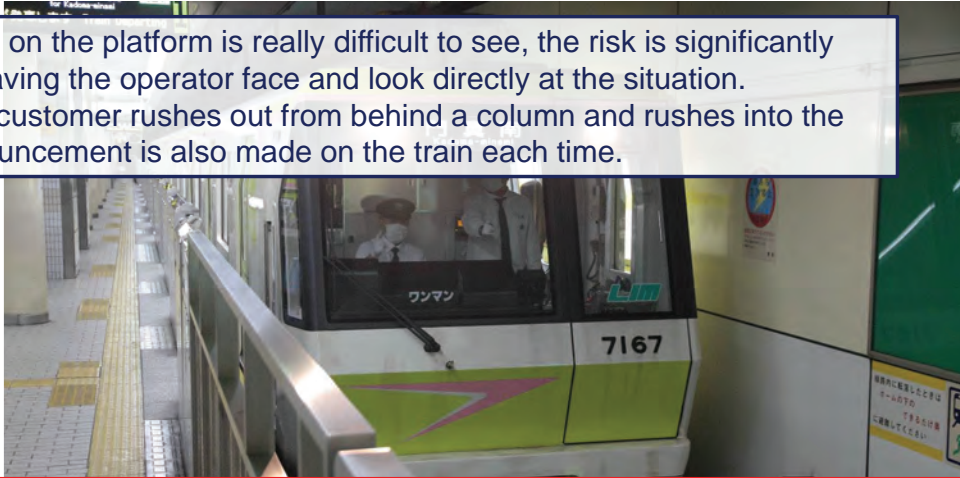
What dangers and potential risks do you think in this picture?



Photo 2 : Potential Risks of One-man Operation

The operator checks the rear-view mirror when operating the closing door, but there is a risk that the door could catch customers

If the situation on the platform is really difficult to see, the risk is significantly reduced by having the operator face and look directly at the situation. However, if a customer rushes out from behind a column and rushes into the train, an announcement is also made on the train each time.



- ✓ Rushing from escalators
- ✓ Rushing from behind of column on the platform
- ✓ Small children are difficult to see due to overlap with PSD and passengers getting off the train

Photo 3 : Potential Risks of Elevated Sections

What dangers and potential risks do you think in this picture?

Osaka Bay Area

Elevated MRT Section



Elevated highway

Steep uphill gradient

Photo 3 : Potential Risks of Elevated Sections

Osaka Bay Area

Potential risks during fogs Countermeasure

When visibility is less than 100 m, slow operation at a speed at which the train can be stopped at any time.
Train operation will be suspended when visibility is 50 m or less

Elevated MRT Section

Potential risks during storms

Objects falling & etc.

Countermeasure

Operation by caution at speeds of 40 km/h or less when wind speeds are 20 m/s or higher.
Operation suspended if the wind speed is 25 m/s or higher



Elevated highway

Objects falling from the highway (ex. luggage)

Steep uphill gradient

Wheel spin on uphill gradients in rainy weather condition

Increased risk of Wheel spin, especially at the start of a rainstorm.

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7. What is “Emergency Drills”

~Cases from Osaka Metro~

In this chapter, you will learn about planning, executing and improving your “Emergency Drills”.

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 Osaka Metro Group

What do emergency drills cover?

Emergency drills are conducted to simulate emergency situations and each staff on how to respond to emergency situations.

- 1. Emergency situations (unusual situations) will be supposed**
 - ✓ In emergency scenarios, who will do what, in a possible situation such as fire, windstorms, floods, terrorist incidents, etc.
- 2. Decide who will do what in the event of an emergency.**
 - ✓ Consider which positions and stakeholders are involved in each scenario.
 - ✓ Decide on the lines and actions of all participants, including the various positions and people involved, according to the manual.
 - ✓ The training will be carried out by a person who has held the position in practice as far as possible.
- 3. In drills, emergency situations occur as per the scenarios. *The drill starts***
 - ✓ Although it is a drill, all participants imagine that an emergency situation has actually occurred
 - ✓ Participants execute defined lines and actions during the training.
- 4. Discuss problems and points for improvement from the drill at the end of the drill**
- 5. Improve manuals and training content if necessary.**

What kind of situation will be supposed for emergency drills

Disasters

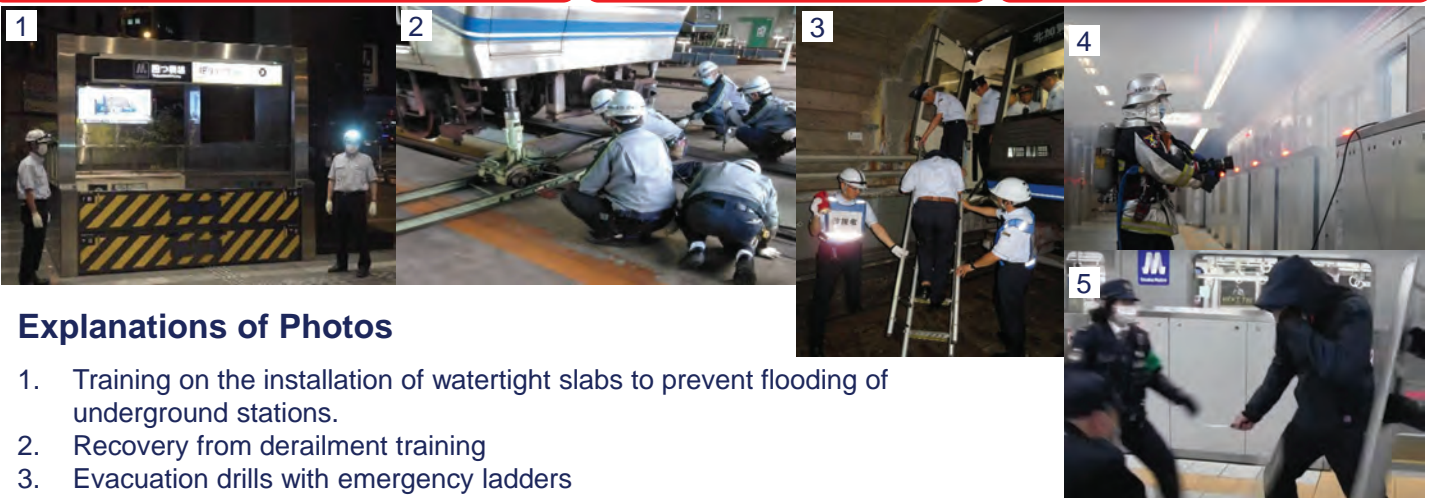
Water flooding of railway facilities.
Earthquakes and other natural disasters.

Accidents

Breakdown of trains occurs.
Train derailments occur.

Attack by Human

Arson occurs.
the event of an injury incident.



Explanations of Photos

1. Training on the installation of watertight slabs to prevent flooding of underground stations.
2. Recovery from derailment training
3. Evacuation drills with emergency ladders
4. Fire drills in the event of fire from rollingstock cabin. *Jointly with the fire service*
5. Training to arrest dangerous persons with knives. *Jointly with the police*

What is the purpose of emergency drills

Emergency situations occur suddenly

⇒ Preparations are required for sudden occurrence

- ✓ Learning the operating procedures in the events of emergency situations.
- ✓ Ability to respond quickly in the events of emergency situations.
- ✓ Problems with response to emergency situations can be identified and the safety of the system can be improved.



- ✓ Ability to follow a PDCA cycle on how to respond to emergency situations.
- ✓ Participants become accustomed to training after the number of drills.
- ✓ Conducting drills without informing participants of the disaster scenario at the time when they are becoming more familiar with the drills is likely to make them more responsive.



Thank you very much for your kind attention
আপনাদের সবাইকে ধন্যবাদ

The Project on Technical Assistance for MRT Safety Management System on Line 6



April, 2022

JICA Expert Team (JET)

Outline

1. Introduction of Emergency Situation types
2. Documents regarding Emergency situation
(Metro rail Act / Safety Policy /
Disaster Management Manual)
3. Introduction of Disaster Management Team (DMT)
4. Introduction of Emergency Drill
5. Public Relation on Emergency Response

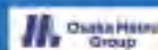
Purpose and Aims of this Course

- To learn how to respond to various Emergency situations after MRT operation
- Discuss roles in your position in Emergency situation and preparation for Emergency Drill (in Session 3)

1. Introduction of Emergency Situation types

In this chapter, you will learn various emergency situation which may occur in MRT operation

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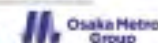


1.1 Example of Emergency Situation

Please watch video No. 1
(Earthquake hit Osaka Metro in 2018)



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1.1 Example of Emergency Situation

Please watch video No.2
(Criminal and Fire in Keio Line (Tokyo) in 2021)



京王線#新宿駅#7月 京王線車内で火災 車内の映像 =@siz33提供

https://www.youtube.com/watch?v=AO9f_XZTQ8U

1.1 Example of Emergency Situation

Other Emergency Situation occurred in Japan

Simultaneous Chemical Terrorism (in 1995)

(Subway sarin attack in Tokyo Metro at 5 vehicles of 3 lines, 14 killed, 6300 injured)



<https://www.moj.go.jp/peia/aum-24nen.html>



<https://toyoketza.net/articles-1338354>

1.1 Example of Emergency Situation

Other Emergency Situation Occurred in Japan

Fire along railway line (in 2020)

(Occured near Kizuri-Kamikita Station, JR-Osaka-east line)



【JR線火災】列車の撮影中、火災に遭遇 // 2020年11月10日・JRおおさか東線衣笠加美北駅にて

<https://www.youtube.com/watch?v=1O4LqjSQvE>

1.1 Example of Emergency Situation

Other Emergency Situation Occurred in Japan

Strong wind / Tornado

Tokyo Metro Tozai Line (at Arakawa river bridge) JR Higashi-Chiba Station (by Typhoon)



https://www.nk.jp/asahi/aluminum/mania/al_train/1_eidan_clash2.htm



<https://www.chibanippo.co.jp/news/national/625798>

1.1 Example of Emergency Situation

Other Emergency Situation Occurred in Japan

Flying Object by Typhoon (in 2019)

(Occured near Koshien Station, Hanshin railway)



https://rail.hanshin.co.jp/service/anzen/pdf/2019/anzen_5.pdf

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1.2 Types of Emergency Situation in DMTCL

From the discussion of Workshop on Emergency Response
(in this February)...

No.	Emergency Situation Type
1	Derailment
2	Collision
3	Fire
4	Power failure
5	Natural disaster (Earthquake, Flood, Strong wind etc.)
6	Cyber attack
7	Terrorism
8	Public unrest, Protest demonstration
9	Crime (inside rolling stock, stations, throwing stones etc.)
10	Suicide

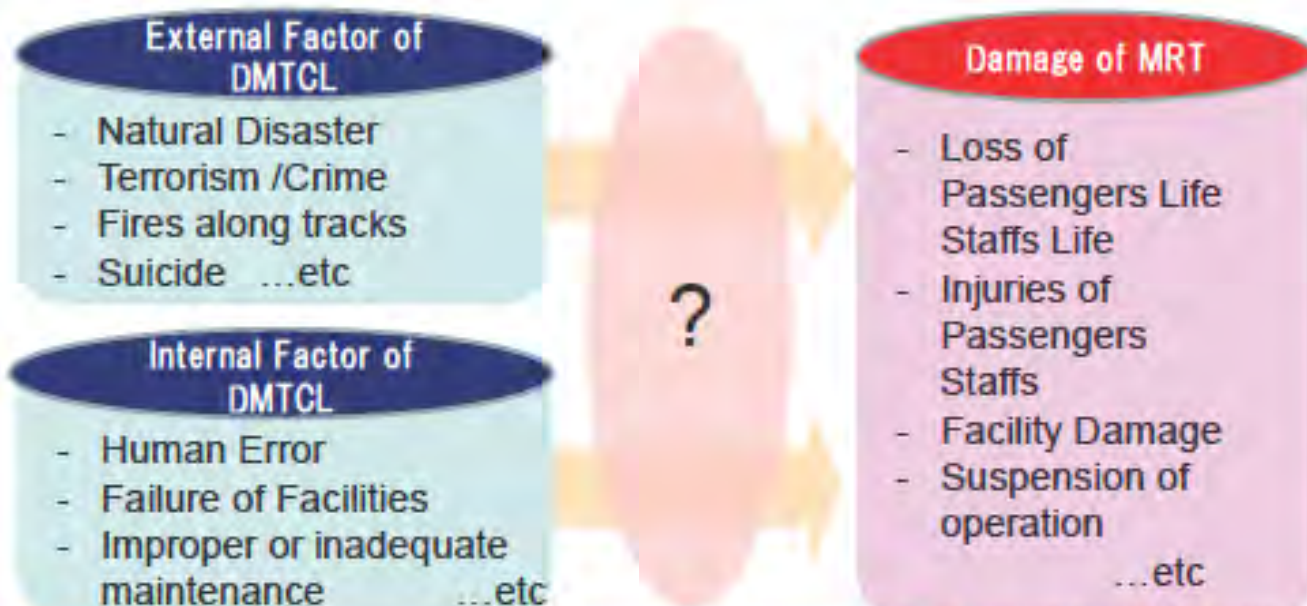
NIPPON KOEI 

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1.3 MecaCauses of Emergency Situation

It is important to identify the causes and mechanisms...

- ... to prevent expansion of loss of lives/damages
- ... to prepare to next emergency situation



1.3 Causes of Emergency Situation

It is important to identify the causes and mechanisms...

- ... to prevent expansion of loss of lives/damages
- ... to prepare to next emergency situation

Investigation of the Emergency Situation is important!



Example



https://www.jreast.co.jp/press/2021/20220321_ho01.pdf

Natural Disaster



Example

Preliminary measures

Natural Disaster

Suspension of operation in advance (if predictable)



https://www.jreast.co.jp/press/2021/20220321_ho01.pdf



Operation Control **Rescue and First aid** **Evacuation**

2. Documents regarding Emergency situation

In this chapter, you will learn documents which we should follow and its practical contents

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2.1 Documents regarding Emergency situation



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2.2 Metrorail Act

Important description related to Emergency Situation

Mahboob san, please correct information of Metro Rail Act in 2015

I think important points are:

[Before Emergency Situation]

- DMTCL should develop "Standard Operating procedure(SOP)" explaining responsibility and step by step procedure to manage the emergency situation.

[During/After Emergency Situation]

- DMTCL should report to the Ministry ASAP
- Investigation of the accident/emergency situation

2.2 Metrorail Act

Important description related to Emergency Situation

A. Statutory Investigations into Metrorail Accident

In exercise of the powers conferred by Rule 49 of the O & M act of Metrorail Act, 2015, the authority hereby makes the following rules, namely:-

- (1) These rules may be called the Statutory Investigation into Metrorail Accident Rules.
- (2) They shall come into force on the date of their publication in the official Gazette.

Inquiry into a serious accident by the Inspector of Metrorail system:-

(1) (a) Where the Inspector of Metrorail as per Metrorail Act' 2015 para 21, 22 & 23, has a power to review and inspect the quality of passenger services and during his inspection ask the reports and related documents.

(2) As per Rule 27 of O&M Metro Act of 2015; Report on severe accident: -
The licensee shall inform the emergency service providing agency of any severe accident arising during operation of the metro rail and submit a report on such an accident to the authority.

These accidents shall be termed as "Serious train accidents".

2.3 Safety Policy

Mahboob san, if any update on Safety policy in DMTCL please let us know

Draft Safety Policy in DMTCL (Under the discussion in Workshop)

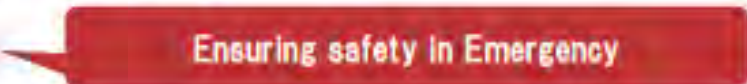
11th October 2021

1. Safety is the top priority
2. Introducing safety culture by learning and understanding Laws, Rules & Regulations following with sincere responsibility and active vigilance
3. Both way communication among employees and customers
4. Providing a reliable service by trained and equipped employees
5. Assess the situation calmly and then take the safest action
6. Strive for continuous improvement by sharing and recording information, providing training, motivation, and incentives

➤ How to act based on Safety Policy?

2.3 Safety Policy

➤ How to act based on Safety Policy?

1. Safety is the top priority 
2. Introducing safety culture by learning and understanding Laws, Rules & Regulations following with sincere responsibility and active vigilance
3. Both way communication among employees and customers
4. Providing a reliable service by trained and equipped employees
5. Assess the situation calmly and then take the safest action
6. Strive for continuous improvement by sharing and recording information, providing training, motivation, and incentives



Also Comment from
Osaka Metro members

2.4 Disaster Management Manual (Prepared by GC)

DHAKA MASS RAPID TRANSIT
DEVELOPMENT PROJECT
DHAKA MASS TRANSIT COMPANY LIMITED

ACCIDENT, INCIDENTS & DISASTER
MANUAL
(Train Operating Manual – Part-C)

CHAPTER I:
DEFINITIONS AND GENERAL INSTRUCTIONS

CHAPTER-II:
CLASSIFICATION OF ACCIDENTS AND OFFICIALS TO
BE ADVISED

CHAPTER III: REPORTING OF ACCIDENTS

CHAPTER IV:
ACTION TO BE TAKEN IN CASE OF SERIOUS
ACCIDENTS

CHAPTER-V: ACCIDENT INQUIRIES

CHAPTER VI:
PROCEDURE FOR DEALING WITH CASES OF
SABOTAGE

CHAPTER VII: UNUSUAL OCCURRENCES

CHAPTER VIII: ACCIDENT RECORD AND RETURNS

CHAPTER- IX: DISASTER MANAGEMENT

2.4 Disaster Management Manual (Prepared by GC)

Procedures are written for each emergency type

9.12.2. Fire in a Train

Since every fire incident is unique, the train operator is to exercise quick judgment based on

- i. The nature of fire whether localized or widespread in passenger area.
- ii. The extent of occupation of the train, number of passengers, if the number is manageable he will ask passengers of the affected coach to move away to other coaches.
- iii. Proximity of the next station -- passenger evacuation and handling of emergency is much easier at station than in between stations. TO has to exercise his judgment about those extreme cases where the train has to be stopped forthwith to save life by prompt evacuation or taken to the next station expeditiously.

2.4 Disaster Management Manual (Prepared by GC)

Duties of each positions are written

- Duties of Train Operator in case of Fire in Train:
 - i. When fire or continued tripping in any equipment occurs in a train between stations or the Train Operator is informed by passengers about fire or smoke emission on any part of the train, he shall immediately inform OCC.
 - ii. The Train Operator will assess the nature and extent of fire to decide whether the train can be safely taken to the next station. In which case he will again inform OCC and proceed to the next station addressing the passengers on board not to panic but be in readiness to vacate the train at the next station in an orderly manner giving precedence to aged, Infirm handicapped, women and children.
 - iii. He will also request Metro Staff travelling on the train to assist in relief work.
 - iv. In case it appears unsafe to proceed to next station, or the train itself has become disabled, the Train Operator will advise OCC of the circumstances, Fire extinguishers provided in the train shall be used to extinguish the fire.
 - v. In case the fire has been extinguished, he may cautiously proceed to the next station under instruction of OCC Traffic Controller.
 - vi. At the next station the passengers shall be detrained and the train withdrawn from revenue operation after the fire is finally put off.
 - vii. If fire cannot be controlled, he will make preparations to evacuate passengers keeping OCC informed.
 - viii. OCC to stop movement of trains on the adjacent line to facilitate safe passenger evacuation.

3. Introduction of Disaster Management Team (DMT)

In this chapter, you will learn how to set-up DMT which is essential to cope with emergency situation and what role DMT should take.

3.1 Introduction of Disaster Management Team

○ Function of DMT

From
“Basic Regulation for Emergency Situations”
of Osaka Metro

Making Decision regarding..

- ✓ Ensuring Safety of Passengers and Staffs
- ✓ Protection and restoration of facilities
- ✓ Necessity measures on train operations and others

..Based on information from the site



(Example of Osaka Metro)

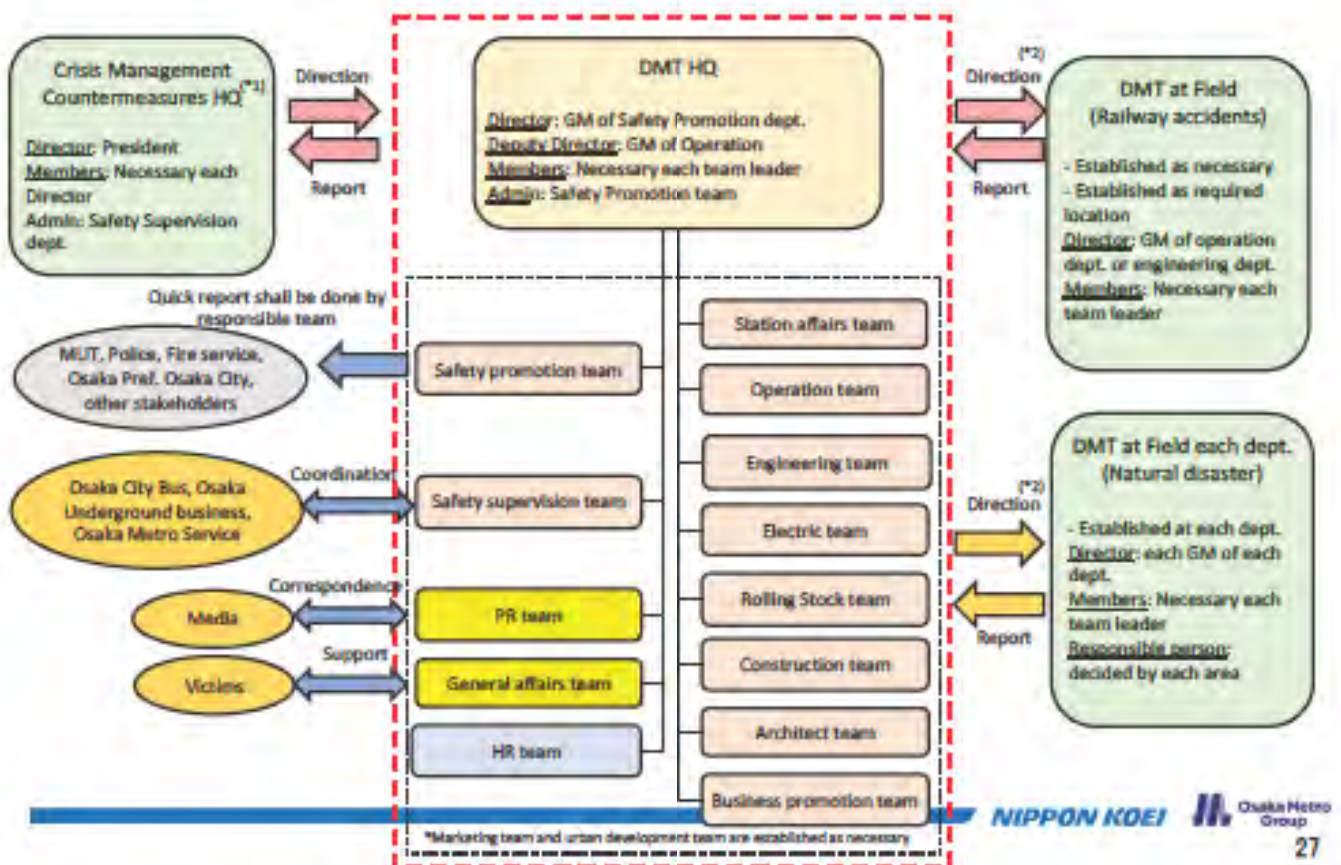
3.1 Introduction of Disaster Management Team

From “Accident & Disaster Management Manual” of DMTCL
(prepared by GC)

(a)As soon as Disaster is reported, it should be the duty of the OCM/Chief Controller to advise the Chairman and the members of DMT to take over the task of **planning and execution of Disaster management at site.**

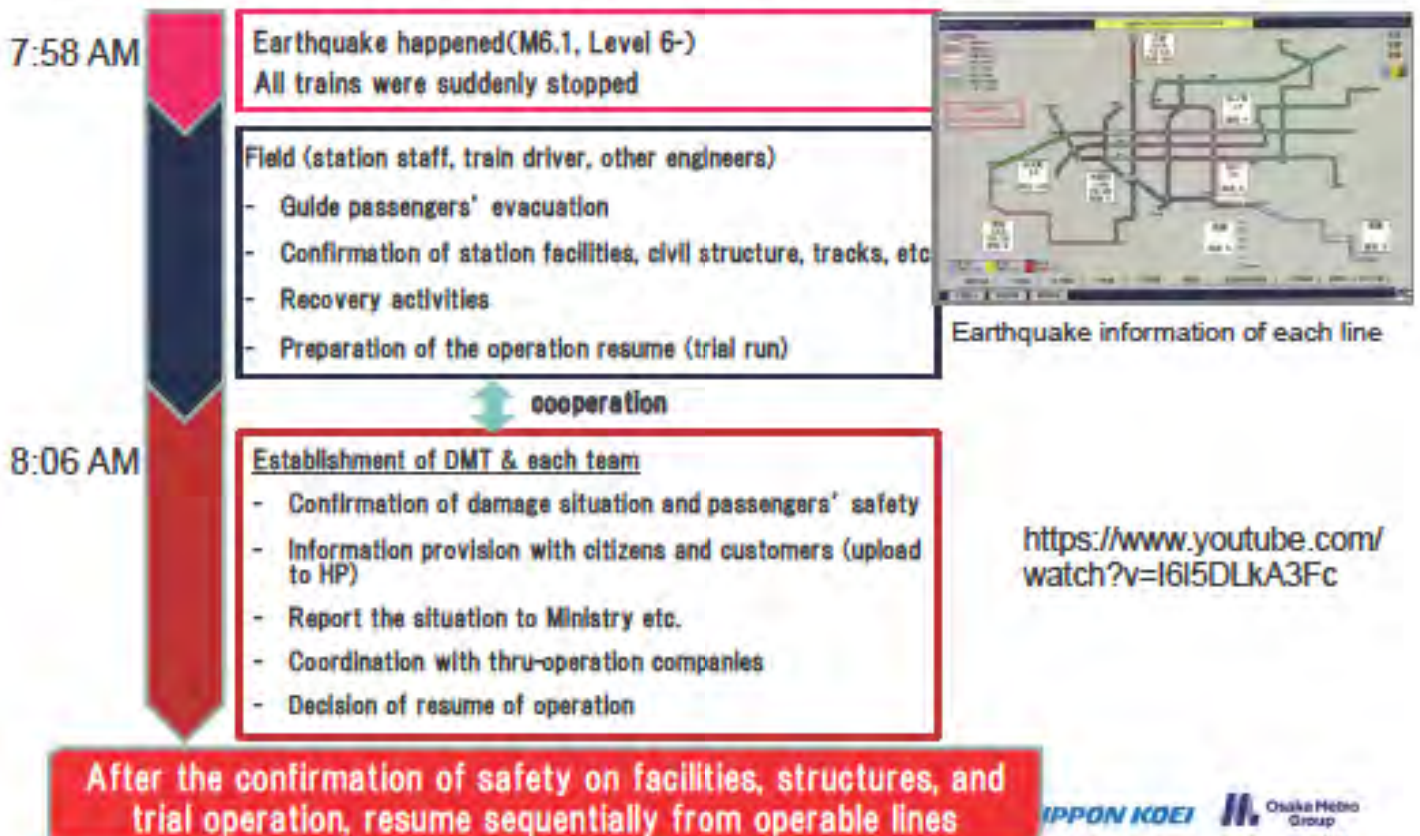
(b)The team members (or their relief) will **report to the incident site at the earliest,** review the work already initiated by Officer in Charge Site (OCS) and **finalize and pursue the Disaster Management plan in the most effective manner.**

3.2 Example of DMT in Osaka Metro (In Level 3 : most serious Level)



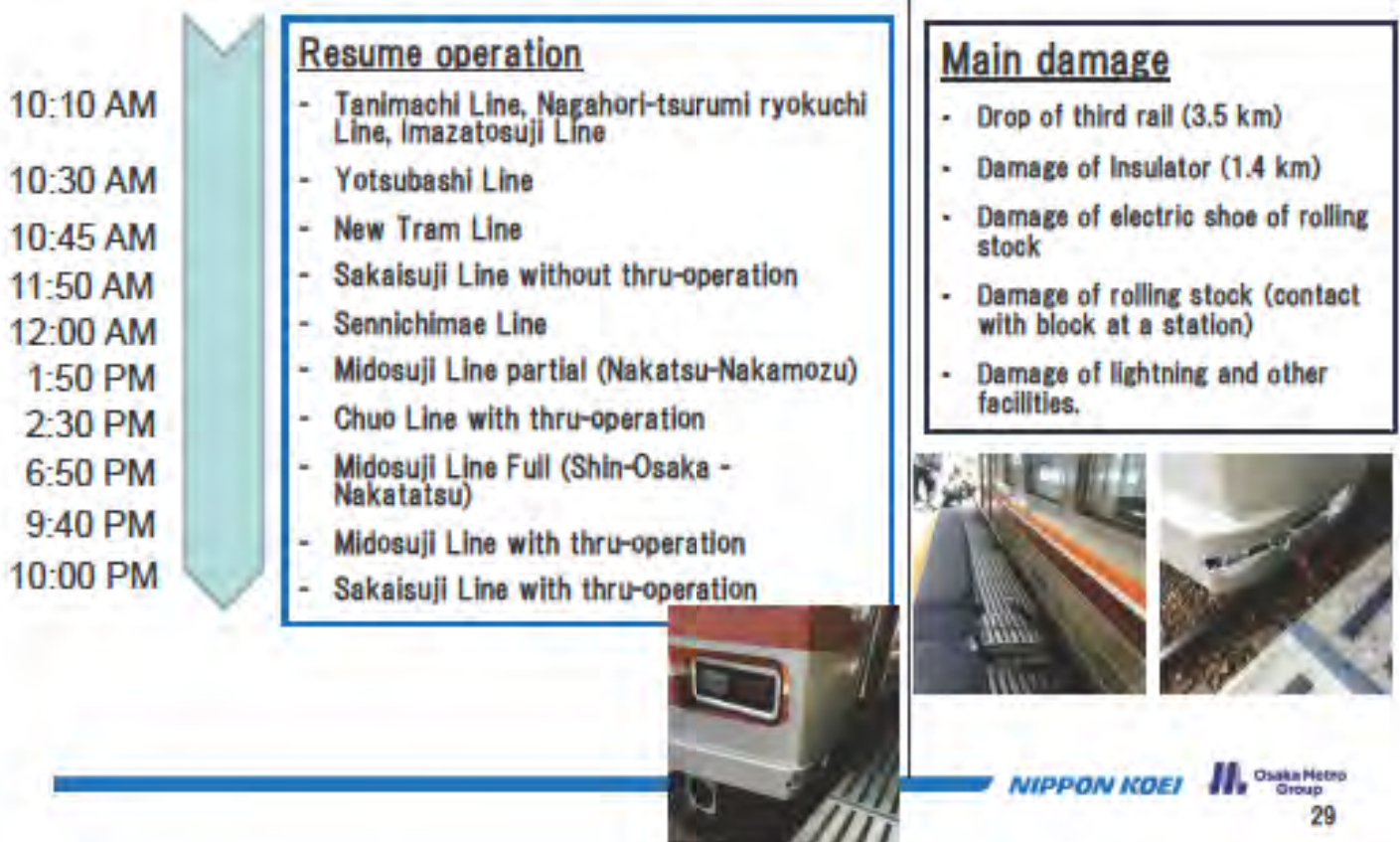
3.2 An Example in Osaka Metro

~Earthquake at Osaka Northern Area (18th June 2018)~



3.2 An Example in Osaka Metro

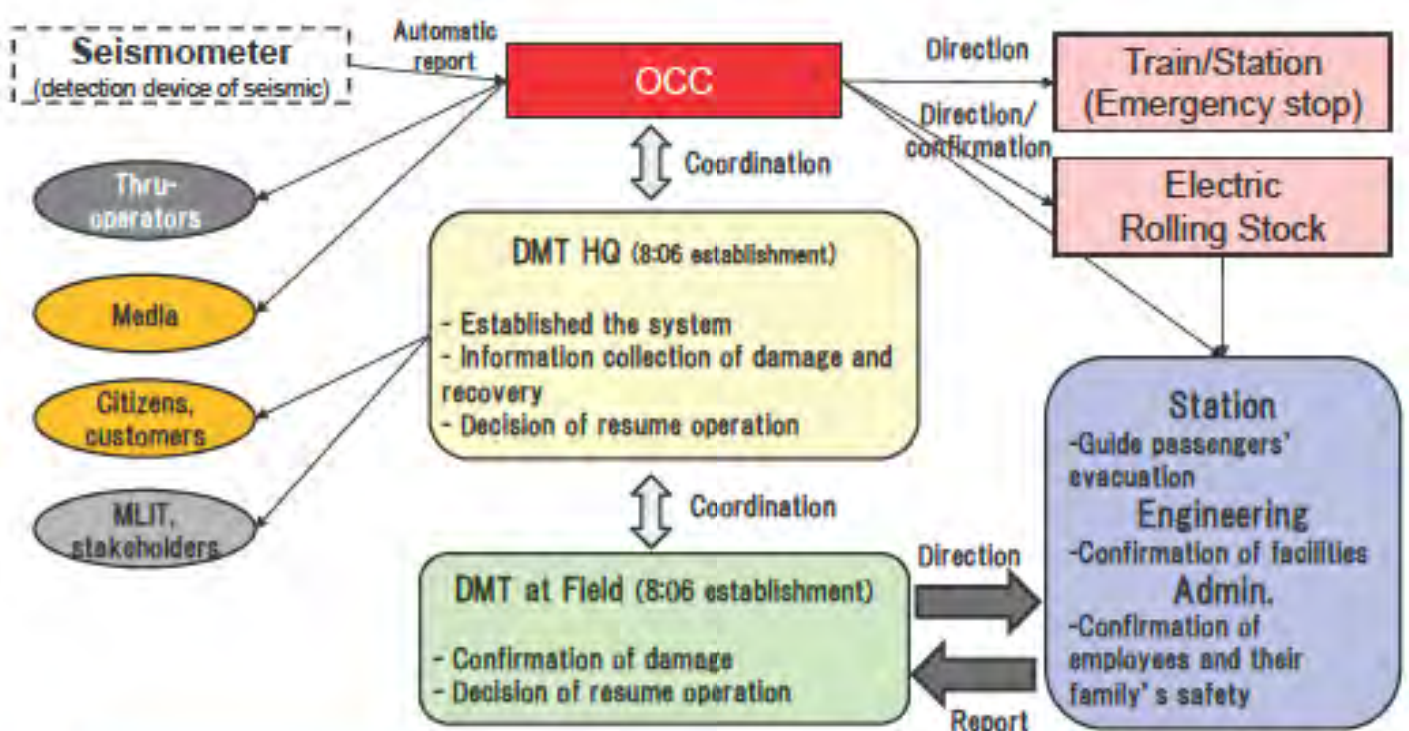
~Earthquake at Osaka Northern Area (18th June 2018)~



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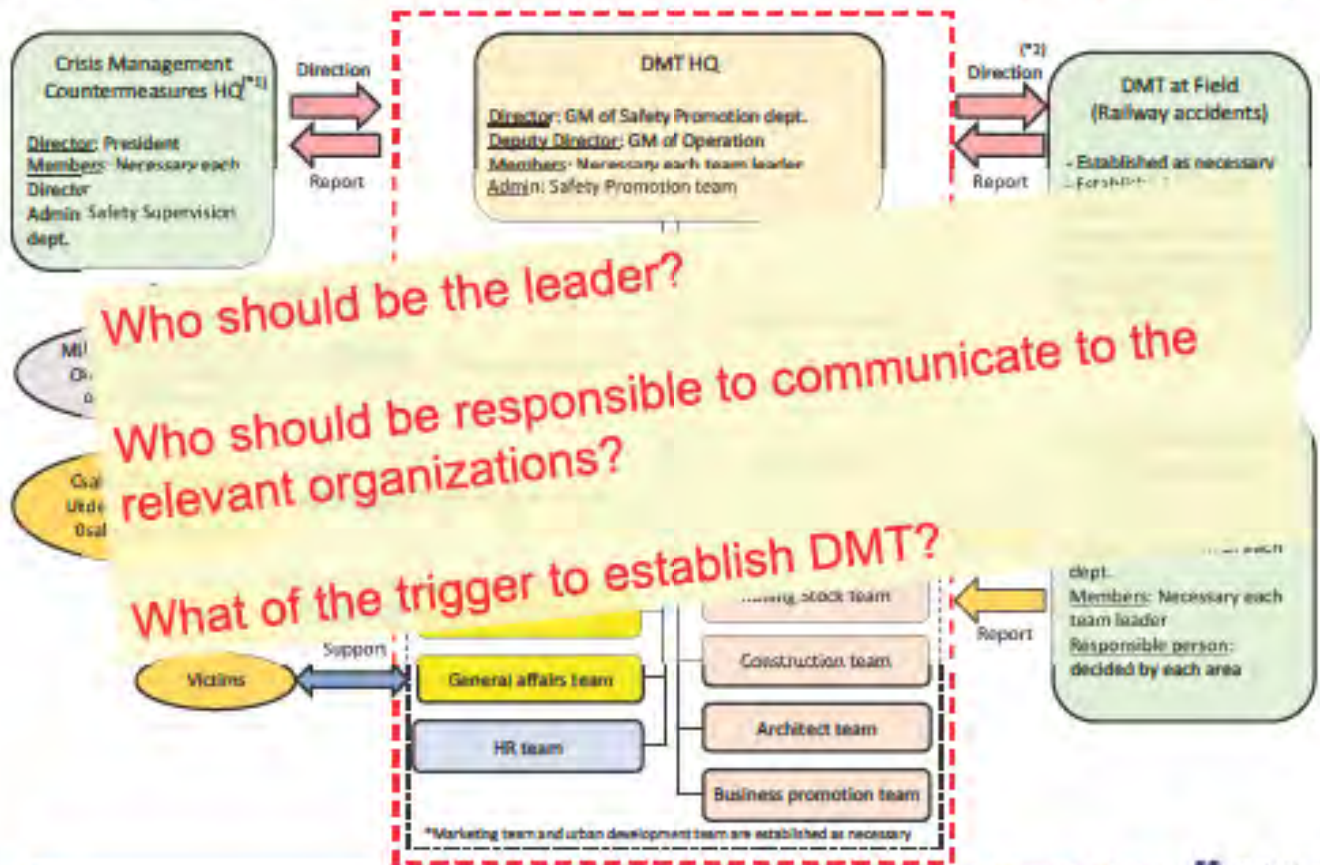
3.2 An Example in Osaka Metro

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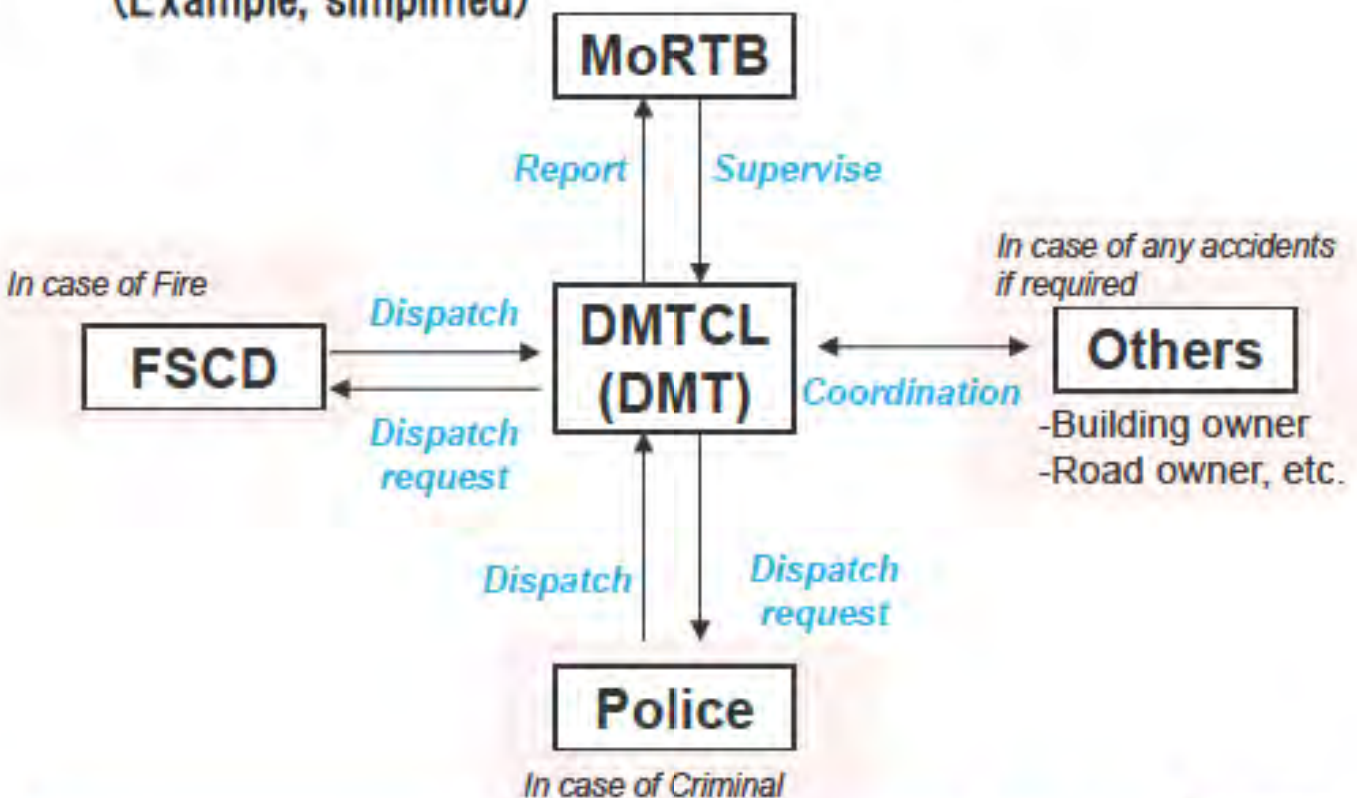
30

3.4 DMT Formation in DMTCL (under discussion)



3.3 Coordination Stakeholder in DMTCL

(Example, simplified)



4. Introduction of Emergency Drill

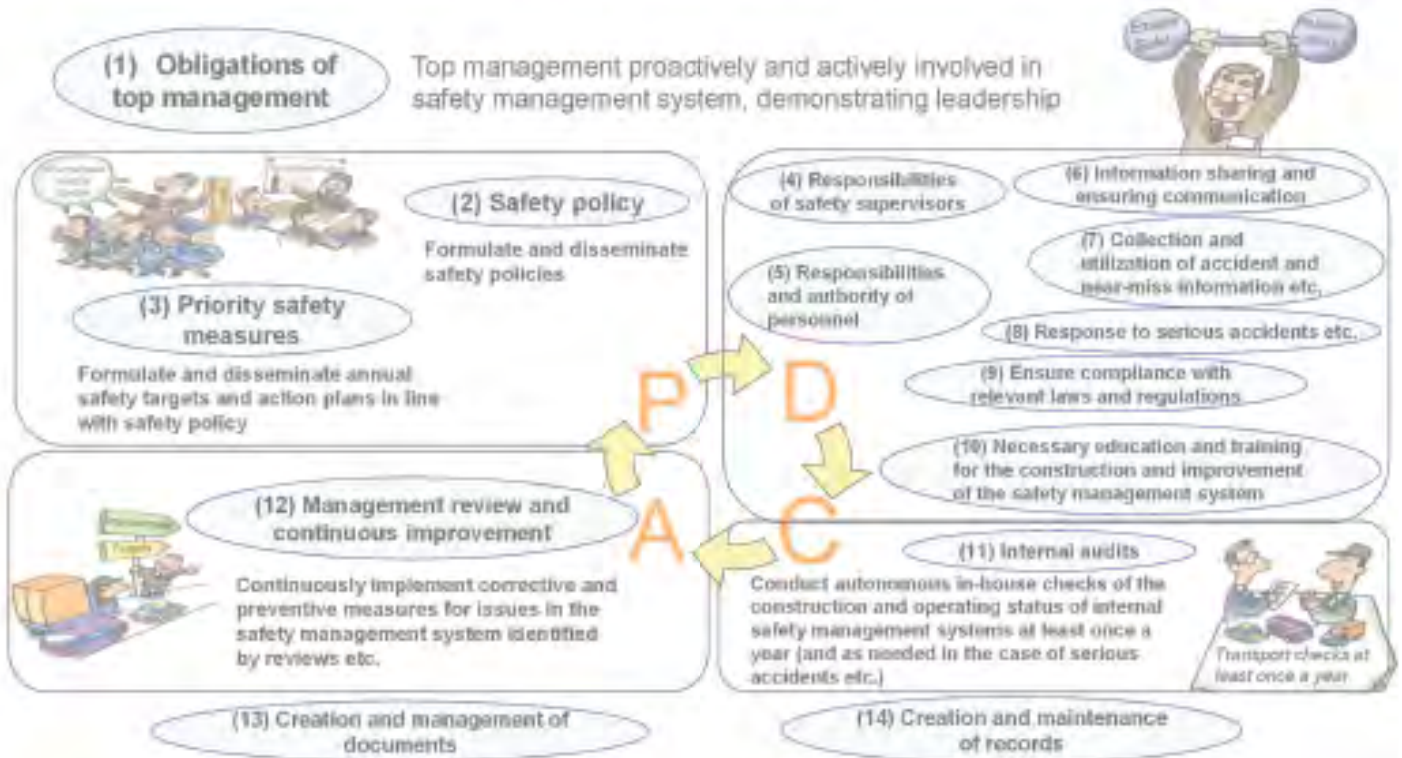
In this chapter, you will learn and discuss on how to practice emergency drill in emergency situation of MRT operation.

4.1 Introduction of Emergency Drill

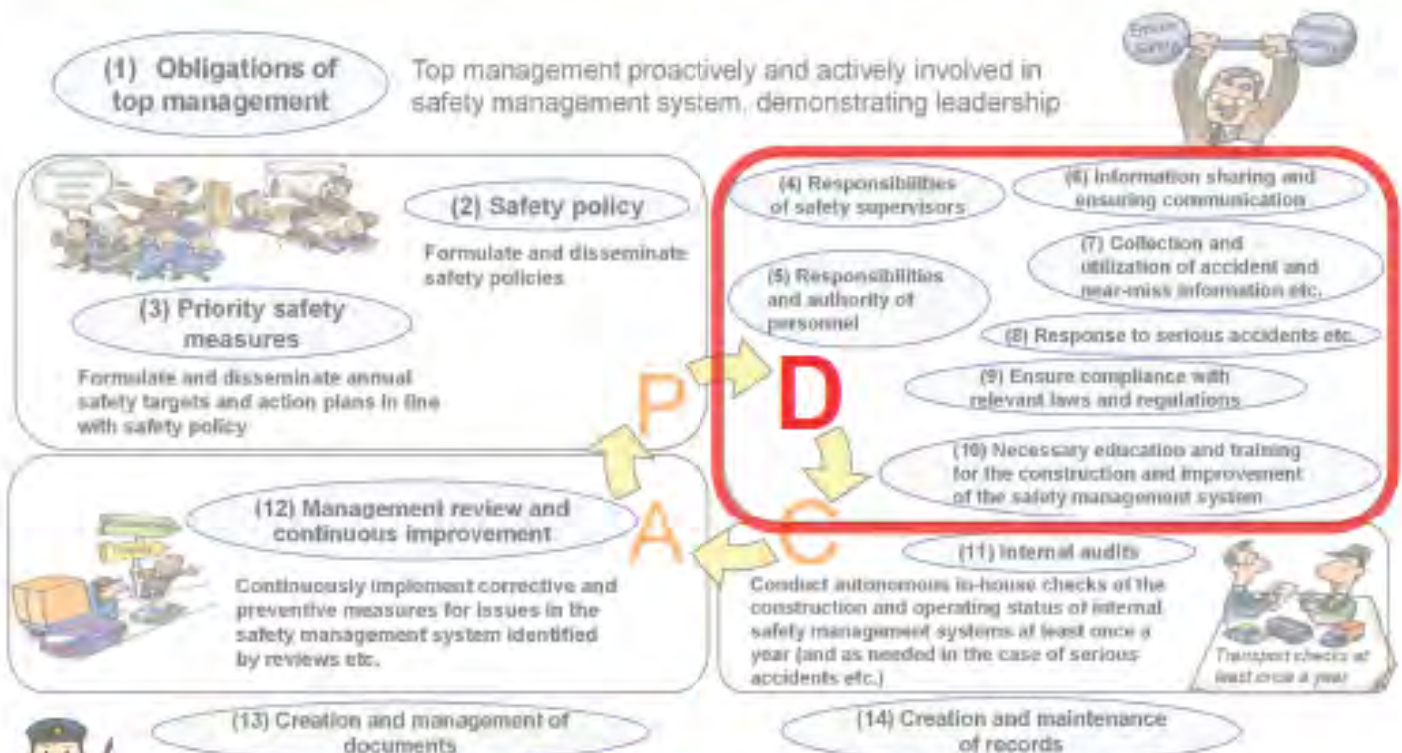
➤ Why Emergency Drill?

- ✓ To understand...
what to do in case of Emergency Situation
- ✓ Communication Training between
Staffs/Departments/Organizations
- ✓ To Identify the Possible Problem
and discuss/cope with the problem

➤ Do you remember "Japanese 14 Examples in SMS"?



➤ Do you remember "Japanese 14 Examples in SMS"?



Also Comment from Osaka Metro members
how they conduct Emergency Drill

4.1 Introduction of Emergency Drill

- How to conduct Emergency Drill in MRT6?

Tomorrow

Mini Emergency Drill
(As a training of SMS activity)

Before MRT Operation

Emergency Drill based on actual facilities
(Led by GC)

After MRT Operation

Periodical Emergency Drill
(Should be led by DMTCL!!)

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4.2 Example of Emergency Drill

1) Fire Drill Video @ MRTJ (Jakarta)



MRT emergency drill tackles concerns of disasters in tunnels

facebook.com/watch/?v=395765464536379

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4.2 Example of Emergency Drill

2) Fire and Criminal Drill @ Osaka Metro



<https://www.youtube.com/watch?v=skithj529eQ&t=30s>

- What points are common and different between DMTCL and Osaka Metro?

4.3 Emergency Drill in DMTCL

1) Mini-Drill at Exhibition Centre (Diabari)

○ Assumption of the Drill

- ✓ Arson(throwing fire) on trains and intimidating other passengers

○ Training items

- 1)DMT set-up
- 2)Communication Training between DMT, OCC, Station Controller, Train Operator and Related Organizations

- 3)Evacuation training

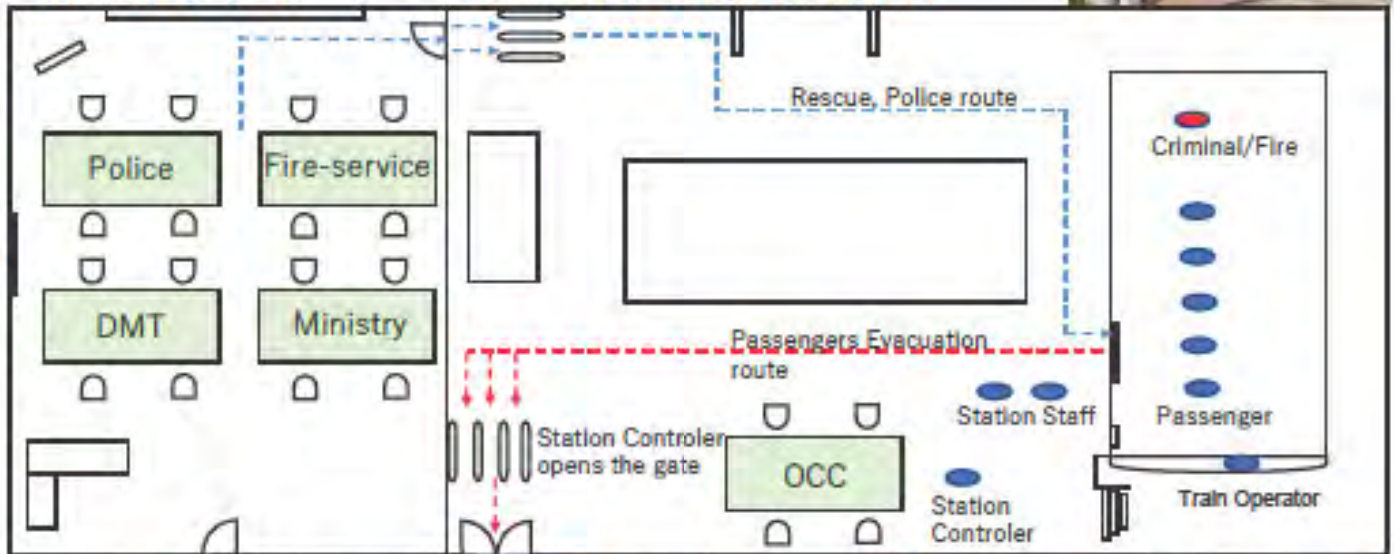


(Example of Emergency Drill, Osaka Metro)

Emergency Drill Venue

(Meeting Room)
Assumed as office

(Exhibition Room)
Assumed as Train/Station/OCC



4.4 Player Selection

Passenger / Criminal

DMTCL

- 1) HQ (DMT)
- 2) OCC
- 3) Train Operator
- 4) Station Controller/Staff

Ministry / DTCA

Fire Service

Police (MRT Police / DMP)

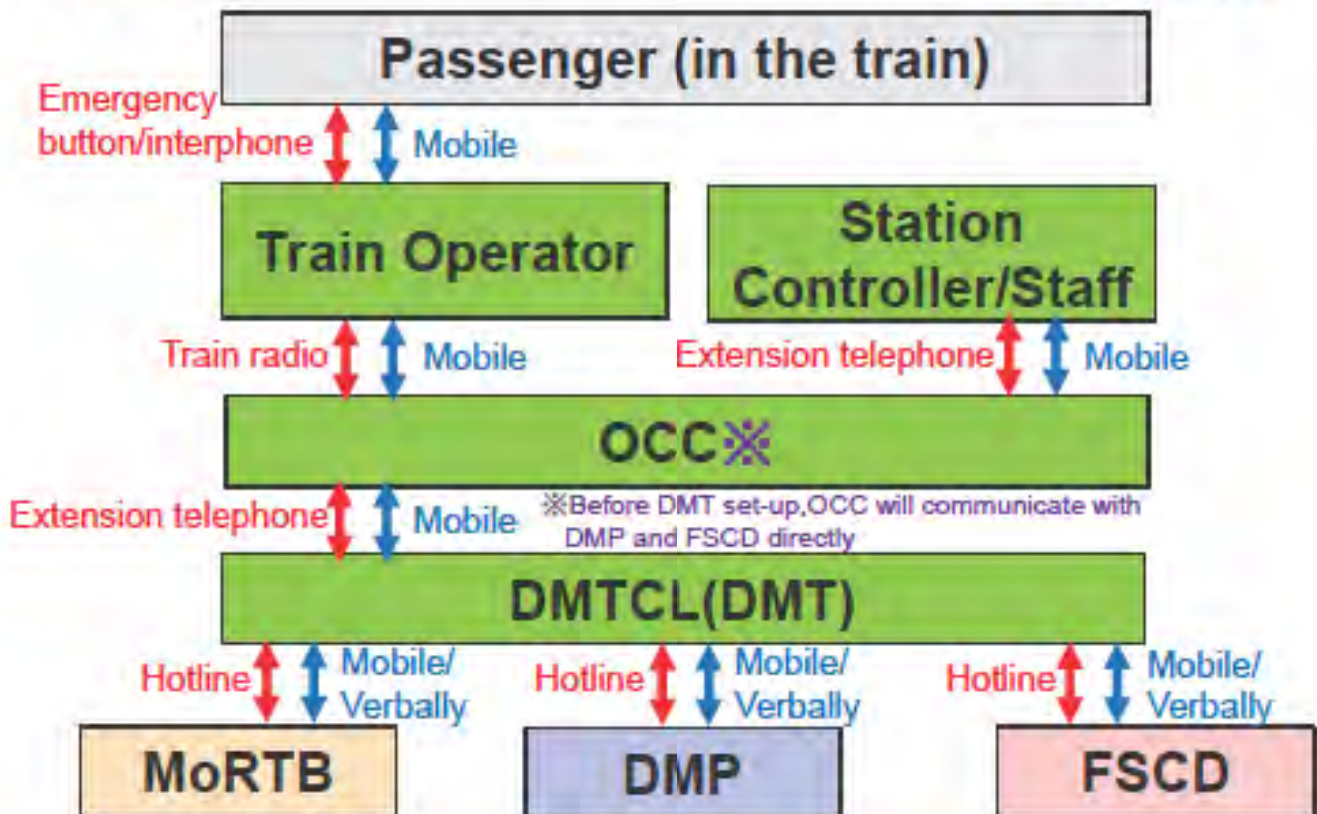


(Example of Emergency Drill, Osaka Metro)

- [Discussion] What player required for the Drill?
And Who will play each role?

4.5 Communication Method (Simplified)

↔ Actual Case
↔ In this Drill



4.5 Communication Method

Preparation and coordination in advance are crucial!

(Preparation of Hotline/Contact List)

APPENDIX-G: Jurisdiction details of Dhaka Metropolitan Police

Sl. No.	Police Station	District	Station	PHONE & FAX	Inspector Mobile No.
1	Uttara D. C. office	Dhaka	Uttara North	8961315, 01758058065	01320041818
2		Dhaka	Uttara Center		
3		Dhaka	Uttara South		
4	Pallabi Thana	Dhaka	Pallabi	8015922, 01713373180	01320041178
5	Mirpur Thana	Dhaka	Mirpur 11	9091030-1, 01713373189	01320041122
6		Dhaka	Mirpur 10		
7		Dhaka	Kazipara		
8		Dhaka	Shevrapara		
9	Tejgaong Thana	Dhaka	Agargang	8119467,9119444, 01713373180	01320040502
10		Dhaka	Bijoy Sarani		
11		Dhaka	Farmgate		
12	Shahbag Thana	Dhaka	Karwan Bazar	9679658	01320039520
13		Dhaka	Shahbag		
14	Ramna Thana	Dhaka	Dhaka University	49350468, 01713373125	01320039492
15		Dhaka	Bangladesh Secretariat		
16	Motjheel Thana	Dhaka	Motjheel	01320040180	
17		Dhaka	Kamolgur		



Reporting with relevant organizations

4.7 Image of Drill Scenario

➤ Please see slide-show

➤ Please check your role by tomorrow!

5. Public Relation on Emergency Response

In this chapter, you will learn various best practices to enhance passenger's awareness / understanding

5.1 Example of Osaka Metro

(Evacuation Map in Nakatsu Station)



TA for MRT Safety Management System on Line 6

5.1 Example of Osaka Metro

(PR by Monitor at Umeda station)



**Safety Activity Promotion
(in Japanese)**

TA for MRT Safety Management System on Line 6

5.2 Example of Tobu Line (Japan)



Press Emergency Train Stop button
if someone fall down to track

TA for MRT Safety Management System on Line 6

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5.3 Example of JR Shikokoku (Japan)



TA for MRT Safety Management System on Line 6

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5.4 Example of Singapore (SMRT)

Please watch video!



Emergency Safety Equipment in Trains
6/12/2018 - 2018/06/17

👍 67 🔄 57 📌 4 📄 1 📄 1 📄 1

<https://www.youtube.com/watch?v=2W1MrEMA78E>

TA for MRT Safety Management System on Line 6

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5.6 Example of Delhi Metro

Please watch video!



<https://www.youtube.com/watch?v=vH7mDkHUQ0Y>



<https://www.youtube.com/watch?v=DmcVMLAuUd0>

TA for MRT Safety Management System on Line 6

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Thank you very much for your kind attention

আপনার সন্তোষকে আমরা বাড়াই

Shisa-Kanko Training (Dhaka)

19 – 20 July 2022

The Project on Technical Assistance for MRT Safety Management System on Line 6

Shisa-Kanko Software Trial Sessions

~ Towards prevention of accidents and safer MRT ~

In Dhaka

19th /JULY/2022 (Training Day 1)

20th /JULY/2022 (Training Day 2)

JICA Expert Team (JET)

1. Practical Safety Activities

~ Cases from Osaka Metro, Japan ~

In this chapter, you will learn about the safety activities in the case of Osaka Metro, with the safety policy and the mind-set. And how to reduce the “Accidents”, “Incidents” and “Troubles”.

Shisa-Kanko 指し呼ぶ

“**Shisa-Kanko**” (in Japanese, “Pointing and Calling” in English) is a “Safety Action”.

When each staff confirms each object, the staff must “Point out” and “Calling” “the item name” and “the conditions of the object” for each time.

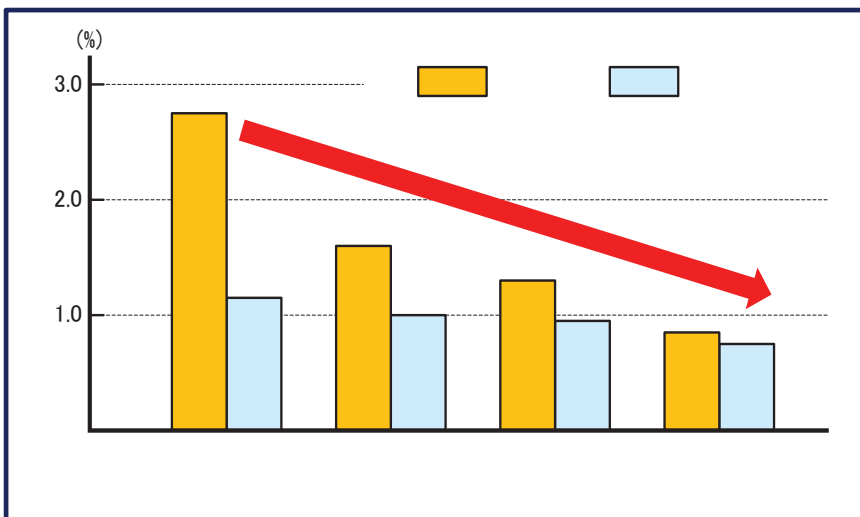
Shisa-Kanko is a methodology of the safety-checking action by own self.

This is NOT signs and signaling actions for other staffs and passengers.



Shisa-Kanko is used for self-safety checking purpose in Japan and the other east Asian countries.

Shisa-Kanko 指し呼ぶ



High risks



	Pointing	Calling
High risks	No	No
	○	No
	No	○
	○	○

“**Shisa-Kanko**” is effective way for the prevention of human errors and for safer MRT

Shisa-Kanko 確認と報告

Let's watch the video of "Shisa-Kanko"



What the purpose of "Shisa-Kanko"?

Shisa-Kanko 確認と報告

Osaka Metro's case

Shisa-Kanko *point and call* is defined in Osaka Metro's internal safety management documents. Shisa-Kanko is clearly mentioned as regulated safety action in the document. It defines what to check, what to call (confirm), and when to call.

Calling contents of "Shisa-Kanko" is defined in detail for each scene for train operation, maintenance works and confirming situation

Document Name

文書管理番号	3-F-02-01	改訂番号	初版
制定日	2018.04.01	頁	2/6
文書名	安全作業の手引		

安全待避五訓

5 actions to evacuate trains in safe

監視員の合図が聞こえたら
「列車！」

Confirmed coming train!

待避状況を自分で確認
「待避ヨシ！」

Completed to evacuate, OK! (指差し呼称)

待避意識を集中
「列車接近！」

Train is coming!

通過列車後尾に向い
「列車通過ヨシ！」

Train passed, OK! (指差し呼称)

後続列車が無い事を確認
「列車ヨシ！」

No other coming train, OK! (指差し呼称)

Shisa-Kanko 見確認 1 点指 点

Let's practice !!

1. Look and confirm the object
2. Make point finger
3. Point finger set your temple (next to your eye)
4. Confirming condition of the object
5. Point out the object
6. Calling the object name and the condition

The case from Osaka Metro

Train operators must hold the breaking handle for emergency cases in the operation of the running trains.

⇒ The train operator do only "**Calling**" without "**Point out**"

Point 1

Confirming is the main purpose of "Shisa-Kanko"

Point 2

Calling sentence should be decided case by case.

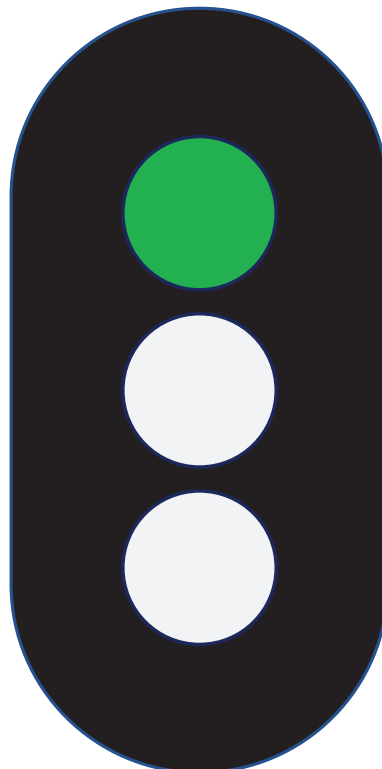
Point 3

*Calling sentence should be short and easy to understand.
EX)*

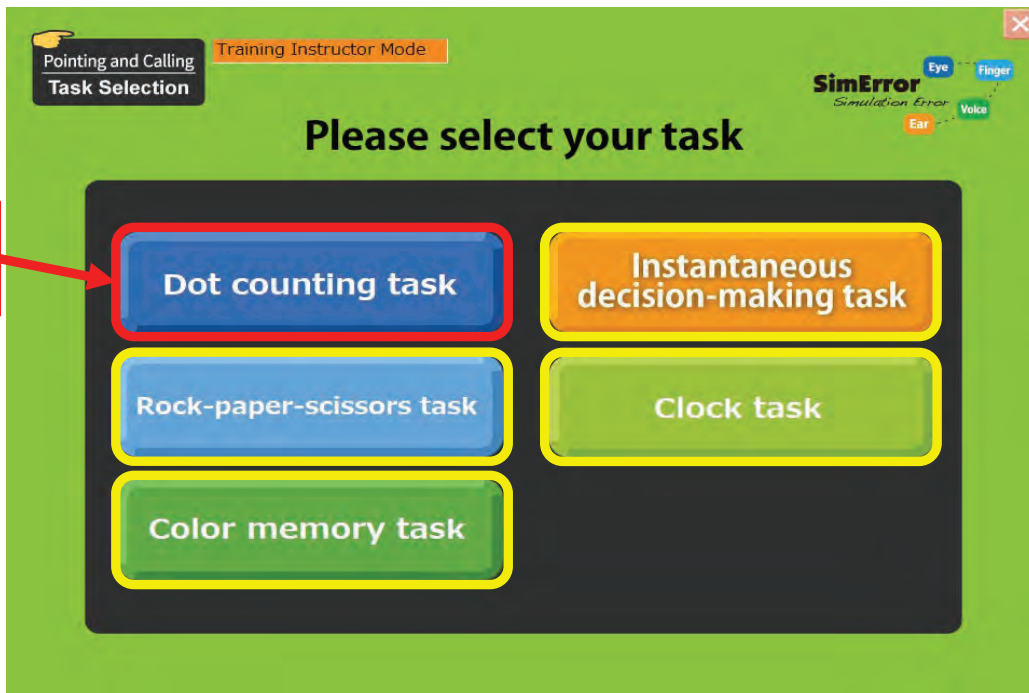
When the departure signal mentions "Green" signal.

*"প্রস্থান G" is good calling.
(Prosthana)*

Green, OK!!



Introduction of “Shisa-Kanko software”



Today
Exercise

5 practice
cases



Thank you very much for your kind attention
আপনাদের সবাইকে ধন্যবাদ