

**People's Republic of Bangladesh
Dhaka Mass Transit Corporation Limited**

**PEOPLE'S REPUBLIC OF BANGLADESH
THE PROJECT ON TECHNICAL
ASSISTANCE
FOR
MASS RAPID TRANSIT SAFETY
MANAGEMENT SYSTEM OF LINE 6
PROJECT COMPLETION REPORT**

JULY 2023

Japan International Cooperation Agency (JICA)

**Nippon Koei Co., Ltd.
Osaka Metro Service Co., Ltd.**

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Abbreviation

BR	Bangladesh Railway
BTRC	Bangladesh Telecommunication Regulatory Commission
DMP	Dhaka Metropolitan Police
DMTCL	Dhaka Mass Transit Company Limited
DNCC	Dhaka North City Corporation
DSCC	Dhaka South City Corporation
DTCA	Dhaka Transport Coordination Authority
FSCD	Fire Service and Civil Defense
JICA	Japan International Cooperation Agency
JR	Japan Railway
Line 6 GC	The consulting service for the Dhaka Urban Transport Improvement Project
MD	Managing Director of Dhaka Mass Transit Company Limited
MRT	Mass Rapid Transit
MRTJ	MRT Jakarta
MoR	Ministry of Railway
PDCA cycle	Plan-Do-Check-Action cycle
PIU	Project Implementation Unit
PR	Public Relations
R/D	Record of Discussion
RHD	Roads and Highway Department
RTHD	Road and Transport Highway Division
SMS	Safety Management System
ToT	Training of Trainer

1 INTRODUCTION

1.1 Importance of Safety Management System

1.1.1 Transportation Safety Management System in Japan

In Japan, Safety Management System has been developed based on the many serious accidents and the lessons learned even though each operator had implemented the safety measures. Especially, many accidents and troubles caused by human error occurred frequently in 2005 in railway, automobile, shipping and airport sectors respectively.

In the derailment accident on JR Fukuchi-yama Line, which killed 106 passengers and 1 train driver, reports of minor troubles and incidents were utilized for high pressure re-education as a penalty, and disciplinary action. The management side pressure was a heavy burden on the employees' daily activity. Although the direct cause of the accident was the driver's human error, it was concluded that the radical background of the driver's human error was management method of the company (organization) to each driver in the committee of human error accident prevention. As common causes of these accidents, "insufficient involvement of management side in ensuring safety" and "insufficient communication and information sharing between management side and employees' side" were identified.

Based on the above lessons learned, National Transport Safety Board was established and the transportation safety management system was started in Japan in October 2006. This safety management system is covering not only the railway operators but also all transportation field operators.

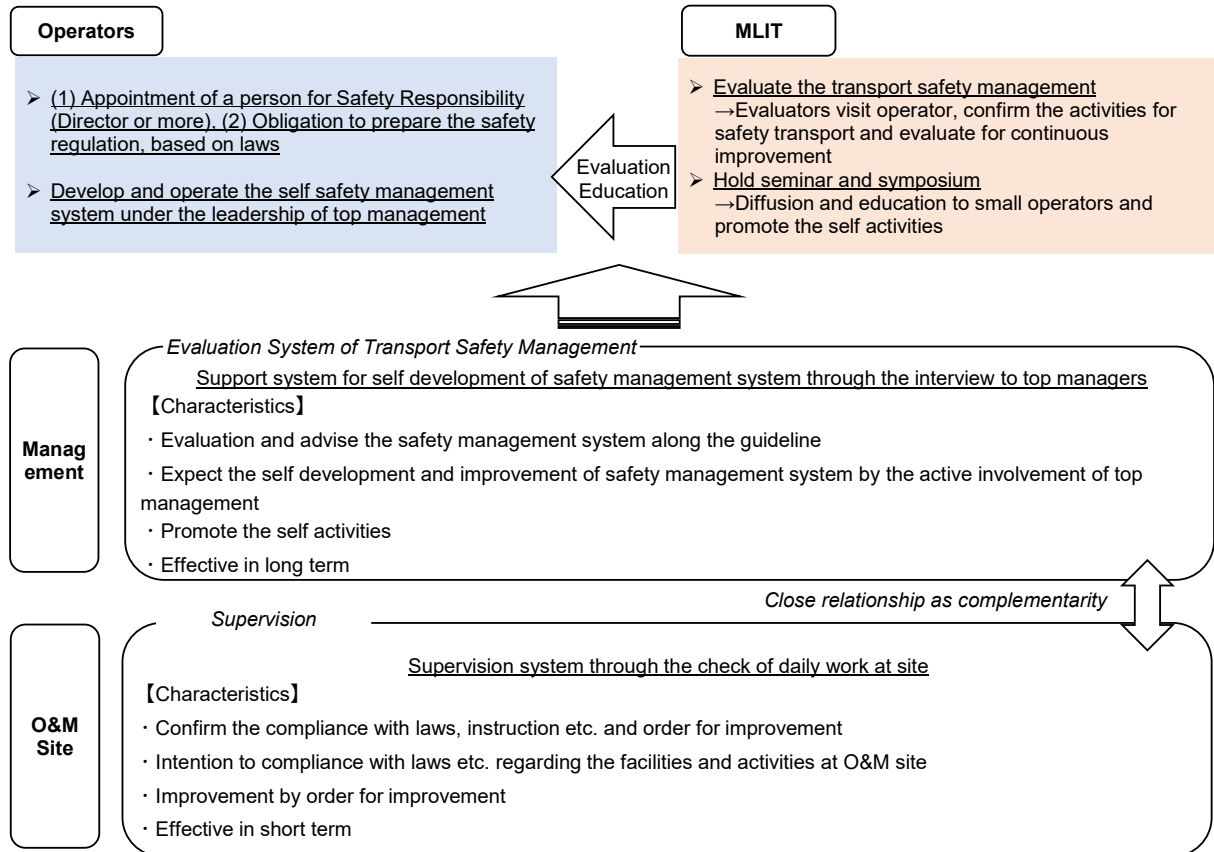
Under the transportation safety management system, the first priority of the transportation business is that "**ensuring transportation safety forms the basis of the transportation business**". as a business that is entrusted with human life. In other words, once an accident occurs, not only physical damage but also human life is lost. Furthermore, it is important for all parties involved in the transportation business to keep in mind that the trust of the business will be lost and the business itself will not survive.

In addition, transportation safety management system in Japan requires "to widely disseminate safety awareness" and "construction of a safety management system" as an organization, rather than assigning the cause and responsibility of an accident to an individual.

Under the above circumstance, Japanese railway operators including Osaka Metro **have built a safety management system led by the heads of organizations** such as the president and the general manager of the operation division through all company staff. General managers of each department carry out their responsibilities and strongly promotes safety management system.

Furthermore, under the transportation safety management system in Japan, in order to increase the effectiveness of safety improvement, operators themselves voluntarily and proactively

promote transportation safety initiatives. It is required to continuously improve the safety management system built by the PDCA cycle.



Source: Modified by JICA Expert Team based on MLIT (Ministry of Land, Infrastructure, Transport and Tourism)

Figure 1-1 Overview of Transportation Safety Management System in Japan

1.1.2 Safety Management System in other countries

In urban railways supported by Government of Japan, support of transportation safety management is also provided as well as infrastructure development.

For example, the North-South Line of MRT Jakarta (hereafter, “MRTJ”), which opened in 2019, continues to support the creation of regulations and manuals. As a result of these efforts, No major accidents have occurred since the opening as of today.

In addition, on Ho Chi Minh Line 1, which is currently under construction for opening, human resource development such as safety management departments and support for building an organizational structure are being provided.

Furthermore, not supported by Japan, but transportation safety management systems have been installed in major cities such as Singapore (hereafter, “SRMT”) and Hong Kong (MRT) where urban transportation has developed in Asia. Continuous operation and external reporting are being made¹.

1.1.3 Application of Safety Management System to Dhaka MRT

Dhaka MRT is the first urban railway in Bangladesh and is expected to transport a large number of passengers with high frequency. Therefore, it is desirable to introduce the transportation safety management system and its experiences/lessons built over many years in Japan to Dhaka MRT to reduce the risk of accidents.

The people of Bangladesh are very interested in it and therefore, by providing safety and high-quality transportation services, public confidence in railways will increase. As a result, it is expected to contribute to mitigate traffic congestion and other economic activity by promoting the use of railways.

1.2 Background and Objectives of the Project

The Dhaka Mass Transit Company Limited (hereafter, “DMTCL”) was set up in 2013 as the implementing agency of the Dhaka Mass Rapid Transit (MRT) with the launch of the MRT Line 6 construction project. The Vice Minister of the Ministry of Road Transport and Bridge (hereafter, “MORTB”) and Road Division are the majority shareholders of DMTCL. Since starting MRT Line 6 operation in December 2022, DMTCL has been operating and maintaining the MRT as the MRT operator.

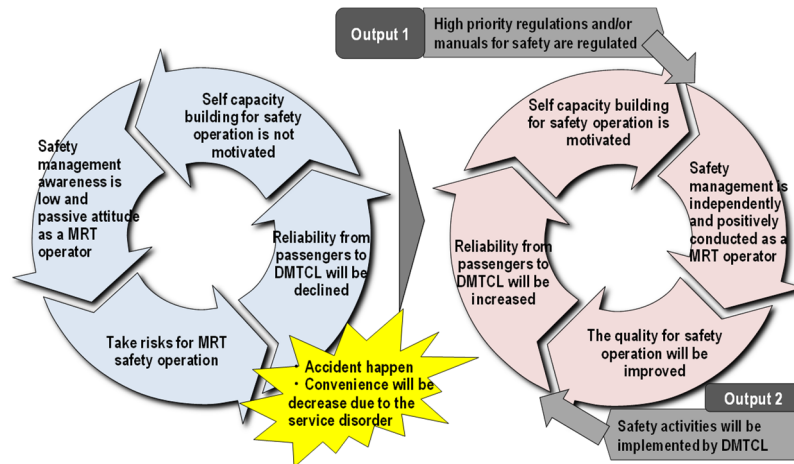
At the beginning of this project, DMTCL had recruited employees as the implementing agency for the construction of MRT Line 6, Line 1, Line 5 North and Line 5 South. However, most of the staff are borrowed or retired from the Roads and Highway Department (“RHD”) and the Public Work Department (“PWD”). The borrowed staff are expected to return to their original organizations after the commencement of operations. DMTCL has not been able to motivate itself as the MRT operator during the operation and maintenance stage.

In addition, there is a critical shortage of human resources with experience in railway operations, which is essential for a railway operator. Before starting operation of MRT Line 6, DMTCL had recruited young DMTCL employees (two to three years post-graduation) and trained by Line 6 GC to acquire knowledge and skills required for the MRT operation and maintenance. While the training of Line 6 GC focuses on the technical matters of MRT operation, the Project specializes in the strengthening of management capabilities related to MRT safety operation.

This Project aims to contribute to the change of the negative cycle of DMTCL from passive, in terms of capacity building due to lack of experience in MRT operations, to a positive cycle of capacity building as a self-reliant MRT operator. This will be achieved by acquiring safety

¹ <https://www.smrt.com.sg/Portals/0/InvestorRelations/SMRT-Group-Review-2018-2019.pdf>
<https://www.mtr.com.hk/sustainability/2019rpt/en/safety-first.php>

management system skills that will motivate them to take a proactive and positive approach toward transport safety. These activities will lead to the prevention of serious accidents.



Source: JICA Expert Team

Figure 1-2 Current Recognition (Left) and Ideal Goals (Right)

1.3 Relationship between Line 6GC and the Project

The consulting service for the Dhaka Urban Transport Improvement Project (hereafter, “Line 6 GC”) has made contract with DMTCL, and focuses on detailed design, bidding support, and construction supervision for the opening of MRT line 6.

Line 6 GC has formulated manuals, rules, regulations, etc. for each technical item necessary for railway operation and maintenance and will hire and train human resources.

On the other hand, in order to realize safe railway operation as a railway operator, it is necessary to raise awareness of safety management system as an organization of DMTCL, build a safety management system, and develop manuals including the regulations specializing in safety.

This project is to provide technical cooperation based on Japanese technology and experience so that DMTCL can think about the issues involved and build systematic safety management system including the development of regulations. This project involved intensive cooperation with Line 6 GC Team.

1.4 Outputs of the Work

The expected outputs are divided into the following two types, which specifically include seven and six activities, respectively:

Output1 : High Priority Regulations and/or Manuals for Safety are Regulated]

- 1-1: Safety philosophy and policy are discussed and prepared by the management level of DMTCL.
- 1-2: Project Implementation Unit (PIU) of the Project is assigned.
- 1-3: PIU identifies the prioritized rules and manual for safety.
- 1-4: PIU discusses and prepares safety regulations and/or manuals with the support of the JICA Expert Team.
- 1-5: Safety regulations and/or manuals are approved within DMTCL.
- 1-6: Follow-up activities are carried out for the implementation and management of safety regulations and/or manuals.
- 1-7: Public relations (hereafter, "PR") activities related to safety enhancement are carried out.

Output 2: Safety activities will be implemented by DMTCL

- 2-1: Approved regulations and/or manuals are shared within DMTCL.
- 2-2: A safety internal audit system is established.
- 2-3: Training for emergency activities are conducted, and the safety management system plan is reviewed based on the trainings.
- 2-4: Safety internal controls of DMTCL are established.
- 2-5: Safety management system activities by DMTCL are evaluated and advice is given by experts before the full opening of MRT Line 6
- 2-6: PR activities related to the established safety management system and operation are carried out.

1.5 Counterparts and Related Organizations

Table 1-1 summarizes the counterparts and related organizations. Bangladesh Police has not been considered in the Record of Discussion (hereafter, "R/D") which was agreed between JICA and DMTCL, it was decided to include Bangladesh Police in above related organization as it is necessary for safety railway operation.

Table 1-1 Counterparts and Related Organizations

Relation	Stakeholders	Role
Counterparts	DMTCL	To conduct the operation and maintenance of the MRT lines
Related Organization	Dhaka Transport Coordination Authority (hereafter, "DTCA")	To conduct the regulation, planning and arrangement of transportation within Dhaka. In line with Metro Rail Act, safety inspectors of

Relation	Stakeholders	Role
		DTCA will advise the safety operation to DMTCL
	Ministry of Railway (hereafter, "MoR")	To evaluate and advise the safety of Bangladesh Railway
	Road and Transport Highway Division (hereafter, "RTHD")	To make arrangements among MoR, Planning Ministry, Ministry of Finance, etc., as a supervisory ministry of DMTCL
	Power Division	To provide advice about the safety for power supply and electric system of the substation
	Bangladesh Telecommunication Regulatory Commission (hereafter, "BTRC")	To provide advice related to signal and telecommunication
	Fire Service and Civil Defense (hereafter, "FSCD")	To provide advice about the station service, MRT operation and evacuation from the viewpoint of fire fighting
	Bangladesh Police (to be discussed)	To provide advice about passenger safety management and cooperation during accident and disaster. Dhaka Metropolitan Police which is subsidiary of Bangladesh Police was attended as representative.

Source: JICA Expert Team

1.6 Establishment of PIU and Its Role

In the Project, the PIU was established soon after starting of the Project. It was confirmed that the PIU will assume the main role of the activities of the Project.

The JICA Expert Team had recommended DMTCL to select from the existing manpower of DMTCL staff at additional charge. The assumed staff which was recommended by the JICA Expert Team is summarized below.

Table 1-2 Candidate Positions of PIU (Recommendation from JICA Expert Team)

Position	Nos.
Director O&M	1
DGM Safety & Quality Audit	1
Manager Safety & Quality Audit	1
Each GM	7

Source: JICA Expert Team

The JICA Expert Team has encouraged DMTCL to determine PIU members and DMTCL selected the PIU members (the selected PIU members is shown in 3.11 described later).

2 SMS related activities which were conducted with the support of JET

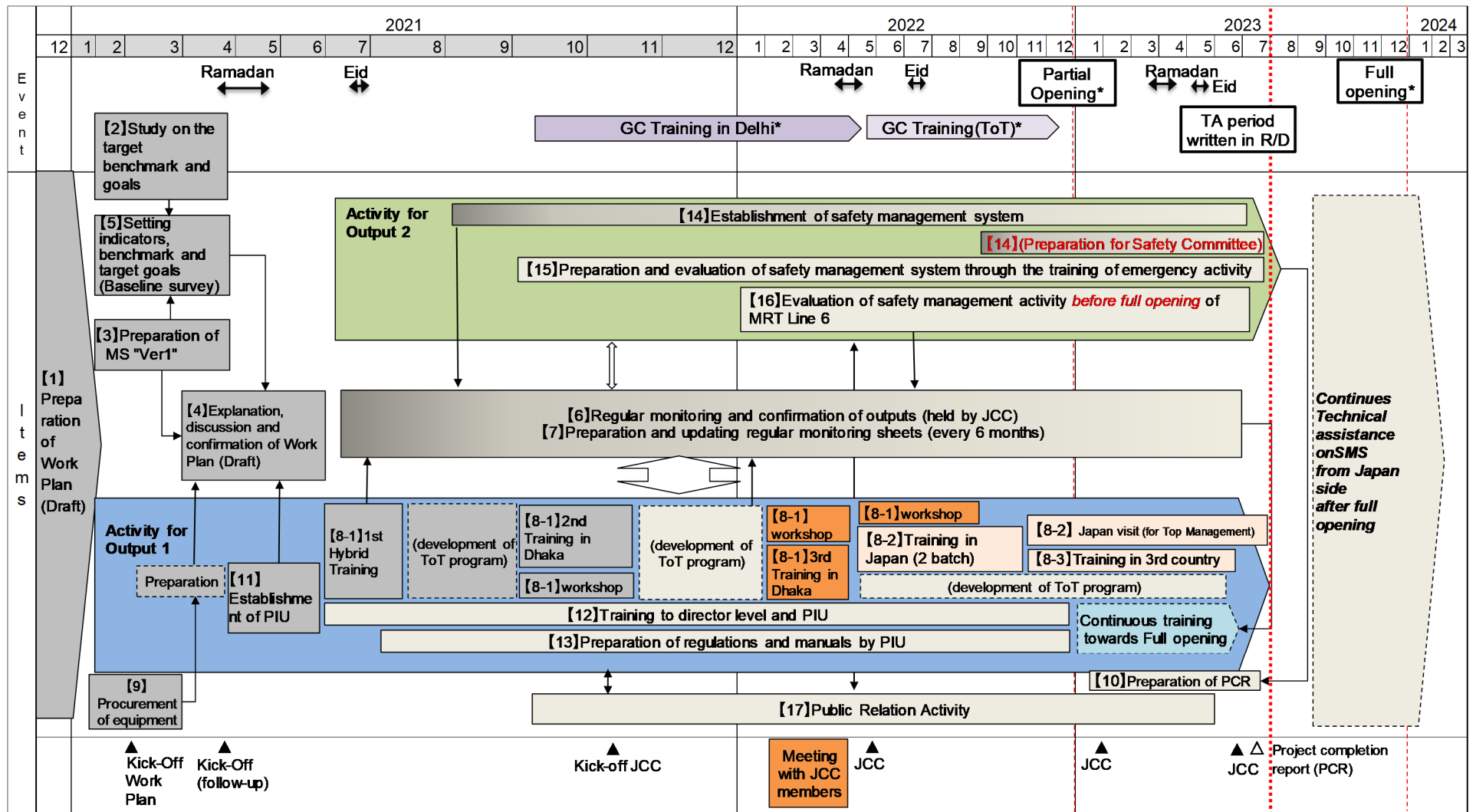
2.1 Schedule of SMS related activities conducted in the Technical Cooperation Period

From the start of this project in February 2021 to the end of July 2023, the JICA Expert Team has conducted various SMS related activities with DMTCL and related organizations to establish the SMS in DMTCL and support safely MRT Line 6 operation.

The whole schedule of SMS related activities conducted in the Technical Cooperation Period (actual track record) is shown as Figure 2-1.

In the schedule, planned MRT Line 6 schedule and actual MRT Line 6 schedule are also shown in Figure 2-1.

This schedule was submitted in the 4th Joint Coordination Committee (hereafter, “JCC”) meeting held on 19th July 2023.



Source: JICA Expert Team

Figure 2-1 Schedule of SMS related activities conducted in the Technical Cooperation Period

3 Evaluation on the Project Output Items

3.1 【1】 Preparation of Work Plan

To achieve the activities set in the Record of Discussion (“R/D”) between JICA and DMTCL, JICA Expert Team prepared Work Plan (Draft) describing the project activities and schedule of activities. Table 3-1 shows the activities set in Work Plan (Draft) and which activities in the Work Plan each activity listed in the R/D corresponds to.

The Work Plan (Draft) prepared is shown in Annex 1.

Table 3-1 Organize project activities

Task in the Work Plan	Task in the R/D
【1】Preparation of Work Plan (Draft)	-
【2】Study on the target benchmark and goals	-
【3】Preparation of Monitoring Sheet Ver.1	-
【4】Explanation, discussion and confirmation of Work Plan Draft	-
【5】Setting indicators, benchmark and target goals (conduct the baseline survey)	0: Baseline Survey
【6】Regular monitoring and confirmation of outputs (held by JCC)	-
【 7 】 Preparing and updating regular monitoring sheets (every six months)	-
【8】Implementation of Trainings	1-3: PIU identify the prioritized rules and manuals for safety. 1-4: PIU discussed and prepares rules and manuals for safety with assistance of JICA experts.
【9】Procurement of training/communication equipment	-
【10】 Preparation of Project Completion Report	2-5: Safety management activities by DMTCL are revised and advised before full operation.
【11】 Establishment of PIU for the Work	1-2: Project Implementation Unit (PIU) of this Project is assigned.
【12】 Training to director level and PIU	
【13】 Preparation of regulations and manuals by PIU	1-3: PIU identify the prioritized rules and manuals for safety. 1-4: PIU discussed and prepares rules and manuals for safety with assistance of JICA experts. 2-2: Internal safety audit system is established.
【14】 Establishment of safety management system	1-5: Rules and manuals for safety are approved and adopted by DMTCL. 1-6: Follow up activities for the implementation of the rules and manuals for safety are conducted. 2-1: The rules and manuals for safety are shared among the organization. 2-2: Internal safety audit system is established. 2-4: Corporate internal control in DMTCL is established

【 15 】 Preparation and evaluation of safety management system through the training of emergency activity	1-6: Follow up activities for the implementation of the rules and manuals for safety are conducted. 2-3: Emergency safety drill and review of safety management plan based on the feedback from the drill are implemented
【 16 】 Evaluation of safety management activity before full opening of MRT Line 6	2-5: Safety management activities by DMTCL are reviewed and advised before full operation.

Source: JICA Expert Team

3.2 【2】 Study on the target benchmark and goals

Targeted benchmarks and goals were set for the implementation of this project. The benchmarks and goals set are shown in Table 3-2.

In order for DMTCL to establish an effective SMS as a railway operator, benchmarks and goals were set separately for items to be achieved before and after the opening of MRT Line 6.

Table 3-2 Evaluation Indicators, Benchmarks, Goals, and Data Collection Method

Evaluation Indicator	Benchmarks	Goals	Data Collection Method
Safety awareness of DMTCL	Safety Awareness	Increased safety awareness is confirmed from the output of the first baseline survey	Baseline survey
Preparation of SMS	Set up of safety management system Understanding Level of the Training Spreading of knowledge	Internal meetings, reports, and trainings are implemented. The implementation of SMS will ensure safely MRT operation.	Comparison of the experience of Osaka Metro DMTCL will revise SMS related documents as necessary
Risks of accident after opening	Implementation of Safety management system and accidents are being prevented from occurring.	Risks of accident (including “potential risk” of accident) will be shared and measured internally after opening.	Data collection of the actual statistics after opening (contents and the nos. of accident and near miss accident)

Source: JICA Expert Team

3.3 【3】 Preparation of Monitoring Sheet Ver.1

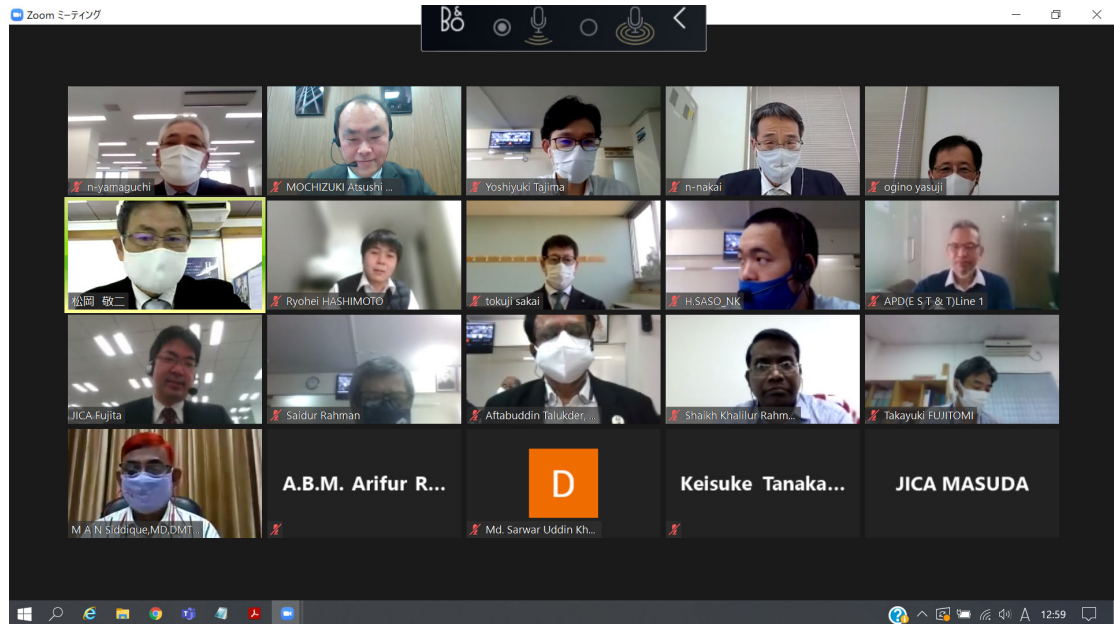
Monitoring Sheet Ver.1 was prepared in accordance with the format of Project Monitoring Sheet I and II as set out in the Record of Discussion agreed between JICA and DMTCL in August 2020, also reflecting the target benchmarks and goals in Section 3.2. The Monitoring Sheet Ver. 1 was presented to the first JCC meeting on 1st November 2021, and it was approved.

3.4 【4】 Explanation, discussion and confirmation of Work Plan Draft

A kick-off meeting attended by key DMTCL members including the Managing Director (hereafter, “MD”) and JICA members was held on 25th February 2021 to explain and discuss the contents of the prepared Work Plan Draft. Based on the results, the Work Plan was revised and approved by DMTCL.

Note that the kick-off meeting was conducted online instead of JICA Expert Team travelling to Dhaka due to the impact of COVID-19.

The revised Work Plan is presented in Annex 2.



Source: JICA Expert Team

Figure 3-1 Kick-off Meeting (held on 25th February 2021)

3.5 **【5】 Setting indicators, benchmark and target goals (Baseline Survey)**

Based on the target benchmark and goals mentioned above and the kick-off meeting with DMTCL, Baseline Survey was conducted to monitor the improvement in safety awareness of DMTCL staff as a result of the implementation of the activities of this project. The survey was conducted three times in conjunction with the progress of the project and the development of MRT Line 6.

The Baseline Survey was conducted by JICA Expert Team that designed the questionnaire, distributed and collected the questionnaires, analysed the responses and prepared a discussion report. The first round of the survey was paper-based, while the second and subsequent rounds of survey were conducted online using the DMTCL intranet system.

Table 3-3 Summary of Baseline survey

	Period	Number of respondents	Summary of result
1st Survey	31 March 2021- 21 September 2021 (Before starting MRT operation and just before starting Safety Management Training)	68 responses	The survey was conducted with the aim of measuring the safety awareness of DMTCL at the start of the project. It was found that the overall attitude towards safety is high. On the other hand, it was found that awareness of errors is weak and apparent confidence that errors do not occur, with human error occurring in the workplace and an absolute reliance on machine operation being ingrained. Safe operation management systems need to be established with the understanding that even the most up-to-date railway systems are subject to the risk of accidents.
2nd Survey	20 June 2022- 30 November 2022 (After Completing 3-times Safety Management Training) MRT operation)	107 responses	The purpose of this survey was to measure the results of the past three training sessions. The results were confirmed by comparing the responses of training participants and non-attendees. Awareness of errors was equal for both groups, and some staff members were able to foresee the risk of accidents. On the other hand, it became clear that there are staff members who were not confident in their ability to avoid making mistakes on the job and whose distrust of machines has not been dispelled. The importance of safety and its correct understanding need to be promoted through the training of employees on the safety policy that we assisted in preparing as part of this project, as well as through each manual.
3rd Survey	28 May 2023- 9 July 2023 (After starting MRT operation)	37 responses	Compared to the previous 1st/2nd surveys, the percentage of correct answers to the safety awareness questions increased, indicating an improvement in safety awareness.

Source: JICA Expert Team

The questionnaire developed for each session and the results of the analysis are presented in Annex 3.

In addition to the DMTCL staff mentioned above, an awareness survey was also conducted before the opening of MRT Line 6 to the general public in Dhaka City, who are likely to use the MRT in the future.

The results of the analysis of the public awareness survey are presented in Annex 4.

3.6 [6] Regular monitoring and confirmation of outputs (held by JCC)

In order to report on the progress of the project and monitor the achievement of the target benchmarks and goals set out in 3.2, a JCC was held involving JICA Expert Team, DMTCL, as well as JICA and agencies involved in the implementation of the MRT's SMS. The JCC aimed to meet about twice a year but taking into account the progress of the construction of MRT Line 6, the JCC actually met on the dates listed below.

In addition to reporting on the progress of the project and reporting the achievement of target benchmarks and goals, each JCC meeting also included discussions on the establishment of system to implement the Safety Management system in the DMTCL.

The materials presented at each JCC are shown in Annex 5. The minutes of each JCC meeting with a list of participants are also shown in Annex 6.

Table 3-4 Summary of JCC

	Date	Agenda
1 st JCC	9 th November 2021	<ol style="list-style-type: none"> 1. Self-introduction 2. Opening Remarks by DMTCL 3. Welcome Remarks by Director, JICA HQ 4. Presentation <ul style="list-style-type: none"> - Outline of Technical Cooperation and the Project – JICA HQ - Introduction and Progress on SMS activities – JICA Expert Team - Project Monitoring Sheet – JICA Expert Team 5. Discussion 6. Mission Remarks by Senior Representative, JICA Bangladesh 7. Closing Remarks by DMTCL
2 nd JCC	21 st April 2022	<ol style="list-style-type: none"> 1. Opening Remarks by DMTCL 2. Opening Remarks by Transportation Group, Infrastructure Management Department, JICA HQ 3. Review of 1st JCC meeting 4. Presentation <ul style="list-style-type: none"> - Introduction of the Project Progress – JICA Expert Team - Introduction of Response to Emergency Situation – JICA Expert Team - Update of Project Monitoring Sheet – JICA Expert Team - Way Forward (Project Work Plan) – JICA Expert Team 5. Discussion 6. Closing Remarks by DMTCL
3 rd JCC	7 th February 2023	<ol style="list-style-type: none"> 1. Opening Remarks by DMTCL 2. Opening Remarks by Senior Representative, JICA Bangladesh Office 3. Review of 2nd JCC meeting 4. Presentation <ul style="list-style-type: none"> - Introduction of the Project Progress – JICA Expert Team - Introduction of on-going/further activities related to Safety Management System in MRT Line-6 operation – JICA Expert Team - Update of Project Monitoring Sheet – JICA Expert Team - Way Forward (Project Work Plan) – JICA Expert Team 5. Discussion 6. Closing Remarks by DMTCL
4 th JCC	19 th July 2023 (Hybrid style of Japan side and Bangladesh side)	<ol style="list-style-type: none"> 1. Opening Remarks by DMTCL 2. Opening Remarks by Transportation Group, Infrastructure Management Department, JICA HQ 3. Review of 3rd JCC meeting 4. Presentation <ul style="list-style-type: none"> - Introduction of Project Output – JICA Expert Team - Update of Project Monitoring Sheet – JICA Expert Team - Way Forward for implementation of SMS – JICA Expert Team 5. Commitment of Top Management for Ensuring Safety and Establishment of SMS in DMTCL 6. Closing Remarks by DMTCL

Source: JICA Expert Team



Source: JICA Expert Team

Figure 3-2 2nd JCC (held on 21st April 2022)

3.7 [7] Preparing and updating regular monitoring sheets

In order to monitor the aforementioned target benchmark and goals and the progress of the project, the monitoring sheet was updated based on Monitoring Sheet Ver. 1. Updated monitoring sheet was presented and explained at each JCC, and approved by the attendees.

The prepared monitoring sheet is presented in Annex 5 together with the JCC presentation materials.

3.8 [8] Implementation of Trainings

Various training sessions on safety management system were provided from JICA Expert Team to DMTCL. Specifically, 4 training sessions and 3 workshops in Dhaka (include one online session from the convention room of hotel in Dhaka), 3 overseas training in Osaka in Japan (2 times) and Jakarta in Indonesia (1 time) and 1 invitation program to Japan were conducted to appropriate personnel of DMTCL. In the training in Dhaka, JICA Expert Team provided the basic and required knowledge for implementing SMS with the practical activities. The workshop was conducted to PIU members to set up and establish safety rules and manuals. The overseas training and invitation program in Japan and Indonesia were conducted to confirm the introduction of SMS into actual operations.

In the early stages of project implementation, face-to-face training was difficult to conduct due to the impact of COVID-19, so training was held online. Later, as movement restrictions were eased, it became possible to conduct in-person training in Dhaka. Subsequently, the readiness to accept the training in Japan and their country and the ability of DMTCL staff to travel abroad, it became possible to conduct training in Japan and third country.

3.8.1 Implementation of Online/In-person Training and Workshop in Dhaka

JICA Expert Team travelled to Dhaka in 2021-2022, the year when the project was launched, to conduct safety management system training for DMTCL staff expected to be involved with MRT operations in the future as well as for members of related agencies such as RTHD, FSCD, Dhaka Metropolitan Police (hereafter, “DMP”), etc. which needed to cooperate with DMTCL in case of emergency.

During the training in Dhaka, many DMTCL officials had limited knowledge and experience of urban railway operations, accidents and safety. Therefore, the basic knowledge required for the operation of urban railways and the experience of serious rail accidents in Japan and its mechanism were firstly introduced. And then, subsequent training was held in order for participants to understand the background to the establishment of the transportation safety management system in Japan basic of the railway safety management system of this project, specific SMS activities implemented by Japanese railway operator, and the organisational structure.

For the training conducted in July 2021, JICA Expert Team had travelled to Dhaka to prepare initially for in-person training, but due to movement restrictions imposed by the Bangladesh Government, JICA Expert Team conducted the training online from a conference room in the hotel where they were staying in Dhaka.

All training from October 2021 onwards was conducted in-person.

In each training course, a mini test was conducted to check the level of understanding of training participant. Furthermore, some homework was also presented to encourage the training participants to consider how they would implement safety management system in their own workplaces, and responses were collected from each participant. The details of the three training sessions on safety management system are shown in Table 3-5. In addition, one training session on “Shisa-kanko” (Pointing and Calling) in a free participation style was held as a practical training session on basic safety confirmation in safety management system.

The materials prepared for each training session are presented in Annex 7.

Table 3-5 Summary of Training in Dhaka

	Date	Number of Participants	Programme (Summary)
1 st Training (Online)	[1 st Batch] 2 nd July to 3 rd July 2021 [2 nd Batch] 9 th July to 10 th July 2021 [3 rd Batch] 16 th July to 17 th July 2021	[1 st Batch] 18 persons [2 nd Batch] 17 persons [3 rd Batch] 20 persons Total: 55 persons	Self-introduction Introduction of Osaka Metro Railway Characteristics and Safety Assurance Mechanism Japanese Railway Accidents and Lessons Learned Development of Safety-First Corporate Culture Introduction of Safety Management System (SMS) in Japan Introduction of SMS in Osaka Metro
2 nd Training (In-person)	[1 st Batch] 8 th October to 9 th October 2021 [2 nd Batch] 21 st October 2021 [3 rd Batch] 24 th October 2021	[1 st Batch] 18 persons [2 nd Batch] 20 persons [3 rd Batch] 20 persons Total: 58 persons	Review of 1st Training Roles and responsibility of each position Safety Related Documents Presentation from the participants Potential Risk in each site
3 rd Training (In-person)	[1 st Batch] 12 th April 2022 [2 nd Batch] 18 th April 2022	[1 st Batch] 25 persons [2 nd Batch] 29 persons Total: 54 persons *including Ministry (RTHD), DMP(Police), FSCD	Practical Daily SMS Activities Response to Emergency Situation Emergency Drill in Exhibition Center (using Mock-up train) Review meeting of Emergency Drill
4 th Training (In-person)	[1 st Batch] 19 th July 2022 [2 nd Batch] 20 th July 2022	(open-style training)	Importance and effect of conducting Basic safety action “Shisa-kanko” Demonstration of “Shisa-kanko” practice software

Source: JICA Expert Team



Source: JICA Expert Team

Figure 3-3 3rd Training in Dhaka (held on 18th April 2022)

A total of three in-person workshops were held in Dhaka to discuss the development of documents related to safety management system within DMTCL and to enhance the on-site work capacity. A summary of the workshops held is shown in Table 3-6.

Due to the wide range of materials prepared during the training sessions and workshops, a set of electronic data was provided to DMTCL for use in future training within DMTCL.

The materials prepared for each workshop and the contents of the discussions are presented in Annex 8.

Table 3-6 Summary of Workshop in Dhaka

	Date	Number of Participants	Programme (Summary)
1 st Workshop	7 th October to 11 th October 2021	11 persons	<ul style="list-style-type: none"> - Outline of Safety Documents and Safety Policy - Discussion on the Contents to be included into the Safety Policy - Discussion on Implementation of Safety Policy
2 nd Workshop	8 th February to 10 th February 2022	20 persons *including RTHD, DTCA, FSCD, DMP, BR, DNCC, DSCC	<ul style="list-style-type: none"> - Introduction of Emergency response and related document structure (including examples of Osaka Metro) - Discussion on the classification of emergency types and those levels - Discussion on each role in emergency response and DMT (Disaster Management Team) - Comments/ final remarks from Osaka Metro
3 rd Workshop	8 th August to 10 th August 2022	19 persons	<ul style="list-style-type: none"> - Outline of Internal Safety Audit System - Discussion on Internal Safety Audit System in DMTCL - Open Discussion on SMS activities

Source: JICA Expert Team



Source: JICA Expert Team

Figure 3-4 2nd Workshop in Dhaka (held on 8th and 10th February 2022)



Source: JICA Expert Team

Figure 3-5 3rd Workshop in Dhaka (held on 8th and 10th August 2022)

3.8.2 Implementation of Training in Japan

Before the commercial operation of MRT Line 6 began, training in Japan was organised in two batches mainly for members who are DMTCL staff expected to be involved in the future operation of MRT and its management, in order to learn about the state of urban railway operations in Japan and state of activity in the workplace which implement the Safety Management system.

As for the participants for the training in Japan, JICA Expert Team nominated members for each batch, and the DMTCL selected and confirmed the members.

An overview of the training programme in Japan is as follows: Visits to various Osaka Metro sites (including test rides in the cabs of operating trains), visits to Osaka Metro training facilities, various lectures and discussions on safety management system, and other site visits related to Japanese railway culture.

Due to the presenting the wide variety of safety contents in the material prepared for the training in Japan, a set of electronic data was provided to the DMTCL for future use in safety management system training within the DMTCL.

Table 3-7 Summary of Training in Japan

	Date	Number of Participants
1st Batch	21st September to 30th September 2022	12 persons (including DMP)
2nd Batch	25th October to 2nd November 2022	15 persons (Including RHTD)

Source: JICA Expert Team

Table 3-8 Programme of Training in Japan (1st Batch)

Date	Training programme
Tuesday 20 th September	[Travel] Dhaka to Bangkok, Bangkok to Haneda
Wednesday 21 st September	[Travel] Bangkok to Haneda, Haneda to JICA Kansai Centre [Orientation] Orientation at JICA Kansai Centre
Thursday 22 nd September	[Lecture] Introduction to Osaka Metro [Lecture] Free discussion on safety report [Lecture] Roles and responsibilities of safety supervisors
Friday 23 rd September	Day off
Saturday 24 th September	Day off
Sunday 25 th September	Historical road trip programme
Monday 26 th September	[Visit] Observation of the facilities in the Human Resources Education Centre [Lecture] Roles and responsibilities of the site manager (administrator) [Lecture] Attitudes and initiatives for safe transport (crew and station staff) [Lecture] Error prevention measures and ensuring employee safety (technical aspects)
Tuesday 27 th September	[Visit] Monitoring the morning rush hour at station [Visit] Observation of fire-fighting and disaster prevention equipment, evacuation routes and flooding countermeasures on the station premises [Visit] Handling of movable platform fences (platform gates), emergency stop signalling devices, etc. [Visit] Observation of specific safety activities at train stations [Lecture] Threats to railway transport safety and their countermeasures [Lecture] Explanation and discussion of the basic regulations for emergency situations of Osaka Metro
Wednesday 28 th September	[Visit] Observation of safety checks and maintenance work on electrical equipment [Lecture] Significance of the Life of Transport Museum (<i>Yuso no Seimeikan</i>) and in-house training initiatives [Visit] Explanation of exhibits at the Life of Transport Museum [Visit] Observation of safety actions at the Midorigi rolling stock plant
Thursday 29 th September	[Lecture] Barrier-free initiatives and hands-on experience [Lecture] Round-table discussion with Osaka Metro Service
Friday 30 th September	[Presentation] Presentation of training results [Presentation] Creation and presentation of commitment cards [Closing ceremony] Awarding of JICA training programme certificates [Travel] Kansai International Airport to Singapore
Saturday 1 st October	[Travel] Singapore to Dhaka

Source: JICA Expert Team

Table 3-9 Participants List of Training in Japan (1st Batch)

Name	Position
Mr. Krishna Kanta Biswas	Additional Project Director, MRT Line-6, DMTCL
Mr. Md. Zakaria	Additional Project Director, MRT Line-6, DMTCL
Mr. Md. Aftabuzzaman	Director (Finance & Accounts), DMTCL
Mr. Nasir Uddin Ahmed	Director-Operation & Maintenance, DMTCL
Mr. Shanti Moni Chakma	(Deputy Secretary) Deputy Project Director, (Land Acquisition & Rehabilitation), MRT Line-6
Mr. Muhammad Shahjahan	Project Manager-1, MRT Line-6, DMTCL
Mr. Md. Abdur Rahman	System Analyst, DMTCL
Mr. Md. Abu Bakor Siddique	Assistant Manager [Mechanical, (Bogie & Pneumatics)], DMTCL
Mr. Md. Uzzal Hossain	Assistant Engineer (Mechanical) (CP-08), MRT Line-6. DMTCL
Mr. Mohd. Abdus Salam	Assistant Manager (Electrical), DMTCL
Mr. Abu Rayhan Muhammad Saleh	Joint Police commissioner (Traffic), Dhaka Metropolitan Police

Source: JICA Expert Team

Table 3-10 Program of Training in Japan (2nd Batch)

Date	Training programme
Monday 24 th October	[Travel] Dhaka to Bangkok, then to Kansai
Tuesday 25 th October	[Travel] Bangkok to Kansai, Kansai to JICA Kansai Centre [Briefing] Briefing by JICA Kansai Centre [Orientation] Orientation by the expert team
Wednesday 26 th October	[Lecture] Introduction to Osaka Metro [Lecture] Free discussion on safety report [Lecture] Roles and responsibilities of safety supervisors [Lecture] Roles and responsibilities of the site manager (administrator)
Thursday 27 th October	[Visit] Observation of the facilities in the Human Resources Education Centre [Lecture] Error prevention measures and ensuring employee safety (technical aspects) [Lecture] Attitudes and initiatives for safe transport (crew and station staff) [Lecture] Barrier-free initiatives and hands-on experience
Friday 28 th October	[Visit] Monitoring the morning rush hour at station [Visit] Observation of fire-fighting and disaster prevention equipment, evacuation routes and flooding countermeasures in the station premises [Visit] Handling of movable platform fences (platform gates), emergency stop signalling devices, etc. [Visit] Observation of specific safety activities at train stations [Lecture] Threats to railway transport safety and their countermeasures [Lecture] Explanation and discussion of the basic regulations for emergency situations of Osaka Metro
Saturday 29 th October	Day off
Sunday 30 th October	Kyoto Railway, historical tour programme
Monday 31 st October	[Visit] Observation of safety checks and maintenance work on electrical equipment [Lecture] Significance of the Life of Transport Museum (<i>Yuso no Seimeikan</i>) and in-house training initiatives [Visit] Explanation of exhibits the Life of Transport Museum

Date	Training programme
	[Visit] Observation of safety actions at the Midorigi rolling stock plant
Tuesday 1 st November	[Lecture] Round-table discussion with Osaka Metro Service [Presentation] Presentation of training results [Presentation] Creation and presentation of commitment cards [Closing ceremony] Awarding of JICA training programme certificates
Wednesday 2 nd November	[Travel] Kansai International Airport to Singapore, then to Dhaka

Source: JICA Expert Team

Table 3-11 Attendance List of Training in Japan (2nd Batch)

Name	Position
Mr. Mohammad Abdur Rouf	Company Secretary, DMTCL
Mr. Md. Moshir Rahman	Director (Planning and Development), DMTCL
Mr. Shaikh Khaliur Rahman	General Manager (Electric), DMTCL
Mr. Md. Iftikhar Hossain	General Manager (Operation), DMTCL
Mr. A.B.M. Arifur Rahman	Project Manager-5, Line-6
Mr. Mohammad Shaiful Islam	Project Manager (Environment&Health Safety), Line-1E/S
Ms. Mst. Maushumi Habib	Deputy Project Director (PE), Line-6
Mr. Md. Zahidur Islam	PS to MD
Mr. Samiul Kadir	Assistant Engineer (Electrical), Line-6
Mr. Raihan Khalil	Assistant Manager (Train Operation), DMTCL
Mr. Mohammad Raihan Farque	Assistant Manager (Inspection& Planning Monitoring), DMTCL
Mr. Swarno Kanti Sarker	Assistant Manager (Mechanical (Aircon&Door)), DMTCL
Ms. Asma Akhtar	Station Controller, DMTCL
Ms. Moriom Afiza	Train Operator, DMTCL
Mr. Muhammad Sher Mahub Murad	Deputy Secretary, Road Transport and Highway Division

Source: JICA Expert Team



Source: JICA Expert Team

Figure 3-6 Training in Japan

In order to implement the safety management system, Involvement of upper management with understanding the importance of them is essential. An invitation to Japan was organised to learn about the railway safety operation and management in Japan and how to prepare for safety at the top of the organization.

The members nominated for the invitation were the MD of DMTCL and DMTCL officials involved at higher levels in the operation of MRT Line 6 and staff training, and members of the supervisory ministries responsible for the operation and supervision of DMTCL, which were finalised by the DMTCL side.

A summary of this invitation is as follows: Visits to various Osaka Metro sites and to Osaka Metro's training facilities, and exchange of opinions with Osaka Metro executives on the establishment of a safety management system. In addition, the preparation meeting for Safety Committee was held in the invitation program, and in the meeting it was confirmed that DMTCL will utilize the safety management documents developed by the support of JICA Expert team and DMTCL will implement Safety Management System by themselves. The 4th JCC was also held to review the results of this project and discuss the sustainable development of DMTCL.

Table 3-12 Summary of Invitation Programme in Japan

	Date	Number of Participants
Invitation Programme for Top Management Level	18th July to 21st July 2023	6 persons

Source: JICA Expert Team

Table 3-13 Program of Invitation Program to Japan

Date	Training programme
Monday 17 th July	[Travel] Dhaka to Singapore
Tuesday 18 th July	[Travel] Singapore to Kansai, Kansai to Hotel Nikko
Wednesday 19 th July	[Visit] Observation of urban development area in Osaka city [Meeting] 4 th JCC meeting [Meeting] Orientation with JICA and JICA Expert Team [Meeting] Kick-off Safety Committee
Thursday 20 th July	[Visit] Observation of Hommachi Station [Visit] Observation of train-crew room [Lecture] Role of the top-manager in SMS [Visit] Observation of “Yuso-no-Seimei-Kan”
Friday 21 st July	[Presentation] Discussion and exchanging opinions with executive staff in Osaka Metro [Presentation] Creation and presentation of commitment cards [Ceremony] Closing ceremony
Saturday 22 nd July	[Travel] Kansai to Dhaka via Singapore

Source: JICA Expert Team

Table 3-14 Attendance List of Invitation Program to Japan

Name	Position	Organization
Mr. M.A.N. Siddique	Managing Director	Dhaka Mass Transit Company Limited
Mr. Md. Aftabuddin Talukder	Project Director of MRT Line-6	Dhaka Mass Transit Company Limited
Mr. Md. Zahid Hossain	Additional Secretary (Urban Transport Wing)	Road Transport and Highways Division
Mr. A K M Hafizur Rahman	Additional Executive Director (Mass Transit) (Joint Secretary)	Dhaka Transport Coordination Authority
Mr. Khondaker Ehteshamul Kabir	Additional Project Director (Admin & Finance)	Dhaka Mass Transit Company Limited
Mr. Md. Saidur Rahman	Principal of MRT Training Center	Dhaka Mass Transit Company Limited

Source: JICA Expert Team



Source: JICA Expert Team

Figure 3-7 Invitation Program to Japan

3.8.3 Implementation of Training in Third Country (Indonesia, Jakarta)

In Indonesia, MRT Jakarta is an urban railway that, like DMTCL, was developed with the technical support from Japan and opened in 2019. Having started MRT operations in December 2022, MRT Jakarta is positioned as the leading urban railway for DMTCL, and its experience in operation and management, as well as its safety management system initiatives, are considered significant for DMTCL, which has just started its operations.

For this reason, training in this third country was held from 15th to 21st March 2023 at MRT Jakarta's training facility for members who are directly involved in the operation of DMTCL.

The training not only included lectures and site visits on safety operation by MRT Jakarta, but also lectures by the JICA Expert Team and discussions on the construction of a future safety management system and its implementation.

Remarks were also made remotely by JICA and Osaka Metro at the opening and closing ceremonies of the training.

The participants from the DMTCL side and the programme of the training in the third country are shown in Table 3-15 and Table 3-16.

The training materials prepared by MRT Jakarta, and the materials prepared by the JICA Expert Team are shown in Annex 9.

Table 3-15 Participants List of Training in Jakarta

No.	Name	Organization	Designation
1	Md. Nazmul Alam	DMTCL	Assistant Engineer (Mechanical)
2	Md. Sajid Hasan	DMTCL	Assistant Manager (Operation Control Center Management)
3	Md. Kamrul Hasan Sagor	DMTCL	Station Controller
4	Md. Jahangir Alom	DMTCL	Station Controller
5	Md. Abdullah Al Rashed	DMTCL	Train Operator

Source: JICA Expert Team

Table 3-16 Programme of Training in Jakarta

No	Activities	Item	Time	Hours
DAY1 (Thu, 16 Mar 2023)				
1	In-Class	Opening ceremony (Management Speech - MRT Jakarta)	08.00-08.30	0.5
2		Introduction of SMS activities in Dhaka (chaired by Nippon Koei)	08.30-09.00	
3	In-Class Training	History of MRT Jakarta & MRT Jakarta Corporate Values	09.00-10.30	1.5
4	In-Class Training	MRT Jakarta Railway Systems	10.30-12.00	1.5
5		Lunch	12.00-13.30	
6	In-Class Training	MRT Jakarta Operations	13.30-15.00	1.5
7	In-Class Training	Crowd Control Management	15.00-16.00	1
8		Break	16.00-16.15	
9	In-Class Training	Risk Management	16.15-17.15	1
DAY2 (Fri, 17 Mar 2023)				
1	In-Class Training	MRT Jakarta Engineering Design	08.30-10.00	1.5
2		Break	10.00-10.15	
3	In-Class Training	Safety Management system	10.15-11.45	1.5
4		Friday Prayer + Lunch	11.45-13.30	
5	Site visit	Workshop	13.30-15.30	2
6		Signalling		
7		Track (Depot Area)		
8		Break	15.30-15.45	
9	Site visit	Warehouse	15.45-17.15	1.5
DAY3 (Sat, 18 Mar 2023)				
1	In-Class Training	Railway Safety	09.00-10.30	1.5
2		Break	10.30-	

No	Activities	Item	Time	Hours
			10.45	
3	In-Class Training	Emergency Preparedness	10.45-12.15	1.5
4		Lunch	12.15-13.30	
5	Site visit	OCC & Train Driver	13.30-15.00	1.5
6	Site visit	Security, Safety & Emergency Equipment	15.30-17.00	1.5
7	Site visit	Stations (Window Time)	23.00-01.00	2
DAY4 (Mon, 20 Mar 2023)				
1	In-Class Training	Incident & Accident Investigation	08.30-10.00	1.5
2		Break	10.00-10.15	
3	In-Class Training	Documentation Procedure	10.15-11.45	1.25
4		Lunch	11.45-13.00	
5	In-Class Training	Inspection & Audit	13.00-14.30	1.5
6		Break	14.30-14.45	
7	In-Class Training	Management Session - Nippon Koei	14.45-15.00	
8	In-Class Training	Management Review & Discussions	15.00-16.30	1.5
9		Closing Ceremony (by Business Expansion Division)	16.30-17.00	

Source: JICA Expert Team



Source: JICA Expert Team

Figure 3-8 Training in Jakarta

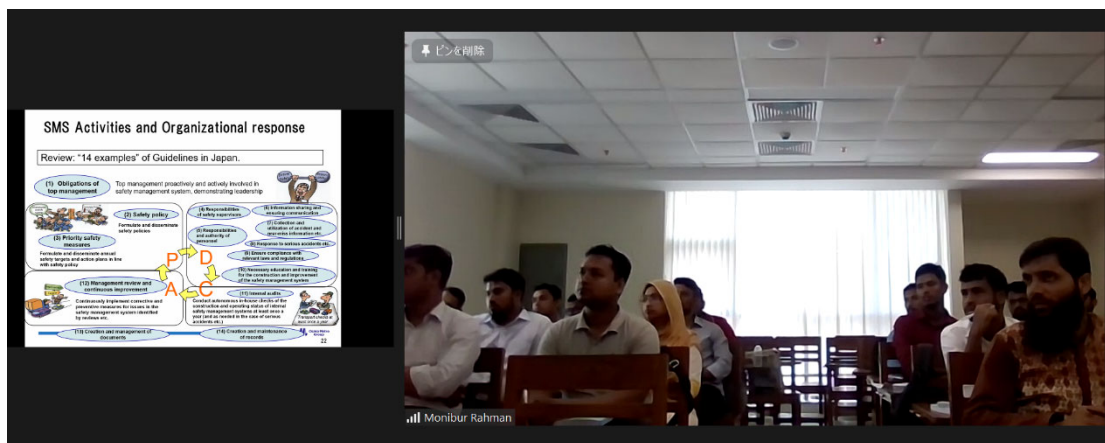
3.8.4 Implementation of Training of Trainers (ToT)

As of June 2023, MRT Line 6 operates on the Uttara North to Agargaon section with limited hours of operation, but expansion of hours and opening of unopened section from Agargaon to Motijheel are expected in the future. Accordingly, the employment and training of staff involved in the operation of the line is progressing gradually.

It is important to continue to provide training on safety management system to all DMTCL staff, including those who are newly employed, in order to promote safety management system throughout the company. To do that, Continuous and company-wide safety management system training should be promoted in the DMTCL even after the completion of this project. Specifically, it is important to establish a system called “Training of Trainers” (“ToT”) in which DMTCL staff who have received training from the JICA Expert Team can become trainers themselves and provide training to other DMTCL staff, utilising the Training Centre set up within DMTCL.

As an initiative of ToT, a session on safety management system was included in the training programme for new employees organised by DMTCL's Training Centre, which was conducted on 16th May 2023 and lectured by DMTCL staff who had been trained by the JICA Expert Team. The JICA Expert Team provided support in the preparation of training materials and assisted the Training online.

Also, in the 4th JCC held on 19th July 2023, There was presentation on internal trainings in DMTCL on safety management system by Mr. Md. Saidur Rahman (The principal of DMTCL’s Training Centre), and Training efforts in DMTCL are expected to continue.



Source: JICA Expert Team

Figure 3-9 Implementation of Training of Trainers (held on 16th May 2023)

3.9 【9】 Procurement of training/communication equipment

In this project, meetings and training sessions were initially conducted online with DMTCL due to travel restrictions, etc. imposed by COVID-19. To ensure smooth communication, online conferencing systems (microphone/camera) were installed on the Japanese and Bangladeshi sides respectively. Wearable cameras were also used to record the training and for use in publicity activities.



Source: JICA Expert Team

Figure 3-10 Procurement Items (Left: Web Camera/Mic System, Right: Wearable Camera)

3.10 【10】 Preparation of Project Completion Report

The Project Completion Report (this report) was prepared jointly by the counterpart organisation DMTCL and JICA Expert Team, summarising the series of SMS-related activities carried out during the project period and the technical cooperation provided by JICA Expert Team.

In addition to what has been done so far, the Project Completion Report also summarises what DMTCL should aim to achieve for continued safety management system based operation in the future after the project is completed, and what DMTCL should continue to implement in the future.

The contents of the report are shown in Table 3-17.

Table 3-17 Table Contents of Project Completion Report

	Date
1	INTRODUCTION
1.1	Importance of Safety Management System
1.2	Background and Objectives of the Project
1.3	Relationship between Line 6GC and the Project
1.4	Outputs of the Work
1.5	Counterparts and Related Organizations
1.6	Establishment of PIU and Its Role
2	SMS related activities which were conducted by the support of JET
2.1	Schedule of SMS related activities conducted in the Technical Cooperation Period
3	Evaluation on the Project Output Items
3.1	Preparation of Work Plan
3.2	Study on the target benchmark and goals
3.3	Preparation of Monitoring Sheet Ver.1
3.4	Explanation, discussion and confirmation of Work Plan Draft
3.5	Setting indicators, benchmark and target goals (Baseline Survey)
3.6	Regular monitoring and confirmation of outputs (held by JCC)
3.7	Preparing and updating regular monitoring sheets
3.8	Implementation of Trainings
3.9	Procurement of training/communication equipment
3.1	Preparation of Project Completion Report
3.11	Establishment of PIU for the Work
3.12	Training to director level and PIU
3.13	Preparation of regulations and manuals by PIU
3.14	Establishment of Safety Management System
3.15	Preparation and evaluation of Safety Management System through the training of emergency activity
3.16	Evaluation of safety management system activity before full opening of MRT Line 6
3.17	Public Relation Activity
4	The gap and issues towards the establishment of SMS in DMTCL
4.1	Status of MRT Line-6 Construction and Operation and SMS implementation corresponding to the status
4.2	Promotion of Recruitment and SMS-related Training in DMTCL
4.3	Enhancement of the awareness of Safety for all DMTCL officials and employees
4.4	Development of necessary documents on SMS after full operation of MRT Line-6
4.5	Continuous Implementation of “SMS PDCA-cycle” after full operation of MRT Line-6
5	The Decision on Project Completion
5.1	Status of MRT Line-6 Construction and Operation and SMS implementation corresponding to the status
5.2	Way forward for continuous implementation of SMS in DMTCL

Source: JICA Expert Team

3.11 [11] Establishment of PIU for the Work

For the establishment of SMS in DMTCL, a Project Implementation Unit (hereafter “PIU”) was established as an executing organisation within DMTCL.

The JICA Expert Team presented the candidate members of PIU in a letter to DMTCL on 27th May 2021, and PIU was established in August 2021 after the selection process by DMTCL.

Since then, there have been changes in PIU members due to transfers, etc., and PIU members as of May 2023 are as shown in Table 3-18 .

In addition, after the completion of this project, the function of PIU, such as planning of SMS activities and its implementation and monitoring etc, will be handed over to Safety Committee described later.

Table 3-18 PIU Member List (as of May 2023)

No.	Name	Designation
01	Mr. Nasir Uddin Ahmed	Director (Operation & Maintenance), DMTCL The Project Manager of PIU
02	Mr. Krishna Kanta Biswas	Additional Project Director, Line-6
03	Mr. Md. Zakaria	Additional Project Director, Line-6
04	Mr. Shaik Khaliur Rahman	Project Manager-4, Line-6
05	Mr. Md. Iftikhar Hossain	General Manager (Operation), DMTCL
06	Mr. A.B.M. Ariful Rahman	Project Manager-5, Line-6
07	Mr. Muhammad Shahjahan	Project Manager-1, Line-6
08	Mrs. Kamrun Nahar	Assistant Engineer (Civil), Line-6
09	Mr. Md. Abu Bakor Siddique	Assistant Manager [Mechanical (Bogie & Pneumatics)], DMTCL
10	Mr. Mohammad Raihan Faruque	Assistant Manager (Inspection & Planning and Monitoring), DMTCL
11	Mr. Md. Sajid Hasan	Assistant Manager (Operation Control Center Management), DMTCL

Source: JICA Expert Team

3.12 [12] Training to director level and PIU

As mentioned in 3.8, safety management system training was conducted in Dhaka, Japan and Jakarta for DMTCL staffs including PIU members and directors involved in MRT operations (Director Operation & Maintenance, etc).

The JICA Expert Team also participated in meetings organised by PIU and provided technical support through presentations, etc. on topics relevant to the agenda.

The documents prepared by the JICA Expert Team for PIU meetings are presented in Annex 10.

Table 3-19 PIU Meeting and Presentation topic from JICA Expert Team

	Date	Presentation topic from JICA Expert Team
1st Meeting	2nd June 2022	Outline and schedule of PIU activities
2nd Meeting	25th July 2022	Finalization of Safety Policy Discussion of "Basic Regulation of Emergency Response"
3rd Meeting	25th August 2022	Finalization of Safety Policy
4th Meeting	22nd November 2022	Accident & Disaster Manual Internal Safety Audit
5th Meeting	4th June 2023	SMS related document Internal Safety Audit Hand-over to Safety Committee

Source: JICA Expert Team

3.13 [13] Preparation of regulations and manuals by PIU

The following documents were discussed and prepared by PIU members for DMTCL's safety management system implementation. The documents covered are listed in Table 3-20.

The compiled documents are presented in Annex 11.

Table 3-20 SMS Related Regulations/Manuals (documents) by PIU

Sl.	Name of document	Status	Remarks
1	Accident, Incidents & Disaster Manual	Draft document is prepared after JET suggested the modification point And waiting for approval by DTCA	Daily MRT operation and Emergency Drills are conducted based on this manual (currently daily/emergency operation is conducted based on current draft Manual)
2	Safety Policy of DMTCL	The content was approved by the Managing Director in December 2022	Design of the poster is also approved and the poster will be hanged in the office and Line-6 stations
3	Basic Procedures of Internal Safety Audit	JET had prepared the draft and handed over to PIU member	JET will also give advice on necessary audit items in DMTCL, and DMTCL should update the documents
4	The procedure manual for Potential Risk report	JET had prepared the draft and handed over to PIU member	Need to be update by DMTCL members based on actual DMTCL operation procedures
5	The procedure manual of Emergency Drill	JET had prepared the draft and handed over to PIU member	Need to be update by DMTCL based on the actual Emergency drill which will be held in future.

Source: JICA Expert Team

3.14 [14] Establishment of Safety Management System

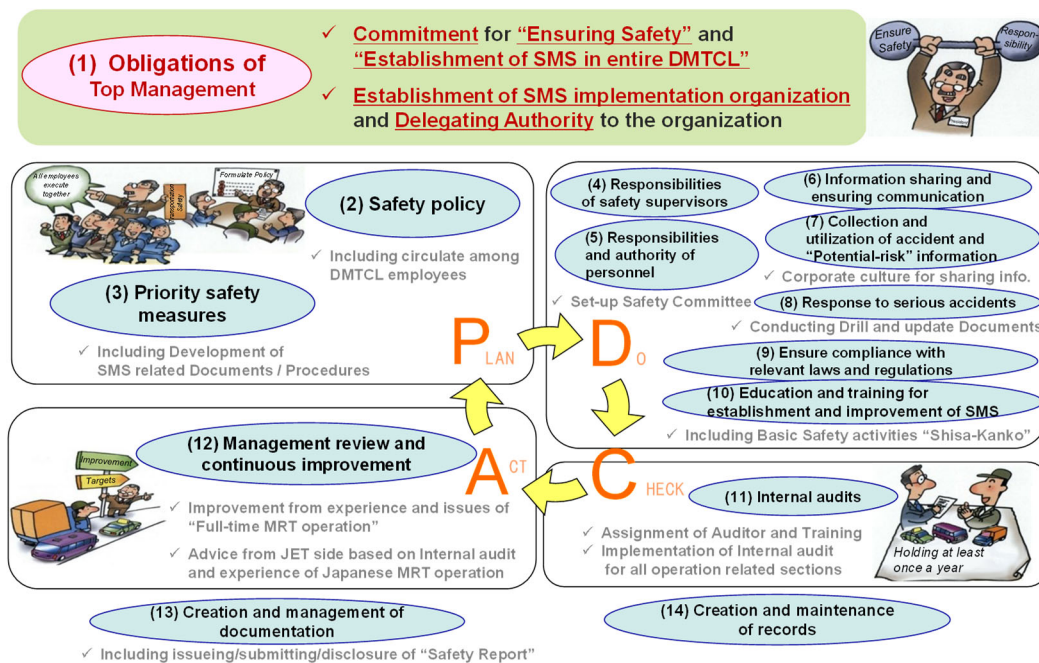
As a mechanism for the autonomous and continuous implementation of safety management system at DMTCL after the completion of the project (improvement of the Safety Management System), it was confirmed in the 4th JCC by the Managing Director of DMTCL that DMTCL will consider and coordinate toward the establishment of Safety Committee, and also the establishment of Internal Audit Team within the Safety Committee.

JICA Expert Team presented the proposed functions (roles) and structure of the Safety Committee to DMTCL, held discussions with DMTCL and supported for the establishment of Safety Committee in the process of selecting and appointing people for each position on the DMTCL side.

The role of the Safety Committee is to continuously implement the series of safety management system activities shown in the Figure 3-11 as a PDCA cycle within the entire DMTCL.

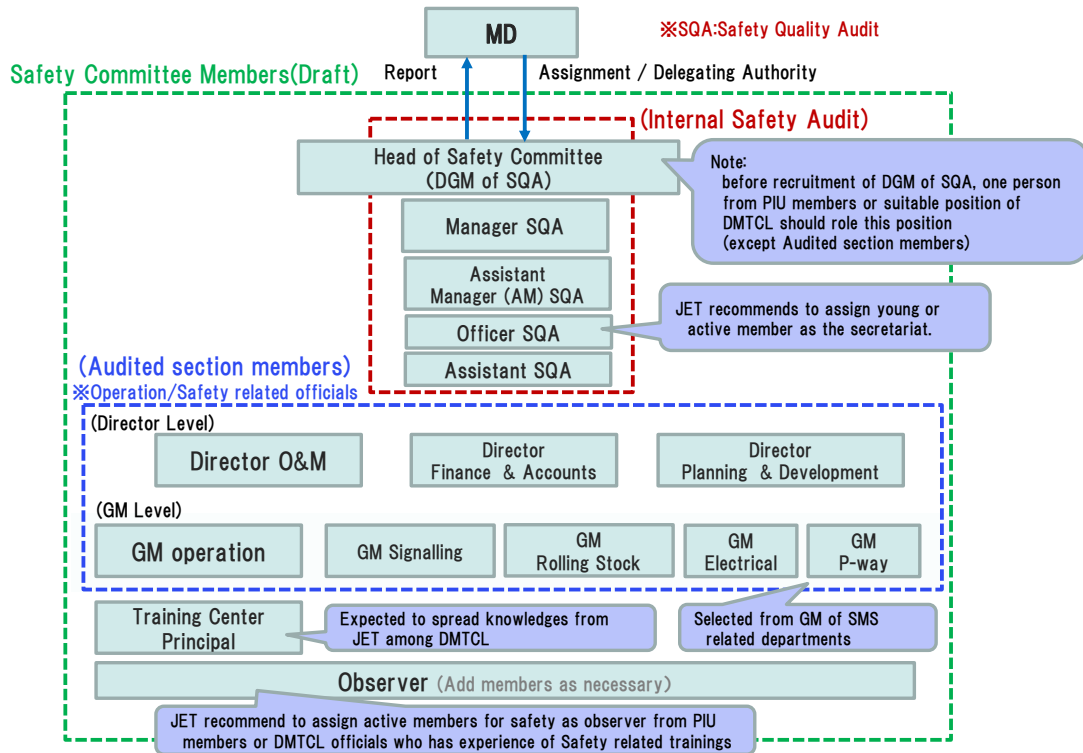
The preparation meeting of the Safety Committee was held on 19th July 2023 to confirm the establishment of the Safety Committee and its future activities, and to have discussion towards utilization and development of SMS related documents for the continuous implementation of SMS activities within DMTCL.

After this project is completed, the Safety Committee will continue to meet regularly to promote the implementation of SMS.



Source: Ministry of Land, Infrastructure and Transport/ JICA Expert Team (Correction)

Figure 3-11 SMS Activity PDCA Cycle to be promoted by Safety Committee



Source: JICA Expert Team

Figure 3-12 Structure of Safety Committee in DMTCL (Proposal from JICA Expert Team)



Source: JICA Expert Team

Figure 3-13 Preparation meeting for Safety Committee (held on 19th July 2023, in the Hybrid style, photo of Japan side)

3.15 [15] Preparation and evaluation of Safety Management System through the training of emergency activity

On MRT Line 6, there are concerns about the occurrence of various emergency incidents that could affect the safe operation of the railway. In preparation for such incidents, it is important to clarify the response policy and response details in the event of an emergency incident through documentation (e.g., Accident, Incidents and Disaster Manual), improve the response capabilities of individual staff by conducting emergency drills based on this documentation, and review documentation based on the results of the emergency drills and examine the response.

Through the training on this project, clarification of the types of emergency incidents that can occur on MRT Line 6 and the understanding of DMTCL staff on the response flow for each type of emergency incident was enhanced.

In addition, based on the series of training on emergency incident response provided by the JICA Expert Team, DMTCL gained momentum to conduct the emergency drill by themselves, with the JICA Expert Team providing technical assistance for the implementation of emergency drills. This has created a structure for DMTCL to plan, organise and conduct its own emergency drills in the future, as required.

The technical assistance from JICA Expert Team side for the emergency drills includes: 1) confirmation of the purpose of the emergency drill and the role of each entity; 2) design of examples of emergency drill scenarios; 3) preparation of evaluation sheets for each participant in the emergency drill; 4) preparation of draft procedures for conducting the emergency drills; and 5) explanation of the details of technical assistance at the joint meeting of DMTCL, experts and the MRT Line 6's GC. The documents prepared for items 1) to 3) are presented in Annex 12.

The emergency drill was conducted in April 2022 before the opening of MRT Line 6, mainly by PIU members using a Mock-up Train. In addition, the diagram-based training was conducted on 8th June 2023 after the opening with the participation of staff involved in actual operation of the stations, Operation Control Centre and Train Operators, etc. The JICA Expert Team provided technical support for the drills, including scenario studies, preparation of evaluation sheets and operational support for every emergency training. The documents prepared by the JICA Expert Team for the drills are shown in Annex 13.

Based on the results of the diagram-based training, a comprehensive drill using actual station facilities and other equipment is planned to be conducted after August 2023, led by the DMTCL.



Source: JICA Expert Team

**Figure 3-14 Emergency Drill before starting MRT operation using Mock-up train
(held on 18th April 2022)**



Source: JICA Expert Team

**Figure 3-15 Emergency Drill after starting MRT operation by participation of
actual operation staffs
(held on 8th June 2023)**

3.16 【16】 Evaluation of safety management activity before full opening of MRT Line 6

The safety management system activities were evaluated in terms of trends in organisational safety awareness, the safety management promotion system, the level of understanding of training and horizontal deployment of safety documents and training contents to staff, the system for responding to emergency incidents after partial opening, and initiatives to improve safety. The summary of evaluations are listed in the Table 3-21.

Table 3-21 Evaluations of Safety management activity

Items	Contents	Evaluation
Safety Awareness	1st, 2nd, and 3rd Baseline Survey	<p>[Evaluations] Safety awareness was found to be high overall. Lack of awareness of human and system errors was evident as a tendency among DMTCL staff. It was clear that DMTCL's corporate culture towards safety tended to be based on top-down decision-making.</p> <p>[Future issues] Exchange of opinions on safety within DMTCL (department, organisation, site, and management) Sharing of information on risks potentially leading to accidents (including human and system errors)</p>
Set up of Safety Management System	Set up of PIU , Workshop, PIU Meeting, Safety Committee	<p>[Evaluations] A promotion organisation within DMTCL for SMS was established and discussions were held on SMS promotion. A selection of documents required by DMTCL was discussed and a draft safety document specific to DMTCL was developed.</p> <p>[Future issues] Ongoing Safety Committee meetings to promote SMS within DMTCL after the project completion. Operationalise the safety documentation in practice and implement necessary revisions. DMTCL to carry out its own reporting when SMS activities are implemented.</p>
Understanding Level of the Training	Series of Training in Dhaka, Training in Japan, Training in Jakarta, etc.	<p>[Evaluations] Training was provided to a wide range of personnel within DMTCL to increase their understanding of the need for and content of SMS and what DMTCL should implement. A commitment card was developed in which the participants of the training pledged their commitment to safety in their own words, based on what they had learned in the training.</p> <p>[Future issues] Practical application of the content of the training and commitment card items</p>
Spreading of knowledge	ToT System, Document Control, Organization System	<p>[Evaluations] Training was provided to a wide range of personnel in DMTCL, and internal trainers were developed. Training including SMS content was initiated for new employees using DMTCL's Training Centre. Internal training methods for SMS were introduced and discussed in Japan with the Principal of DMTCL's Training Centre.</p> <p>[Future issues] Ongoing SMS training needs to be provided as the number of new employees is expected to increase after the project is completed due to the expansion of the operational sections. Training needs to be provided for personnel who have not yet received SMS training.</p>

Items	Contents	Evaluation
Implementation of Safety Management System	Internal Safety Audit, Safety Patrol, Emergency Drill	<p>[Evaluations]</p> <p>A workshop on Internal Safety Audit was held to introduce examples of their implementation in Japan and to discuss how to implement them at DMTCL.</p> <p>An internal system for conducting Internal Safety Audit was established and attempts were made to improve the quality of auditors through simulated Internal Safety Audit and other activities.</p> <p>Safety patrols were conducted at DMTCL stations and Depot to learn how to identify risks potentially leading to accidents and how to prevent them.</p> <p>Workshops on emergency response were conducted to discuss emergency incident methods at DMTCL.</p> <p>Conducted emergency drills before and after the MRT Line 6 opening to confirm the flow of emergency response methods and improve the ability to respond to such incidents.</p> <p>[Future issues]</p> <p>A safety action plan should be developed by the Safety Committee of DMTCL after the project is completed to sustainably promote SMS.</p> <p>The safety action plan should include a schedule for conducting Internal Safety Audit and emergency drills and ensure that they are carried out at least once a year.</p> <p>As various emergency incidents are expected to occur on MRT Line 6 even after the project is completed, the capacity to respond to emergency events needs to be improved through future operational experience.</p> <p>It is desirable for DMTCL to build on its operational and SMS experience and bring it up to the safety level of Japanese railway operators.</p>

Source: JICA Expert Team

3.17 [17] Public Relation Activity

The fact that MRT Line 6 was constructed and opened with the assistance of Japan is widely known locally in Bangladesh through the media. On the other hand, the local media does not actively report on the implementation of technical cooperation related to MRT operation, including the establishment of safety management system, which is difficult to visualise in a tangible form. Through PR activities, the project carried out publicity activities with the aim of spreading awareness of the fact that Japan provided consistent support, including not only technical assistance for construction but also knowledge and know-how for the safe operation of MRT, as well as the specific activities involved. In Japan, there were limited opportunities to publicise through the media, including the fact that MRT Line 6 was constructed with Japan's technical cooperation. Therefore, the publicity for Japan was designed to inform the public about the project activities as well as the fact that the MRT in Bangladesh was constructed with technical cooperation from Japan.

Table 3-22 Aim of PR and its Means in Each Target

Target	Purpose of PR	PR Media
Bangladesh citizens	Make the public aware of the safety management system activities and outputs of the Work and make them aware that MRT is a safe and secure means of transportation.	Local TV commercials, newspapers, animations, and advertisements in the trains and at the station, Flyer
Japanese citizens	The activities of the Work will be publicized, and the details of Japan's international cooperation projects will be made known.	Online articles, journal publications, and animations
Japanese and Bangladesh donors	By making the significance, activity content, and outputs of the Work a common understanding among donor officials in both countries, it will be the result of the international cooperation project.	Safety report and animation

Source: JICA Expert Team

3.17.1 Public Relation Activity for Bangladesh citizens

Public relations activities for Bangladesh citizens covers the following three points:

- Public relations activities to inform citizens that Japan has provided assistance for safe operation of the MRT
- Public relations activities to inform citizens that DMTCL is implementing initiatives to improve safety
- Public relations activities to ensure that users use the MRT safely and comfortably

DMTCL plans to strengthen the implementation of safety-related PR activities, including the use of spaces inside station premises and coaches, as well as issuing Safety Reports from the next fiscal year, etc. Training and individual meetings were held with DMTCL public relations officers to ensure that DMTCL can continue to carry out safety-related public relations activities on a proactive and sustained basis even after the project is completed. Meetings held for the Public Relation officer is aims to understand the importance of the PR activities by introducing the content and examples of PR method at stations. Regarding activities visible to citizens, how to consider PR contents were conveyed to the DMTCL's officer by making PR materials such as Safety Reports and PR materials relating to safety awareness activities. In addition, PR know-how for display the materials using social media site, in station premises and in coaches was lectured to DMTCL's officer. It is expected that DMTCL will utilise these materials in the future and continue to publicise them using DMTCL's own PR media, such as in station buildings, on-board trains and through their social media.

At the beginning of the project, there were plans to use TV commercials to publicise the project, but during the project implementation period, MRT Line 6 was opened as the first urban railway in Bangladesh, and DMTCL suggested that publicity activities should be tailored to the needs of users. Therefore, it was decided between JICA Expert Team and DMTCL that the publicity content should include safety awareness activities to instil among users a culture of riding the MRT with the correct etiquette.

The Managing Director of DMTCL also proposed installing safety policy posters inside station premises to inform passengers about DMTCL's commitment to safe operation and safety management system, and JICA Expert Team supported to provide for making the posters and installing them in station building concourses.

Table 3-23 shows PR activities carried out in Bangladesh under this project.

The respective PR results are also shown in Annex 14.

Table 3-23 Public Relation Activity for Bangladesh

Date	Contents	PR Media
4th April, 2022	The emergency drill using the mock-up train conducted during the third training session and the activities of the project were introduced in local newspapers.	The Daily Star (Newspaper), Prothom Alo (Newspaper)
3rd-7th Nov, 2022	An article in a local newspaper and an online article reported that DMTCL staff received training in safety management system at Osaka Metro during the training in Japan. In the same article, the first female driver and station staff in Bangladesh were introduced, and the need to implement activities related to rule compliance and safety in MRT operations was reported.	Financial Express (Newspaper: Issued on 4th Nov.), NEWAGE (Newspaper: Issued on 5th Nov.), Business Standard (Internet Article: 3rd Nov.), Financial Express (Internet Article: 4th Nov.), NEWAGE (Internet Article: 7th Nov.)
From 11th June, 2023	Safety policy posters were installed in station building concourses to inform passengers about DMTCL's commitment to safe operation. The posters will continue to be displayed after the project is completed.	Safety Policy Poster [DMTCL Facility] All operated stations
From 5th July, 2023	A video was produced and transferred to DMTCL to raise awareness of the following four points, including an actual incident that occurred on Line 6 around March, when the operation of Line 6 began and the daily use of the MRT was in full swing. The video will be made available on DMTCL's YouTube channel and monitors in trains on MRT Line 6. In consideration of those who cannot read, this video has been designed to make the content understandable through animated images. The video will be continuously released at DMTCL facilities and through social media after the project is completed. Caution for approaching the platform door Prevention of using smartphones while walking in train stations How to use the emergency call button Request for cooperation to wait in line and get on the train in order	Safety Videos Public Location [Social Media] YouTube (DMTCL's Account) [DMTCL Facility] Station concourse Inside of passenger's cabin
From 5th July, 2023	Posters were prepared and transferred to DMTCL so that the same content as the safety video could be displayed in paper form where and when it was	Safety Poster Public Location

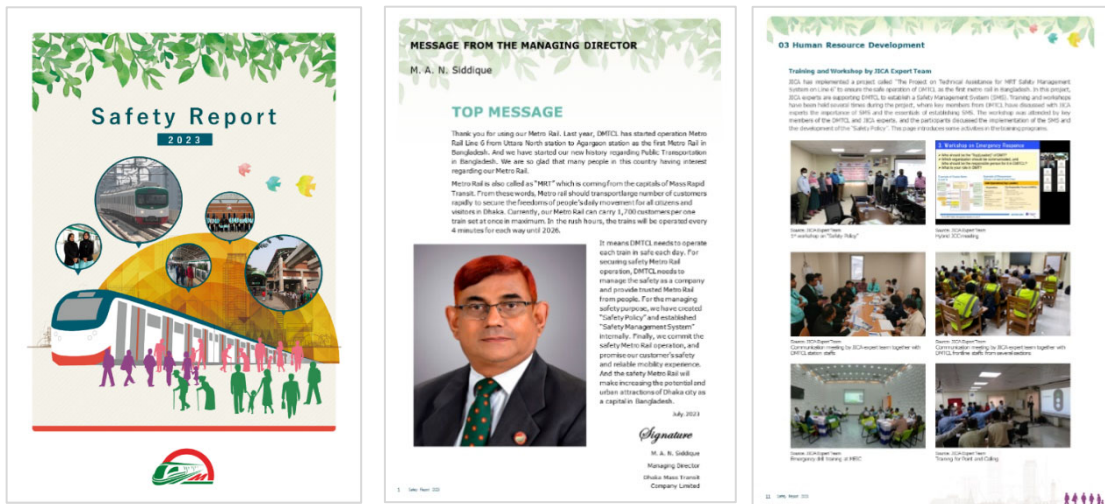
Date	Contents	PR Media
	needed. The posters were displayed on concourses where passengers could easily see them. They will continue to be displayed in station facilities after the project is completed.	[DMTCL Facility] Operating Station
From 5th July, 2023	Flyers were prepared and distributed to MRT passengers at stations as materials to publicise the project activities. Useful information for users was added, such as fare tables and route maps. The aim was to increase the chances that users who picked up the flyer would retain it for a longer period of time and become visually aware of the project's activities.	Project Introduction Flyer
From 5th July, 2023	A Safety Report was prepared by DMTCL as a document for reporting to users on safety and related activities in train operations during the previous year, distributed electronically via the internet. The first edition was prepared jointly by the JICA Expert Team and DMTCL to teach how to prepare the reports, including content selection. The content included a message from the MD of DMTCL, an introduction to the safety policy, an introduction to the safety activities carried out, and a request from DMTCL to the users.	Safety Report

Source: JICA Expert Team



Source: JICA Expert Team

Figure 3-16 Public Relation Activity at MRT Line6 Facility



Source: JICA Expert Team

Figure 3-17 Safety Report (prepared by JICA Expert Team, Excerpt)



Source: JICA Expert Team

Figure 3-18 Project Introduction Flyer (prepared by JICA Expert Team)



Source: JICA Expert Team

Figure 3-19 Safety Poster (prepared by JICA Expert Team, example)



Source: JICA Expert Team

Figure 3-20 Safety Video (prepared by JICA Expert Team, example)

3.17.2 Public Relation Activity for Japanese citizens

It was considered that public relations activities for Japanese citizens would be more effective if they were carried out with those who have a certain level of knowledge, interest and concern for railways and other public transport, with a view to highlighting the importance of technical cooperation in terms of operation. Therefore, the focus of PR activities was narrowed down to knowledgeable people interested in railways, such as railway operators and those involved in related businesses, and the activities of the project and the importance of SMS construction for MRT in Bangladesh were communicated through the media that this target group would see.

At the start of the project, there were plans to publish an article on the project's activities on *TOYOKEIZAI ONLINE*. However, the plan had to be changed because *TOYOKEIZAI ONLINE* was not accepting article submissions at a time when the activities could be introduced to Japanese citizens. As an alternative, the project was published in an article in the *Koutsu Shimbun* newspaper, which has an online page and is widely subscribed to by public transport operators and its stakeholders, and in the monthly *JAPAN RAILFAN MAGAZINE*, which is subscribed to by railway-related industry professionals, railway operators and railway enthusiasts. The article on the *Koutsu Shimbun* newspaper was treated as a general article. On the other hand, the article on the *JAPAN RAIL FAN MAGAZINE* was published as paid public relation.

Details of the PR activities carried out for Japanese citizens are given in the table below.

The respective PR results are shown in Annex 15.

Table 3-24 PR Activities for Japan

Date (Published date)	Contents	PR Media
25th May, 2023	Using trade newspapers specialising in news on public transport operators and related industries, particularly railways, the project was introduced to knowledgeable people who have an interest in railways. The article mentioned that safety-related know-how was transmitted to DMTCL during the training conducted under the project.	Koutsu Shimbun (Newspaper/Internet Article)
21st June, 2023	Using the monthly railway magazine with the largest circulation in Japan, which targets Japan's railway-related industries, railway operators and railway enthusiasts, the project was introduced to knowledgeable people interested in railways, and Line 6 was introduced as a preliminary explanation of the project. It was mentioned that assistance was provided not only for the construction of the railway, but also for education, guidance and support for the establishment of a system to embed safety management system accuracy, which is a key element of safe operation.	JAPAN RAILFAN MAGAZINE (Magazine)

Source: JICA Expert Team



Source: Koutsu Shimbun

Figure 3-21 Article of “Koutsu Shimbun”



Source: Koyusha Co.,Ltd (publishing “Japan Railway Magazine”)

*The article was prepared by JICA Expert Team

Figure 3-22 Article of “Japan Railway Magazine”

4 Gaps and issues to be addressed towards the establishment of SMS in DMTCL

In this chapter, we clarify the gaps and problems with the current situation due to external factors, etc. towards the establishment of SMS in DMTCL.

4.1 Summary of implemented and Achieved project output and Way Forward

Firstly, we have summarized what was actually implemented and achieved for each of the outcomes in the project and way forwards which DMTCL should implement in the future in Table 4-1 and Table 4-2.

Table 4-1 Summary of implemented and Achieved project outputs and Way Forward (1)

Contents of Activities	Achieved project output	Way Forward
[OUTPUT 1] High priority regulations & manuals for safety are regulated		
[1-1] Discussion/Preparation of Safety philosophy/policy	Conducted workshop on Safety Policy and got approval by Managing Director of DMTCL	Continuously dissemination among DMTCL including newly recruited staffs
[1-2] Assignment of PIU	Set up in January 2022	Continuously holding Safety Committee
[1-3] PIU identify the prioritized rules and manual for safety	Discussion of Basic Regulation for Emergency (based on Accident & Disaster Manual) was done	Implementation and revise of safety regulations/manuals towards expansion of MRT operation Final approval of “Accident & Disaster Manual” by DTCA is required
[1-4] PIU discusses and prepares safety regulations/manuals	Prepared the Basic Procedure document of Safety Internal Audit(SIA) and discuss within PIU members	Following up of implementation / update of SMS related document after this project completion is required (operation section /time extension of MRT Line 6 is planned)
[1-5] Safety regulations and/or manuals are approved within DMTCL	Prepared the procedure manual (Basic Procedures of Internal Safety Audit, The procedure manual for Potential Risk report, The procedure manual of Emergency Drill) discuss within PIU members The above documents are approved in kick-off meeting of Safety Committee	
[1-6] Follow-up activities for the implementation and	JET conducted “Safety Patrol” and had discussion	

Contents of Activities	Achieved project output	Way Forward
management of safety regulations and/or manuals	with DMTCL staffs and gave advice to DMTCL	
[1-7] Public Relations (PR) Activities	JET prepared PR materials and conducted PR activities	Continuously implementation of PR activities by DMTCL

Source: JICA Expert Team

Table 4-2 Summary of implemented and Achieved project outputs and Way Forward (2)

Contents of Activities	Achieved project output	Way Forward
[OUTPUT 2] Safety activities will be implemented by DMTCL		
[2-1] Regulations/manuals are shared within DMTCL	Safety Policy is shared among DMTCL	Sharing Safety Policy and Manuals within DMTCL
[2-2] A Internal Safety Audit system is established	Conducted Workshop on Internal Safety Audit and Prepared the Basic Procedure document of Internal Safety Audit and discuss within PIU and its utilization toward SMS in DMTCL was approved in the 4th JCC by the Managing Director of DMTCL Establishment of Internal Safety Audit system	Conduct Internal Safety Audit periodically Improve safety of MRT operation based on the result of Internal Safety Audit
[2-3] Implementation of Training for emergency activities and Review of the safety management plan based on the trainings	Conducted Drill Mock-up train (in April 2022) Conducted Drill on the desk by actual MRT staffs Update/Review of Manuals based on the drill result	Conduct Emergency Drill using actual MRT staff/facilities for various situation Update/Review of Manuals based on the drill result
[2-4] Safety internal controls of DMTCL are established	Supported toward the establishment of Internal Safety Audit system and development of Internal Safety Audit document and its utilization toward SMS in DMTCL was approved in the 4th JCC by the Managing Director of DMTCL Internal Safety Audit Team and preparation for Safety Committee in DMTCL	Continuously holding Safety Committee Conduct Internal Safety Audit periodically
[2-5] Safety management activities by DMTCL will be evaluated and advice will be given by experts	Advice on necessary documents Advice on report/sharing system and countermeasures Conducted Baseline survey	Continuously follow-up and monitoring
[2-6] PR activities related to	Preparation and Publication of	Continuously conduct PR activities

Contents of Activities	Achieved project output	Way Forward
the established SMS will be carried out	Safety Report (JET prepared the draft of 1st edition and DMTCL will prepare from 2nd edition)	by DMTCL Updating and Publication of Safety Report by DMTCL

Source: JICA Expert Team

The following section provides details of what needs to be implemented in the future.

4.2 Status of MRT Line-6 Construction and Operation and SMS implementation corresponding to the status

At the beginning of the project, it was assumed that by the end of 2021, MRT Line 6 would be partially opened from Uttara North Station to Agargaon Station, and by the end of 2022, the entire route to Motijheel Station would be opened. The original schedule of this project was to complete the project after monitoring the establishment and implementation status of the SMS within DMTCL after opening the entire line up to Motijheel Station.

However, due to the impact of COVID-19, etc., which has become more serious since 2020, the actual opening schedule of MRT Line 6 was changed from the initial schedule, and partial opening up to Agargaon Station started from the end of 2022. The MRT Line 6 is in the process of expanding services, and operation including nighttime services (up to 20 pm) started on 31st May 2023, and further operation time expansion will start from within this year.

After the start of operation at the end of 2022, DMTCL employees began to face various safety issues arising from the operation, and awareness of the importance of safety management system is increasing. As an example, external events that affect the safe operation of MRT Line 6 such as stone-throwing, earthquakes, and cyclones have occurred, and it is necessary to consider how to respond in terms of operation to ensure the safety of customers.

On the other hand, it is feared that the potential risk in MRT operation will further increase in the future due to the expansion of operation hours, increase in train operation frequency, and increase in MRT customers. During the project period until June 2023, the JICA Expert Team will provide technical guidance for the above-mentioned potential risks that have become apparent, and we are working to improve the safety management capabilities of DMTCL. After July 2023, it is necessary for DMTCL to consider countermeasures and implement safety management system without support from the JICA Expert Team.

For that, the Safety Committee, which should become the promotion organization for the SMS in DMTCL, is expected to take full responsibility and autonomously promote safety management system to prevent serious accidents from occurring.

4.3 Promotion of Recruitment and SMS-related Training in DMTCL

In order to build SMS for MRT Line 6, it is important to recruit necessary employees related to operation and promotion for safety management system, and it is also important to train staff on safety management system.

The initial assumption is that in the first half of 2021, when this project started, employees involved in the operation of MRT Line 6 will be recruited for partial opening at the end of 2021, and those employees will receive safety management system training from JICA Expert Team.

However, as described in 4.2, due to COVID-19, etc., the schedule for the development and start of operation of MRT Line 6 has been changed, and in relation to this, the employment of the staff necessary for the operation has been delayed.

As for the employment situation as of June 2023, DMTCL is still in the process of recruiting the staff necessary for the operation of the entire route to Motijheel Station, and DMTCL is conducting training related to the operation of urban railways for newly recruited employees. It is necessary to promote the implementation of training related to safety management system in the future.

In addition, the employment of Director and General Manager classes in the operation department of DMTCL began in earnest in 2022. We had no choice but to focus on construction department staff, who are expected to be assigned to the operation department in the future.

Furthermore, as of July 2023, five people were scheduled to be hired for the Internal Quality and Safety Audit team in DMTCL, which is expected to be the internal audit team that plays a very important role in the Safety Management System, but all of the members are not recruited yet. This is the situation, and the JICA Expert Team is also urging DMTCL to promote employment or allocate the necessary staff.

On the other hand, safety awareness related to MRT operation has increased among the personnel who have received training from the JICA Expert Team (site personnel involved in the operation and participants in the training, including those in the construction sector). It is important to promote and disseminate training on safety management system within DMTCL to newly recruited and trained personnel, as has been done by the JICA Expert Team so far. As a system for this, the Training Center has been established within DMTCL to conduct in-house training, and the principal is also active in in-house safety management system training. As part of this, from May 2023, DMTCL staff who have participated in training from the JICA Expert Team will serve as trainers at the Training Center in an in-house training program to give lectures on SMS.

After the completion of this project, DMTCL is expected to continue to provide training on Safety Management System within DMTCL to newly recruited employees and employees who have not yet participated in past safety management system training while utilizing the Training Center.

4.4 Enhancement of the awareness of Safety for all DMTCL officials and employees

For the safe operation of the MRT, it is essential that all DMTCL employees understand the principle that ensuring safety is the top priority and act accordingly.

The initial assumption was that all DMTCL employees would be more aware of the importance of ensuring safety by the end of 2022 when the entire route of MRT Line 6 opened.

In response to the progress of employment described in 4.3, the JICA Expert Team explained the importance of giving top priority to ensuring safety in a series of safety management system training.

And the JICA Expert Team has supported the formulation Safety Policy of DMTCL, which incorporates the top priority of ensuring safety and the Managing Director of DMTCL approved the Safety Policy in December 2022. In addition, during the project period of June 2023, the Safety Policy was posted in the office of DMTCL officials and on the station premises of MRT Line 6.

On the other hand, in Bangladesh, where serious accidents occur frequently in the transport sector, some people lack a sense of crisis about the loss of human life due to accidents and the impact on railway operators when accidents occur, and DMTCL should change and improve the mind of employees if those who have such sense.

It is important to inform all DMTCL employees of the Safety Policy, rather than just creating it. In addition, all DMTCL employees, from the Top Management to on-site employees, are responsible for ensuring that no serious accidents are allowed to occur, and for the realization of the highest priority on ensuring safety and zero accidents as indicated in the Safety Policy. It is important to keep in mind what should be done by each employee and put it into practice.

4.5 Development of necessary documents on SMS after full operation of MRT Line-6

Preparing and developing the necessary documents for the practice of safety management system is important.

The initial assumption was that JICA Expert Team would support the preparation of documents related to the SMS by the end of 2021 and that the operation and review of documents would proceed through operation after the partial opening of MRT Line 6.

The JICA Expert Team has explained the importance of document preparation and document operation in a series of safety management system trainings in response to the situation of the schedule for the start of operation mentioned above, Using the system as a reference, draft safety management system documents for DMTCL were created and shared with PIU members.

However, due to the delay in the schedule for the start of operation of MRT Line 6, the efforts toward the approval of documents related to safety management system within DMTCL was carried out at the preparation meeting for Safety Committee in July 2023, and it was confirmed

by the Managing Director of DMTCL that DMTCL members will discuss on Safety Committee activities including approval and development of safety Management system related documents.

In the future, by accumulating operational experience for the full opening of MRT Line 6 and accumulating experience in such emergency response drills, DMTCL staff will increase the effectiveness of documents related to safety management system, and DMTCL themselves should review and improve the documents.

4.6 Continuous Implementation of “SMS PDCA-cycle” after full operation of MRT Line-6

Safety management system does not end with establishing documents and organizational systems, but it is important to continuously implement and improve through a series of PDCA cycles.

The initial assumption was that the “Plan” stage of the PDCA cycle would be completed by the time of the partial opening of MRT Line 6 in 2021, the “Do-Check-Action” stage would be implemented after the partial opening of MRT Line 6, and the PDCA cycle would continue to be implemented after the full opening of MRT Line 6.

However, since the expansion of operation time and operation section of MRT Line 6 is scheduled in this year, now we have reached the “Plan-Do” stage of the PDCA cycle.

Based on the above situation, in this project, the JICA Expert Team has explained the importance of implementing the PDCA cycle in SMS and the JICA Expert Team has discussed with the members of DMTCL through SMS training and workshops the matters required at each stage.

After the completion of this project, it is assumed that the “Check-Adjustment Action” stage will become particularly important. To that end, it is important for DMTCL to properly record the issues and knowledge obtained through the operation of MRT Line 6, and for DMTCL to consider and implement countermeasures by themselves. In addition, based on the demonstration of the Internal Safety Audit conducted in this project, it is particularly important for DMTCL to conduct an Internal Safety Audit of safety management system and make necessary improvements based on the results of the Audit periodically and continuously.

The JICA Expert Team strongly hopes that DMTCL will implement the PDCA cycle of safety management system and continue safe MRT operation while expanding the operation of MRT Line 6 in the future.

5 Project Completion Decision

5.1 Status of MRT Line-6 Construction and Operation and SMS implementation corresponding to the status

Regarding this project, the following points were confirmed at the final JCC held on July 19th, 2023.

The decision was made to complete the project on 31st July 2023, as scheduled.

[Confirmed Items for Project Completion]

- Initially, the project was supposed to be completed after the full opening of MRT Line 6, but due to the impact of COVID-19, it was delayed until after the partial opening of MRT Line 6. On the other hand, it was judged that each “Output” item described in the work plan of this project was realized by the technical cooperation from the JICA Expert Team and the efforts of DMTCL.
- In addition, it was confirmed by the Managing Director of DMTCL that consideration and coordination toward the establishment of Safety Committee, it was judged that the autonomous and continuous SMS implementation system will be developed by DMTCL after the project is completed.
- As a precondition for the completion of the project, DMTCL will be required to actively implement safety management system based on the principle that ensuring safety is the top priority as an MRT operator. As an example of actively implement of safety management system, SMS related documents such as Accident and Disaster Manual which the JICA Expert Team supported for the improvement of the document and the utilization in emergency case by conducting emergency drill, is utilized for implementation of Safety Management system in DMTCL. At the JCC on 19th July 2023, the Managing Director, the Top Management of DMTCL, expressed his commitment to ensuring safety and his determination to establish and implement SMS in DMTCL. As a result, it was judged that DMTCL has built a system to operate safety management system by itself as a company, so this project will be completed on 31st July 2023.

5.2 Way forward for continuous implementation of SMS in DMTCL

It is necessary for DMTCL to continue to implement the SMS even after the completion of this project. The following items should be implemented by DMTCL to improve the effectiveness of the safety management system that will be established in the future.

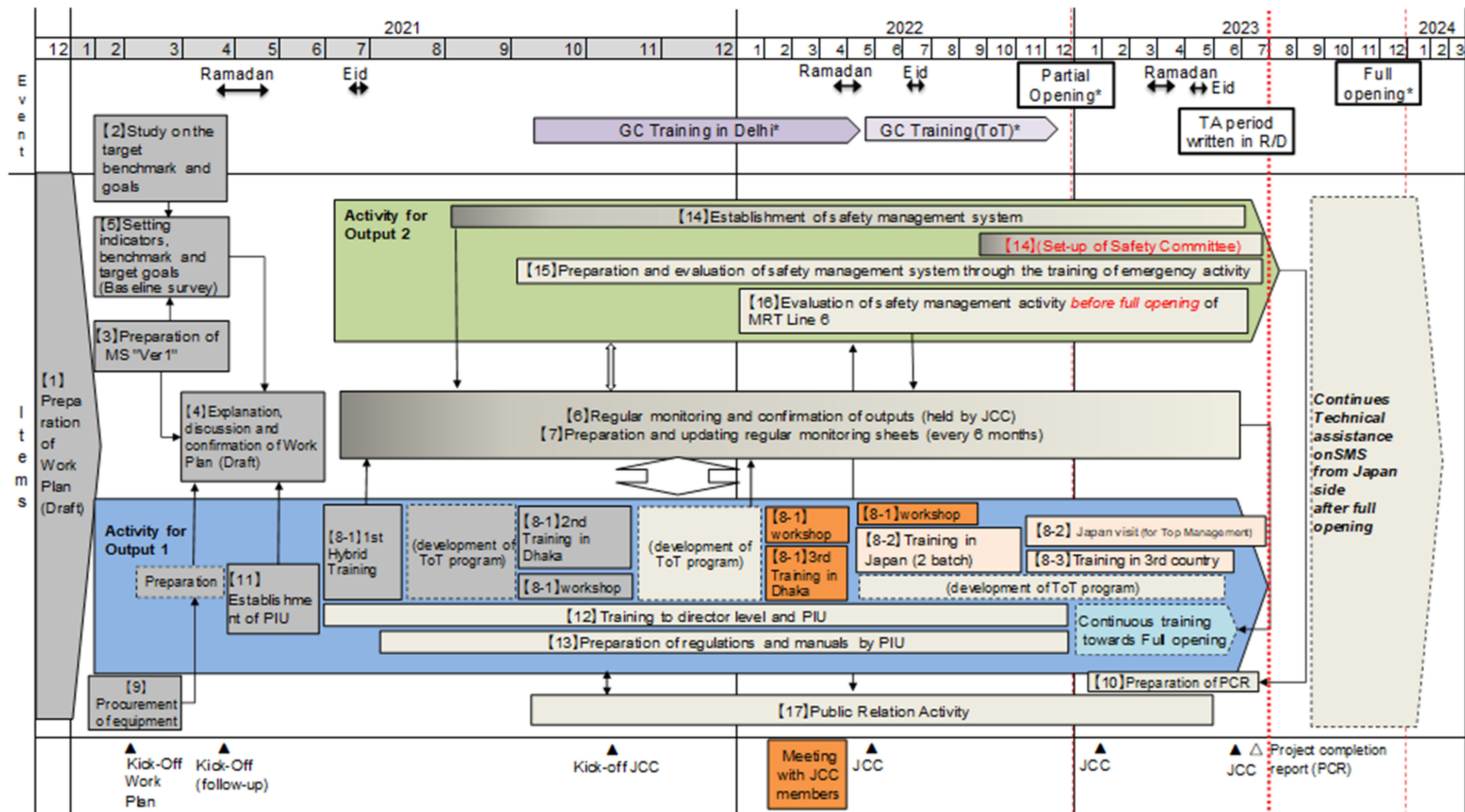
- Cultivate a corporate culture that prioritizes safety based on established safety policies
- Implementation of SMS within DMTCL through the PDCA cycle

- Implementation of continuous education and training for DMTCL employees
- Keeping close communication between on-site staff, Managers, Directors, and the Top Management regarding safety
- Efforts to improve the motivation of employees to improve safety (e.g., praising employees who contributed to SMS)

At the JCC on 19th July 2023, the above confirmation and items to be addressed in the future by DMTCL were confirmed.

Attachment

Attachment 1: Work Flow Chart



Attachment 2: Results of Dispatching Experts (Latest Version of Personnel Plan)

Results of Dispatching of Expert in Japan

	Name	Position			2021																												2022																												Total Days	Total MM																																										
					1							2							3							4							5							6							7							1									2							3							4							5							6							7						
					1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7	1	2	3	4	5	6	7																																																			
Assignment in Japan	Atsushi Mochizuki	Team Leader/ Safety Management	2	Plan	[Gantt chart for 2021-2023]																												60	3.00																																																																						
				Actual	[Gantt chart for 2021-2023]																												50	2.50																																																																						
	Yasuji Ogino	Training Planning (Management Level)/Safety Document Management Plan 1	3	Plan	[Gantt chart for 2021-2023]																												140	7.00																																																																						
				Actual	[Gantt chart for 2021-2023]																												140	7.00																																																																						
	Nobuo Nakai	Training Planning(Safety Staff Level)	3	Plan	[Gantt chart for 2021-2023]																												115	5.75																																																																						
				Actual	[Gantt chart for 2021-2023]																												119	5.95																																																																						
	Keiji Matsuoka	Safety Management (Organization Management)	3	Plan	[Gantt chart for 2021-2023]																												80	4.00																																																																						
				Actual	[Gantt chart for 2021-2023]																												84	4.20																																																																						
	Naoki Yamaguchi	Safety Management (Implementation)	3	Plan	[Gantt chart for 2021-2023]																												35	1.75																																																																						
				Actual	[Gantt chart for 2021-2023]																												35	1.75																																																																						
Successor: Jun Kawashita predecessor: Tokuji Sakai	Safety Management (Document Management)	3	Plan	[Gantt chart for 2021-2023]																												70	3.50																																																																							
			Actual	[Gantt chart for 2021-2023]																												74	3.70																																																																							
Yoshiyuki Tajima	Safety Document Management Plan2	4	Plan	[Gantt chart for 2021-2023]																												80	4.00																																																																							
			Actual	[Gantt chart for 2021-2023]																												80	4.00																																																																							
Ryohei Hashimoto	Training Implementation	6	Plan	[Gantt chart for 2021-2023]																												90	4.50																																																																							
			Actual	[Gantt chart for 2021-2023]																												90	4.50																																																																							
Hayami Saso	Public Relation Activity/ Training Implementation Support	6	Plan	[Gantt chart for 2021-2023]																												40	2.00																																																																							
			Actual	[Gantt chart for 2021-2023]																												40	2.00																																																																							
			Total																													Plan	710	35.50																																																																						
																																Actual	712	35.60																																																																						

Attachment 3: Acceptance of Trainee in Japan

1st Batch Training

Detail Training Schedule

Date	Time		Title of Training	Trainer	Venue			
21 SEP. (Wed)		-				Lecture		
		-				Discussion		
	16:00	-	18:00	Briefing	JICA Kansai	Site visit		
22 SEP. (Thu)	9:00	-	10:00	Orientation	Mr. Mochizuki Nippon Koei	JICA Kansai	Movement	
	10:00	-	10:50	Orientation, review of the objectives and outcomes of this training	Mr. Tajima Nippon Koei			holiday
	11:00	-	12:00	Introduction of Osaka Metro	Mr. Nakai Osaka Metro Service			
	12:00	-	13:00	Lunch Time				
	13:10	-	14:50	Discussion on the safety report	Mr. Mochizuki Nippon Koei			
	15:00	-	17:00	Role and responsible for safety manager	Mr. Onishi Osaka Metro			
	17:10	-	17:40	Making daily report				
23 SEP. (Fri)		-		Japanese National Holiday				
24 SEP. (Sat)		-		Holiday				
25 SEP. (Sun)	9:00	-	17:30	Holiday (Excursion to learn Japanese history)		JICA Kansai → Kyoto		
	7:50	-	8:50	Commute to Nakamozu training center				
26 SEP. (Mon)	9:00	-	10:30	Tour of Nakamozu training center	Mr. Tanda Osaka Metro	Osaka Metro Nakamozu Training Center		
	10:30	-	12:00	Role and responsibility of site manager	Mr. Ogino Osaka Metro Service			
	12:00	-	13:00	Lunch Time				
	13:00	-	14:20	preparedness and initiative for safety operation (Operation department)	Mr. Araki Osaka Metro Service			
	14:30	-	16:30	Error prevention measures and employee safety (Engineering department)	Mr. Matsumoto Osaka Metro Service			
	16:40	-	17:20	Making the daily report				
	17:30	-	18:30	Commute to JICA Kansai center				
27 SEP. (Tue)	6:50	-	7:45	Commute to Umeda st.				
	7:45	-	8:00	Move to each station				
	8:00	-	8:20	Site visit for observation of morning rush time (Group A)	Mr. Yamaguchi Osaka Metro	Umeda st.		
	8:00	-	8:20	Site visit for observation of morning rush time (Group B)	Mr. Simogaichi Osaka Metro	Honmachi st.		
	8:00	-	8:20	Site visit for observation of morning rush time (Group C)	Mr. Haneda Osaka Metro	Yodoyabashi st.		
	8:20	-	8:30	Move to Motomachi st.				
	8:30	-	9:30	Site visit for observation of station disaster equipment (Group A,B,C)	Mr. Simogaichi Osaka Metro	Motomachi st.		
	9:30	-	10:00	Move to Nakamozu st.				
	10:00	-	10:30	Site visit for observation of platform door and emergency stop sign(Group A)	Mr. Yamamoto Osaka Metro	Nakamozu st.		
	10:00	-	11:00	Site visit for observation of activity in crew cabin(Group B,C)	Mr. Hatanaka Osaka Metro			
	11:00	-	11:30	Site visit for observation of platform door and emergency stop sign(Group B,C)	Mr. Yamamoto Osaka Metro			
	11:00	-	12:00	Site visit for observation of activity in crew cabin(Group A)	Mr. Hatanaka Osaka Metro			
	12:00	-	13:00	Lunch time				
	13:00	-	14:20	Threat and countermeasure for train operation	Mr. Kawashita Osaka Metro Service	Nakamozu training center		
	14:30	-	16:50	Lecture and discussion of Osaka metro's emergency response	Mr. Ogino Osaka Metro Service			
	17:00	-	17:20	Making daily report				
	17:30	-	18:30	Commute to JICA Kansai center				
28 SEP. (Wed)	7:50	-	8:50	Commute to Yuso-no-Seimeikan				
	9:00	-	10:00	Observation of safety checks and maintenance work on electrical facilities	Mr. Fukuyama Osaka Metro	Yuso-no-Seimeikan		
	10:10	-	11:20	Explanation of importance of existence and internal training of "Yuso-no Seimeikan"(Safety Museum of Osaka Metro)	Mr. Matsuoka Osaka Metro			
	11:30	-	12:30	Lunch time				
	12:30	-	14:00	Observation of the facilities in "Yuso-no Seimeikan"	Mr. Omae Osaka Metro			
	14:10	-	15:00	Move to Midorigi				
15:00	-	17:20	Observation of safety activities in Midorigi Rolling Stock Inspection Depot	Mr. Otsuka Osaka Metro	Midorigi Depot			
17:30	-	18:30	Commute to JICA Kansai Center					
29 SEP. (Thu)	7:50	-	8:50	Commute to Nakamozu				
	9:00	-	10:30	Lecture for Barrier free	Mr. Matsuyama Osaka Metro	Nakamozu training cen		
	10:40	-	11:40	Trial and Lecture for barrier free	Mr. Matsuyama Osaka Metro			
	12:00	-	13:00	Lunch Time				
	13:00	-	15:50	Summarize of Training of Japan by trainee				
	16:00	-	17:20	Discussion with Osaka Metro Service	Mr. Uebayashi Osaka Metro Service			
	17:30	-	18:30	Commute to JICA Kansai center				
9:00	-	11:00	Summary of training outcomes					
30 SEP. (Fri)	11:10	-	12:00	Presentation of summary of training outcomes		JICA Kansai		
	12:00	-	13:30	Lunch time				
	13:30	-	14:00	Making commitment card	Mr. Hashimoto Nippon Koei			
	14:10	-	15:30	Presentation of commitment card				
	15:40	-	16:30	Closing ceremony				

Participants

Name	Position
Mr. Krishna Kanta Biswas	Additional Project Director, MRT Line-6, DMTCL
Mr. Md. Zakaria	Additional Project Director, MRT Line-6, DMTCL
Mr. Md. Aftabuzzaman	Director (Finance & Accounts), DMTCL
Mr. Nasir Uddin Ahmed	Director-Operation & Maintenance, DMTCL
Mr. Shanti Moni Chakma	(Deputy Secretary) Deputy Project Director, (Land Acquisition & Rehabilitation), MRT Line-6
Mr. Muhammad Shahjahan	Project Manager-1, MRT Line-6, DMTCL
Mr. Md. Abdur Rahman	System Analyst, DMTCL
Mr. Md. Abu Bakor Siddique	Assistant Manager [Mechanical, (Bogie & Pneumatics)], DMTCL
Mr. Md. Uzzal Hossain	Assistant Engineer (Mechanical) (CP-08), MRT Line-6. DMTCL
Mr. Mohd. Abdus Salam	Assistant Manager (Electrical), DMTCL
Mr. Abu Rayhan Muhammad Saleh	Joint Police commissioner (Traffic), Dhaka Metropolitan Police

2nd Batch Training

Detail Training Schedule

Date	Time	Title of Training	Lecturer / Person in Charge	Venue	Note	Present to Osaka metr	
25 Oct. (Tue)	14:00 - 16:00	Briefing	Mr. Shimizu JICA Kansai	JICA Kansai Seminar Room (SR XX)			Lecture
	16:10 - 17:00	Orientation	Mr. Mochizuki Nippon Koei				Discussion
26 Oct. (Wed)	9:00 - 10:30	Introduction of Osaka Metro	Mr. Nakai Osaka Metro Services	JICA Kansai Seminar Room (SR XX)			Closing ceremony
	10:40 - 12:00	Discussion on the safety report	Mr. Mochizuki Nippon Koei				Movement
	12:00 - 13:00	Lunch Time					Holiday
	13:00 - 15:00	Role and responsibility of safety manager	Mr. Onishi Osaka Metro				From Rouf san
	15:10 - 17:30	Role and responsibility of site manager	Mr. Ogino Osaka Metro Services				Closing ceremony
27 Oct. (Thu)	8:30 - 9:20	Commute to Nakamozu training center by JICA bus		Osaka Metro Nakamozu Training Center	Meet at JICA Kansai lobby at 8:25. Please get your breakfast box in the evening (Oct.27) for the next day (Oct.28)		
	9:30 - 11:00	Tour of Nakamozu training center	Mr. Sano Osaka Metro				From Itikar san
	11:10 - 12:10	Error prevention measures and employee safety (Engineering Department)	Mr. Matsumoto Osaka Metro Services				From Arif san
	12:10 - 13:10	Lunch Time					
	13:10 - 14:20	Preparedness and initiative for safety operation (Operation Department)	Mr. Araki Osaka Metro Services				From Asma san
	14:30 - 17:00	Lecture for Barrier free	Mr. Matsuyama Osaka Metro Services				From Afiza san
28 Oct. (Fri)	7:00 - 7:45	Commute to Umeda Station by JICA bus			Meet at the JICA Kansai lobby at 6:55. (Sorry for early morning!)		
	7:45 - 8:00	Move to each station by Osaka Metro subway Midosuji Line					
	8:00 - 8:20	Site visit for observation of morning rush time (Group A)	Mr. Yamaguchi Osaka Metro	Umeda Station			
	8:00 - 8:20	Site visit for observation of morning rush time (Group B)					
	8:00 - 8:20	Site visit for observation of morning rush time (Group C)	Mr. Shimogaichi Osaka Metro	Honmachi Station			
	8:00 - 8:20	Site visit for observation of morning rush time (Group D)	Mr. Haneda Osaka Metro	Yodoyabashi Station			
	8:20 - 8:30	Move to Honmachi Station					
	8:30 - 9:30	Site visit for observation of station disaster equipment (Group A,B)	Mr. Shimogaito Osaka Metro	Honmachi Station			
	8:30 - 9:30	Site visit for observation of station disaster equipment (Group C,D)					
	9:30 - 10:00	Move to Nakamozu st.					
	10:00 - 10:30	Site visit for observation of platform door and emergency stop sign(Group A, B)	Mr. Yamamoto Osaka Metro				
	10:00 - 11:00	Site visit for observation of activity in crew cabin(Group C,D)	Mr. Hatanaka Osaka Metro				
	11:00 - 11:30	Site visit for observation of platform door and emergency stop sign(Group C,D)	Mr. Yamamoto Osaka Metro				
	11:00 - 12:00	Site visit for observation of activity in crew cabin(Group A,B)	Mr. Hatanaka Osaka Metro				
	12:00 - 14:00	Lunch/pray time					
	14:00 - 15:00	Threats and countermeasures for train operation	Mr. Kawashita Osaka Metro Services	Osaka Metro Nakamozu Training Center			Closing ceremony
	15:10 - 17:00	Lecture and discussion of Osaka metro's emergency response	Mr. Ogino Osaka Metro Services				Closing ceremony
	17:00 - 17:50	Move back to JICA Kansai center by JICA bus					
29 Oct. (Sat)	-	Weekend					
30 Oct. (Sun)	10:00 - 17:30	Kyoto Railway and Historical Site Visit Program	Mr. Tajima Nippon Koei		Meet at JICA Kansai lobby at 9:55.		
31 Oct. (Mon)	8:30 - 9:20	Commute to Yuso-no-Seimeikan (Safety Museum of Osaka Metro)		Yuso-no-Seimeikan	Meet at JICA lobby at 8:25		
	9:30 - 10:40	Observation of safety checks and maintenance work on electrical facilities	Mr. Fukuyama Osaka Metro				From Samiul san
	10:50 - 11:20	Explanation of importance of existence and internal training of "Yuso-no Seimeikan"(Safety Museum of Osaka Metro)	Mr. Matsuo Osaka Metro				Closing ceremony
	11:20 - 12:40	Observation of the facilities in "Yuso-no Seimeikan"	Mr. Misaki Osaka Metro				From Khalil san
	12:40 - 13:40	Lunch time					
	12:40 - 13:40	Explanation of Final Presentation(Lunch meeting, 10 min.)	Mr. Mochizuki Nippon Koei				
	13:40 - 15:00	Move to Midorigi					
15:00 - 17:00	Observation of safety activities in Midorigi Rolling Stock Inspection Depot	Mr. Otsuka Osaka Metro	Midorigi Depot	From Khalilur san			
17:00 - 17:50	Move back to JICA Kansai Center by JICA bus						
1st Nov. (Thu)	8:30 - 9:20	Commute to Nakamozu by JICA bus		Nakamozu training center	Meet at JICA lobby at 8:25		
	9:30 - 10:20	Summarize of Training in Japan (by trainees)	Mr. Mochizuki				
	10:30 - 12:00	Discussion with Osaka Metro Services	Mr. Uebayashi Osaka Metro Services				From Zahidul san
	12:00 - 13:00	Lunch Time					
	13:00 - 15:00	Presentation of training outcomes and its summary	Mr. Tajima Nippon Koei				
	15:10 - 16:10	Making commitment card and its presentation	Mr. Hashimoto Nippon Koei				
	16:30 - 17:00	Closing ceremony					
17:00 - 17:50	Move back to JICA Kansai center by JICA bus						
2nd Nov. (Wed)	9:00	Leave JICA Kansai for the Airport (Kansai International)					

Participants

Name	Position
Mr. Mohammad Abdur Rouf	Company Secretary, DMTCL
Mr. Md. Moshir Rahman	Director (Planning and Development), DMTCL
Mr. Shaikh Khaliur Rahman	General Manager (Electric), DMTCL
Mr. Md. Iftikhar Hossain	General Manager (Operation), DMTCL
Mr. A.B.M. Arifur Rahman	Project Manager-5, Line-6
Mr. Mohammad Shaiful Islam	Project Manager (Environment&Health Safety), Line-1E/S
Ms. Mst. Maushumi Habib	Deputy Project Directore (PE), Line-6
Mr. Md. Zahidur Islam	PS to MD
Mr. Samiul Kadir	Assistant Engineer (Electrical), Line-6
Mr. Raihan Khalil	Assistant Manager (Train Operation), DMTCL
Mr. Mohammad Raihan Farque	Assistant Manager (Inspection& Planning Monitoring), DMTCL
Mr. Swarno Kanti Sarker	Assistant Manager (Mechanical (Aircon&Door)), DMTCL
Ms. Asma Akhtar	Station Controller, DMTCL
Ms. Moriom Afiza	Train Operator, DMTCL
Mr. Muhammad Sher Mahbub Murad	Deputy Secretary, Road Transport and Highway Division

JICA Invitation Program to Japan

Detail Invitation Schedule

Date	Time	Program	Lecture from	Venue
17th July 2023		[Movement] Dhaka - Singapore		
18th July		[Movement] Singapore - Kansai - Hotel		
19th July	10:00	Short Osaka Tour	Mr. Aida UR Linkage Co.,Ltd.	Umeda area
	14:00	4th JCC Meeting		Hotel Nikko Room: Magnolia
	16:30	Preparation Meeting for Safety Committee		Hotel Nikko Room: Magnolia
20th July	8:30	Observation of Station safety facilities and SMS activities in station during Rush-hour and ride on MRT	Mr. Fuchihara Osaka Metro	Honmachi Station Osaka Metro
	9:00	Observation of SMS activities in Station master room	JET	
	9:30	Observation of SMS activity on the train cab/ Platform	JET	
	10:30	Observation of SMS activity in crew office	Mr. Kobayashi Osaka Metro	Yuso-no-Seimei-Kan Morinomiya Depot, Osaka Metro
	13:30	Lecture of Role of Top Management in SMS	Mr. Ogino Osaka Metro Service	Yuso-no-Seimei-Kan Morinomiya Depot, Osaka Metro
	15:30	Observation of Safety Museum of Osaka Metro	Mr. Matsuoka Osaka Metro	Yuso-no-Seimei-Kan Morinomiya Depot, Osaka Metro
	9:00	Introduction of Osaka Metro	Mr. Nakai Osaka Metro Service	Osaka Metro Headquarter
	9:45	Making a Commitment Card		Osaka Metro Headquarter
	10:00	Exchange of Opinion with Top management of Osaka Metro	Mr. Ito, Mr. Nabeshima, Mr. Hirohata, Mr. Yagi Osaka Metro	Osaka Metro Headquarter
	12:00	Closing Ceremony		Osaka Metro Headquarter
	13:15	Prayer time		Osaka Masjid
21st July		[Movement] Kansai- Singapore - Dhaka		

Participants

Name	Position	Organization
Mr. M.A.N. Siddique	Managing Director	Dhaka Mass Transit Company Limited
Mr. Md. Aftabuddin Talukder	Project Director of MRT Line-6	Dhaka Mass Transit Company Limited
Mr. Md. Zahid Hossain	Additional Secretary (Urban Transport Wing)	Road Transport and Highways Division
Mr. A K M Hafizur Rahman	Additional Executive Director (Mass Transit) (Joint Secretary)	Dhaka Transport Coordination Authority
Mr. Khondaker Ehteshamul Kabir	Additional Project Director (Admin & Finance)	Dhaka Mass Transit Company Limited
Mr. Md. Saidur Rahman	Principal of MRT Training Center	Dhaka Mass Transit Company Limited

Attachment 4: Results of Provided Equipments

Our Ref. No. JET-MRTJ-23-026

Your Ref. No.

Date: 31/7/2023

Subject: Transfer of JICA Procurement

Mr. Atsushi Mochizuki team leader of The Project on Technical Assistance for Mass Rapid Transit Safety Management System of Line 6, transfer the following table items used project period to DMTCL.

Items	Transfer into	Number of items
Gopro Camera	DMTCL	1
Gopro Battery	DMTCL	5
Gopro Battery Charger	DMTCL	2
Gopro Tripod	DMTCL	1
Gopro Micro SD Card 128GB	DMTCL	1
Meeting Owl (Web Camera/ Micro Web Camera)	DMTCL	3
Laptop	DMTCL	3
Projector	DMTCL	1

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Atsushi MOCHIZUKI

Team Leader

THE PROJECT ON TECHNICAL
ASSISTANCE FOR MASS RAPID
TRANSIT SAFETY
MANAGEMENT SYSTEM OF LINE
6 (JICA Expert Team)

Name:

Position:

Dhaka Mass Transit Company
Limited (DMTCL)

Attachment 5: JCC Meeting Minuets

Date	Meeting Name
9 November 2021	1 st JCC
21 April 2022	2 nd JCC
7 February 2023	3 rd JCC
19 July 2023	4 th JCC

Mass Rapid Transit Safety Management System of Line 6

Minutes of Meeting

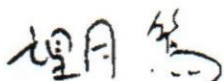
Subject	1st Joint Coordinating Committee (JCC) Meeting
Location	Meeting Room at DMTCL and Zoom Cloud
Date	09 November 2021
Time	10:00 – 12:00 (Bangladesh time)
Participant	<p>[DMTCL] M. A. N. Siddique (MD), Md. Abdur Rouf (Company Secretary). S. M. Shifur Rahman (PS to MD), Md. Aftabuddin Talukder (PD, 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)	1. Outline of Technical Cooperation and the Project After the introduction of participants, JICA made presentation on Outline of the Project.
Mr. Mochizuki (JET)	2. Explanation of Introduction and Progress on SMS Activities JICA Expert Team (JET) explained the following items: 1) Introduction of Safety Management System (SMS) 2) Current Progress on SMS Activities 3) Work Schedule
Mr. Debashish Vardhan (FSCD)	3. Discussion Regarding the SMS Activities 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.
Mr. Ogino (JET)	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.
Mr. Abdul Rouf (DMTCL)	3) Procurement of modern equipment is important to enhance railway safety and mitigate the risk.
Mr. Saidur Rahman (Line 6)	4) We have considered the fire prevention, mitigation and evacuation in the design stage. However, we need to coordinate with FSCD to have trainings.
Mr. Abdul Matin Chowdhury (Line 5: North)	5) A few months ago, we had meetings with FSCD and consultant team of Line 1 & 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

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)

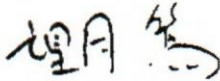
Speaker:	Content:	Action by:	By When	Decision
MD (DMTCL)	<p>1. Opening Remarks</p> <p>Welcoming all participants.</p>			
Mr. Koizumi (JICA)	<p>2. Opening Remarks</p> <p>1) Self-introduction and thanking everyone related to this project.</p> <p>2) Describe the importance of practicing emergency response 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

*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), Hosneara 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)	Mentioned two points; 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. 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.			
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)	In continuation of Mr. Zakaria, he mentioned two points 1. JET team is requested to make a training module for the DMTCL training academy. 2. JET team is requested to share the findings they made by visiting various sites and stations.			
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.			

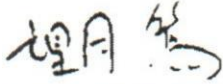
Speaker:	Content:	Action by:	By When	Decision
Mochizuki (JET)	JET visited various site stations and station control rooms. According to Osaka Metro members, the station control room has adequate facilities to deal with emergencies. After talking with MRT staff, Osaka Metro members found that they do 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>

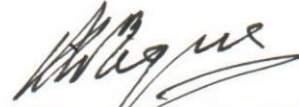
Speaker:	Content:	Action by:	By When	Decision
	4. Request for preparing videos: He requested JET for assisting DMTCL in preparing Safety Management System videos.	JET	As soon as possible	As requested
	5. Format for Safety Audit: He requested JET to provide format of safety audit to DMTCL for conducting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

Minutes of Meeting

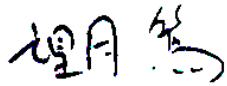
Subject:	4th Joint Coordination Committee (JCC) Meeting
Location:	31st Floor, Conference Room, Hotel Nikko, Osaka, Japan and 13th Floor, Conference Room, DMTCL, Dhaka, Bangladesh and Zoom
Date:	19th July 2023, 14:00– 15:30 (Japan Standard Time)
Participant:	<p>[DMTCL] M.A.N Siddique (MD), Md. Aftabuddin 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

Attachment 6: Results of Technical Products

Materials listed in the following table are shown in “Technical Products” part.

No.	Material
Annex 1	Work Plan (Draft)
Annex 2	Revised Work Plan
Annex 3	Baseline Report
Annex 4	Public Awareness Survey Report
Annex 5	JCC Materials
Annex 6	Meeting Minuets of JCC
Annex 7	Materials for Technical Training
Annex 8	Materials for Workshop
Annex 9	Training Materials in MRT Jakarta
Annex 10	PIU Meeting Materials Prepared by JET
Annex 11	Prepared SMS Documents and Manuals
Annex 12	Materials for Emergency Drill in April 2022
Annex 13	Materials for Emergency Drill in June 2023
Annex 14	Results of PR Activity in Bangladesh
Annex 15	Results of PR Activity in Japan
