

**Approval Conditions
for Operating
Mandatory Safety Training Courses**

Part II – Module 4

Course Design and Specifications

For

- (A) Training Course for New Operators of Loadshifting Machine**
- (B) Training Course for Experienced Operators of Loadshifting Machine**
- (C) Revalidation Training Course for Operators of Loadshifting Machine**

Version Control Record

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Inquiry

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Annex 1 Qualifications of a Loadshifting Machine Training Course Trainer

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1. Overview

- 1.1 The terms and abbreviations adopted in this module follow those defined in Part I. This module is Part II – 4 of the AC which covers 3 loadshifting machine operator training courses, i.e. 2 full courses and 1 revalidation course. This module should be read together with Part I of this AC.
- 1.2 The LD has introduced loadshifting machine training in specified industries by enacting the Factories and Industrial Undertakings (Loadshifting Machinery) Regulation, (“the Regulation”), Cap 59AG. Under the Regulation, the person operating a specified loadshifting machine should have successfully completed the relevant safety training course and have been issued with a relevant certificate. In this regard, the CL is empowered by the Regulation to recognise the following safety training courses.
- (A) Training Course for New Operators of Loadshifting Machine (“full course (New Operator)”);
 - (B) Training Course for Experienced Operators of Loadshifting Machine (“full course (Experienced Operator)”); and
 - (C) Revalidation Training Course for Operators of Loadshifting Machine (“revalidation course”).
- 1.3 Procedures for application for course recognition are stipulated in the GN. Applicant who wishes to run any full course or revalidation course should submit an application to the CL for course recognition.
- 1.4 Unless stated otherwise, requirements stated in this module are applicable to any full course and revalidation course.
- 1.5 TCP should ensure that the course materials used should comply with the requirements of this module.
- 1.6 The objective of the full course is to provide appropriate knowledge

and skills to operators of loadshifting machine to enhance or reinforce their occupational safety and health awareness and prevent work accidents and occupational diseases in connection with the operation of the particular type of loadshifting machine. The trainees will be issued with a certificate upon successful completion of the course.

1.7 Revalidation course aims to provide refresher training to holders of operator certificates, which are expired or expiring, so as to enhance or reinforce their occupational safety and health awareness and prevent work accidents and occupational diseases in connection with the operation of the particular type of loadshifting machine. Upon successful completion of the course, the trainee will be issued with a new certificate.

1.8 At the end of **any** full courses, the trainees should be able to:

1.8.1 Describe the basic legal requirements prescribed under relevant safety legislation applicable to the operation of the type of loadshifting machine;

1.8.2 Understand the construction, performance, maintenance and operation of the type of loadshifting machine;

1.8.3 List potential hazards and their preventive measures in relation to the operation of the type of loadshifting machine;

1.8.4 Analyse possible causes of accidents associated with the type of loadshifting machine and ways/means of preventing such accidents;

1.8.5 Demonstrate appropriate skills necessary to operate relevant loadshifting machine safety;

1.8.6 Demonstrate the necessary safety attitude to safeguard themselves and other workers while operating the particular type of loadshifting machine; and

1.8.7 Grasp the types, purposes, correct selection procedures and the proper use of personal protective equipment commonly used.

1.9 At the end of revalidation course, the trainees should be able to:

1.9.1 Describe the basic legal requirements prescribed under

- relevant safety legislation applicable to the operation of the type of loadshifting machine;
- 1.9.2 List potential hazards and their preventive measures in relation to the operation of the type of loadshifting machine;
- 1.9.3 Analyse possible causes of accidents associated with the type of loadshifting machine and ways/means of preventing such accidents;
- 1.9.4 Describe the typical/alarming accidents (including causes and related preventive measures) associated with the operation of loadshifting machine, in particular those occurred during the five years preceding the conduct of the course;
- 1.9.5 Describe new technological advancements and developments in work procedures or equipment usage associated with the operation of loadshifting machine, particularly those that occurred during the five years preceding the conduct of the course; and
- 1.9.6 Grasp the types, purposes, correct selection procedures and the proper use of personal protective equipment commonly used.

2. Admission criteria

- 2.1 Full course (New Operator) is run for trainee who
- does not possess experience in operating the particular type of loadshifting machine and not hold a relevant operator certificate, or
 - possesses a relevant operator certificate which has expired for more than 3 months.
- 2.2 Full course (Experienced Operator) is run for trainee who-
- possesses prior knowledge and experience in operating the particular type of loadshifting machine (required experience specified in column 4 of the table at **Annex 3** and gained not contravene to the Regulation) but without holding a relevant operator certificate, and his/her experience has to be verified in writing by the employers that the applicant has actively

engagement in the operation of the particular type of loadshifting machine in specified years of working; or

- possesses a relevant operator certificate which has expired for more than 3 months.

2.3 A TCP should ensure that applicant to be admitted to a revalidation course should-

- at the time of application, be holding a relevant operator certificate which either will expire within 6 months or has expired for not more than 3 months; and
- fulfill the following experience requirement for renewal of the certificate preceding application and attendance of the course, and the applicant's experience has to be verified in writing by the employers that the applicant has actively engagement in the operation of the particular type of loadshifting machine in specified years of working.

(i) Current employer's certification showing that the operator has operated the type of loadshifting machine for at least 6 working days; or

(ii) One and a half years' experience in operating the type of loadshifting machine in the past 5 years; or

(iii) 6 months' experience in operating the type of loadshifting machine in the preceding year.

2.4 A TCP should ensure that trainee admitted to its full course (new operator), full course (experienced operator) and revalidation course has attained the age of 18 years.

3. Qualifications of trainer

3.1 A TCP should ensure that its trainer should at least possess the specified qualifications stipulated in **Annex 1**.

4. Trainees to trainer ratio

- 4.1 A TCP should ensure that the maximum ratio of trainees to trainer of each type of loadshifting machine training course should be strictly followed the specifications stipulated in column 3 of the table at **Annex 2**.

5. Class size

- 5.1 A TCP should ensure that the maximum size of a class of each type of loadshifting machine training course should be strictly followed the specifications stipulated in column 4 of the table at **Annex 2**.

6. Course duration

- 6.1 A TCP should ensure that the minimum course duration of full course (New Operator) should not be less than the number of days specified in column 3 for the type of loadshifting machine in column 2 of the table at **Annex 3**, and it should include reasonable time distribution between theory session and practical session, a written examination session of 30 minutes, a practical examination session of 30-60 minutes and a total of not more than 30 minutes recess time per day.
- 6.2 A TCP should ensure that the minimum course duration of full course (Experienced Operator) should not be less than the number of days specified in column 4 for the type of loadshifting machine in column 2 of the table at **Annex 3**, and it should include 1 day in theory session and other day(s) for practical session, a written examination session of 30 minutes, a practical examination session of 30-60 minutes and a total of not more than 30 minutes recess time per day.
- 6.3 A TCP should ensure that the minimum course duration of

revalidation course should not be less than the number of days specified in column 5 for the type of loadshifting machine in column 2 of the table at **Annex 3**, and it should include a written examination session of 30 minutes and a total of not more than 15 minutes (half-day course) or 30 minutes (one-day course) recess time.

7. Attendance

- 7.1 A TCP should ensure that any trainee who is absent from the theory class for more than 15 minutes for any half-day sessions will be disqualified to attend the examination.

8. Lesson plan

- 8.1 A TCP should devise and submit the lesson plan(s) of course(s) applied for recognition to the CL for approval.

9. Course contents

- 9.1 A TCP should ensure that the course materials used should include all the topics and details stipulated at **Annex 4**. The TCP should also supplement additional materials in accordance with the needs of the trainees and the latest safety information. The course contents should be submitted to the CL for prior approval.

10. Display, demonstration and practising

- 10.1 A TCP should provide suitable and sufficient equipment (including safety helmet, safety shoes/boots, safety harness with lifeline and fall-arresting device, safety gloves, ear and eye protectors, respirator,

portable fire extinguisher etc.) and should ensure that demonstration of the correct use of the above personal protective equipment is provided to its trainees.

- 10.2 A TCP should ensure that the training venue for the practical session of full courses should be sufficient, suitable, safe and appropriate for the type of loadshifting machine.
- 10.3 A TCP should ensure that the loadshifting machine involved in the practical training should comply with all the legal requirements as delineated under the relevant legislation and should be solely used for training during the practical session.

11. Examination

- 11.1 A TCP should ensure that every trainee attending the examination should meet the required attendance and the requirement of completing the hands-on practice.
- 11.2 The TCP should submit at least 3 sets of examination papers, each consisting of 20 different multiple-choice questions, their model answers and marking schemes to the CL for approval.
- 11.3 Time allowed for the written examination is 30 minutes and the passing mark is 60%. The time allowed for the practical examination (30 – 60 minutes) and its passing mark may be varied depending on the complexity and the number of critical skills to be examined of the type of loadshifting machine involved.
- 11.4 A TCP should ensure that the trainee should pass the written examination, the practical examination and also perform all critical skills competently in the practical examination before qualifying him/her to get the certificate.

12. Validity period of certificate

- 12.1 A TCP should ensure that the validity period of operator certificate issued for fork-lift truck is 10 years while the validity period of operator certificate issued for other types of loadshifting machine is 5 years.
- 12.2 For full course (New Operator) and full course (Experienced Operator), validity period of the certificate should be counted from the date when the trainee successfully completes the course.
- 12.3 For revalidation courses, validity of the certificate should be counted from the day—
- 12.3.1 immediately after the expiry date of the current certificate if the revalidation course is successfully completed within 6 months prior to expiry of the current certificate, or
 - 12.3.2 of completing the revalidation course if the revalidation course is successfully completed within 3 months after expiry of the current certificate.

13. Standard certificate format

- 13.1 A TCP should ensure that the front side of a loadshifting machine operator certificate should be designed with the required words, in the format as shown in **Figure 1** and according to the specifications below. The reverse side is left to the TCP to include other information as appropriate, which should be commensurate with the purpose of the certificate.

Figure 1: Required Words and Design Format of the Front Side of Loadshifting Machine Operator Certificate

操作(指明負荷物移動機の種類)證明書
Certificate for Operation of (specify type of loadshifting machine)
工廠及工業經營(負荷物移動機械)規例
Factories and Industrial Undertakings (Loadshifting Machinery) Regulation

持證人姓名 Holder's Name
(中文) :
(English) :

編號 Reference No. :

完成課程日期 Date of Course Completion :
(日日/月月/年年年年) (dd/mm/yyyy)

有效期限 Validity Period : 由 From 至 To 止
(日日/月月/年年年年) (dd/mm/yyyy)

本證明書由 [某發證機構] 簽發
Issued by [provider of recognised training course]

此證明書須由持證人擁有及保存。
This certificate is owned and should be kept by the certificate holder.



(not to scale)

- 13.1.1 The certificate should be made of durable materials, either laminated or plastic, and in standard size of 85 mm x 55 mm;
- 13.1.2 A photograph (minimum size of not less than 20 mm x 25 mm) of the trainee should be incorporated into the certificate for easy identification;
- 13.1.3 For laminated card, the corner of the trainee's photo should be stamped with the TCP's company's chop;
- 13.1.4 For plastic card, the trainee's photo should be printed on the card;
- 13.1.5 Unless otherwise specified, information on the certificate should be printed in both Chinese and English;
- 13.1.6 The certificate should contain the following information:
 - The name of certificate, i.e. “操作(指明負荷物移動機の種類)證明書” and “Certificate for Operation of (specify type of loadshifting machine)”;
 - The empowering legislation, i.e. “工廠及工業經營(負荷物移動機械)規例” and “Factories and Industrial Undertakings (Loadshifting Machinery) Regulation”;
 - The Chinese and English name as printed on the Hong Kong Identity Card (or equivalent identity documents) of the certificate holder;
 - Reference number of the certificate (an “R” should be appended to the last digit of the reference number to denote that the certificate is issued for a revalidation

- course);
- Date of Course Completion (in the format of DD/MM/YYYY);
 - Validity period with starting date and expiry date (in the format of DD/MM/YYYY);
 - Name of the certificate issuing course provider; and
 - The wordings of “此證明書須由持證人擁有及保存。” and “This certificate is owned and should be kept by the certificate holder.”

14. Training records

14.1 A TCP should submit the record of every certificate issued according to the required details stipulated in Table 1 as well as the name of the course.

Table 1 : Example of Training Records

HKID/ Passport No. (TRT1)	Name of trainee (TRT2)	Class Ref. (TRC1)	Name of Trainer (TRC2)	Date of Course completion (TRC3)	Certificate Effective Date (TRT3)	Certificate Expiry Date (TRT4)	Certificate Serial No. (TRT5)
A123456(1)	Chan Siu On	ABC1	HAU To-si	13/06/2011	13/06/2011	12/06/2016	W396000201R
A123457(2)	Chan Siu Chuen	ABC1	HAU To-si	13/06/2011	23/09/2011	22/09/2016	W396000202R
A123458(3)	Chan Siu Feng	ABC2	HAU To-si	18/06/2011	18/06/2011	17/06/2016	W396000203
A123459(4)	Chan Siu Lin	ABC2	HAU To-si	18/06/2011	18/06/2011	17/06/2016	W396000204

Annex 1

Qualifications of a Loadshifting Machine Training Course Trainer

Type of loadshifting machine	Qualification Requirements	
	^Theoretical Trainer for full course or revalidation course	^Practical Trainer for full course only
All Loadshifting Machines (other than Fork-lift truck, Fork-lift truck (Front Loader) and Locomotive)	QT01, QT02, QT06, QT07 and QT08	QT01, QT02 and QT09
Fork-lift truck	QT01, QT03, QT06, QT07 and QT08	QT09, QT10, QT11, QT12, QT13, QT14 and QT15
Fork-lift truck (Front Loader)	QT01, QT04, QT06, QT07 and QT08	QT01, QT04, QT06, QT09, QT12, QT13, QT14 and QT15
Locomotive	QT01, QT05, QT06, QT07 and QT08	QT01, QT05 and QT09

^ Trainer's qualification codes:

QT01	have successfully completed an acceptable instructional skill training course, such as the certificate course of Basic Instructional Techniques by the Hong Kong Institute of Education or the certificate course of Occupational Safety and Health Trainer by the Occupational Safety and Health Council ("OSHC") or the certificate course of Effective Site Safety Training and Instructing Techniques Course by the Construction Industry Council Training Academy ("CICTA") or equivalent.
QT02	have 7 years relevant working experience in operating the type of machine.
QT03	have 2 years relevant working experience in operating the fork-lift truck.
QT04	have 3 years relevant working experience in operating the fork-lift

	truck (front loader).
QT05	have at least 1 year relevant working experience of operating the type of locomotive, and 4 years railway operating experience.
QT06	possess a Continuing Education Diploma in Occupational Safety and Health Practices issued by OSHC or equivalent, or both mandatory basic safety training and a certificate of Safety Supervisor Course issued either by OSHC or CICTA or equivalent.
QT07	be familiar with the local safety regulations relating to the operation of the type of loadshifting machine.
QT08	possess sound knowledge relating to the prevention of injuries and property losses in connection with the use of such type of loadshifting machine.
QT09	hold a relevant valid operator certificate for the particular type of loadshifting machine or equivalent.
QT10	have 5 years relevant working experience of operating the fork-lift truck.
QT11	possess a certificate of fork-lift truck instructor issued by OSHC or equivalent.
QT12	possess sound lecturing, instructing and assessment skills.
QT13	able to identify defects and malfunction of the type of loadshifting machine.
QT14	have a good understanding of the construction, performance and limitation of the type of loadshifting machine.
QT15	have skills to conduct basic operational tests on the type of loadshifting machine, e.g. testing of brake system, steering and loading function.

Annex 2**Maximum trainees to trainer ratio and class size
for Various Types of Loadshifting Machine Training Courses**

Types of loadshifting machine	Nature of training courses	Maximum trainees to trainer ratio	Maximum class size
Fork-lift truck	Full course (New/Experienced Operator)	30:1 in theory session 3:1 in practical session	30
	Revalidation course	30:1	30
Fork-lift truck (Front Loader)	Full course (New/Experienced Operator)	15:1 in theory session 3:1 in practical session	15
	Revalidation course	15:1	15
Locomotive	Full course (New Operator)	20:1 in theory session 3:1 in practical session	20
	Full Course (Experienced Operator)	30:1 in theory session 3:1 in practical session	30
	Revalidation course	20:1	20
Others	Full course (New/Experienced Operator)	20:1 in theory session 3:1 in practical session	20
	Revalidation course	20:1	20

Annex 3

Course Duration for Various Types of Loadshifting Machine

No.	Type of loadshifting machine	Duration (in days, and should be 7 hours per day, excluding break between half-day sessions and lunch time)		
		Full course (New Operator)	Full course (Experienced Operator)	Revalidation course
1	Fork-lift truck (for each type of Fork-lift trucks)	7	2 (with 1 year experience)	0.5 (3.5 hours)
2	Fork-lift truck (Front Loader)	12	3 (with 1 year experience)	1
3	Bulldozer	13	2 (with 3 years experience)	1
4	Loader	13	2 (with 3 years experience)	1
5	*Mini/Skid Loader	10	2 (with 1 year experience)	0.5 (4 hours)
6	Excavator	50	2 (with 3 years experience)	1
7	Truck	Training for these machines are dependent on training to obtain driving license issued under Road Traffic Ordinance, Cap. 374		
8	Lorry			
9	Compactor	13	2 (with 3 years experience)	1
10	Dumper	13	2 (with 3 years experience)	1
11	Grader	13	2 (with 3 years experience)	1
12	Locomotive (for each type of Locomotives)	6	2 (with 3 years experience)	1
13	Scraper	13	2 (with 3 years experience)	1

* Mini/Skid Loader means a loader with overall length (with bucket) not exceeding 4 M, overall width (with bucket) not exceeding 2 M, the bucket capacity not exceeding 1 M3.

**Course Contents for Training for Operators
of Loadshifting Machine**

(A) Full Course (New/Experienced Operator)

1. Overview of legislative provisions, including:
 - Occupational Safety and Health Ordinance (including General Duties provisions) and Regulation;
 - Factories and Industrial Undertakings Ordinance (including General Duties provisions) and Regulations;
 - Factories and Industrial Undertakings (Loadshifting Machinery) Regulation;
 - Other relevant subsidiary regulations such as Construction Sites (Safety) Regulations (including Part VA), Factories and Industrial Undertakings (Lifting Appliances & Lifting Gear) Regulations, Factories and Industrial Undertakings (Electricity) Regulations, Factories and Industrial Undertakings (Safety Management) Regulation, Factories and Industrial Undertakings (Gas Welding and Flame Cutting) Regulation, Factories and Industrial Undertakings (Confined Spaces) Regulation, etc; and
 - Any relevant Codes of Practice, and any other applicable safety legislation, etc.

2. Detailed construction, performance, maintenance and operation of the type of loadshifting machine.

3. Potential hazards associated with the operation of Loadshifting Machines (**except Locomotive**) should include: (depending on the types of loadshifting machine, some of the following potential hazards may not be applicable)
 - uneven/ unstable terrain
 - power lines
 - trees
 - overhead service lines
 - bridges

- surrounding buildings
- obstructions
- structures
- facilities
- adjacent equipment
- dangerous materials
- underground services
- recently filled trenches
- performing adjustment, lubrication or maintenance of the machine with its engine started
- checking engine of the machine that has been operated, its radiator, heater or its associated pipes/ lines
- checking conditions of the cooling system and the battery
- refuelling
- accumulation of grease and oil on the machine
- handling of flammable substances such as fuels, lubricants and coolant mixtures
- handling tire inflation
- coordination of different work processes
- working-at-height while mounting and dismounting the machine
- operation on slopes

Potential hazards associated with the **operation of Locomotive** should include:

- permit-to-work system, signalling system and operation of locomotive under the system
- operation of electrical and mechanical system of the locomotive
- operation of communication system
- system authorities and occupation of tracks
- working-at-height operations
- obstructions on tracks
- adjacent equipment
- handling of dangerous materials
- working in confined spaces
- noise and lighting
- operation in inclement weather and emergency conditions
- selection and use of personal protective equipment

- operation of the locomotive exceeding its safe working load/ speed
 - stability of the locomotive while loading, unloading and travelling
 - selection and use of attachments to the locomotive
 - collision of locomotives or associated attachments with other stationary or moving objects
4. Possible causes of and prevention strategies for common accidents associated with the operation of Loadshifting Machines (**except Locomotive**), should include:
- exceeding the safe working load of the machine
 - instability of the machine while loading, unloading and travelling
 - incorrect choice and use of attachments
 - collision of machine or associated attachments with other stationary or moving objects
 - injury to those working in the vicinity of the machine
 - operating the machine without authorization
 - failure to follow the manufacturer's operation guidelines
 - vision obstructed when operating the machine
 - presence of naked lights, smoking or running of engine during refuelling
 - human errors
 - personal protective equipment not in place or incorrect use of them
 - not conversant with in-house regulations
 - improper parking
 - improper towing of machine
 - harmful or toxic exhaust fumes

Possible causes of and prevention strategies for common accidents associated with the **operation of Locomotive** should include:

- failure of permit-to-work system and signalling system
- break-down of electrical and mechanical system of the locomotive
- failure of communication system
- mal-practice of system authorities and occupation of tracks
- human errors in the operation of the locomotive
- injury to those working in the vicinity of the locomotive
- falling from height

- unsafe system of work for working in confined space
 - collision of the locomotive or associated attachments with other stationary or moving objects in the close vicinity
 - improper handling of dangerous materials
 - unsafe operation in inclement weather and emergency conditions
 - exceeding the safe working load/speed of the locomotive
 - instability of the locomotive while loading, unloading and travelling
5. Basic operating skills for all types of Loadshifting Machine (**except Locomotive**) are described in the table at **Annex 5**. Depending on the types of loadshifting machine, some of the skills described in the table may not be applicable.
 6. As locomotive is fundamentally distinct from other types of loadshifting machine, course providers should develop their basic operating skills of the locomotive with reference to the manufacturer's specifications and operation/maintenance manual.
 7. Safety attitude to safeguard themselves as operators of loadshifting machines and other workers while operating the loadshifting machines.
 8. Types, purpose, correction selection and proper use of personal protective equipment commonly used, including:
 - safety helmet;
 - safety shoes / boots;
 - safety harness with lifeline and fall-arresting device;
 - safety gloves;
 - ear and eye protectors; and
 - respirator.

(B) Revalidation course

1. Overview of legislative provisions, including:
 - Occupational Safety and Health Ordinance (including General Duties provisions) and Regulation;
 - Factories and Industrial Undertakings Ordinance (including General Duties provisions) and Regulations;
 - Factories and Industrial Undertakings (Loadshifting Machinery) Regulation;
 - Other relevant subsidiary regulations such as Construction Sites (Safety) Regulations (including Part VA), Factories and Industrial Undertakings (Lifting Appliances & Lifting Gear) Regulations, Factories and Industrial Undertakings (Electricity) Regulations, Factories and Industrial Undertakings (Safety Management) Regulation, Factories and Industrial Undertakings (Gas Welding and Flame Cutting) Regulation, Factories and Industrial Undertakings (Confined Spaces) Regulation, etc; and
 - Any relevant Codes of Practice, and any other applicable safety legislation, etc.

2. Detailed construction, performance, maintenance and operation of the type of loadshifting machine.

3. Potential hazards associated with the operation of Loadshifting Machines (**except Locomotive**) should include: (depending on the types of loadshifting machine, some of the following potential hazards may not be applicable)
 - uneven/ unstable terrain
 - power lines
 - trees
 - overhead service lines
 - bridges
 - surrounding buildings
 - obstructions
 - structures
 - facilities

- adjacent equipment
- dangerous materials
- underground services
- recently filled trenches
- performing adjustment, lubrication or maintenance of the machine with its engine started
- checking engine of the machine that has been operated, its radiator, heater or its associated pipes/ lines
- checking conditions of the cooling system and the battery
- refuelling
- accumulation of grease and oil on the machine
- handling of flammable substances such as fuels, lubricants and coolant mixtures
- handling tire inflation
- coordination of different work processes
- working-at-height while mounting and dismounting the machine
- operation on slopes

Potential hazards associated with the **operation of Locomotive** should include:

- permit-to-work system, signalling system and operation of locomotive under the system
- operation of electrical and mechanical system of the locomotive
- operation of communication system
- system authorities and occupation of tracks
- working-at-height operations
- obstructions on tracks
- adjacent equipment
- handling of dangerous materials
- working in confined spaces
- noise and lighting
- operation in inclement weather and emergency conditions
- selection and use of personal protective equipment
- operation of the locomotive exceeding its safe working load/ speed
- stability of the locomotive while loading, unloading and travelling
- selection and use of attachments to the locomotive
- collision of locomotives or associated attachments with other

stationary or moving objects

4. Possible causes of and prevention strategies for common accidents associated with the operation of Loadshifting Machines (**except Locomotive**), should include:

- exceeding the safe working load of the machine
- instability of the machine while loading, unloading and travelling
- incorrect choice and use of attachments
- collision of machine or associated attachments with other stationary or moving objects
- injury to those working in the vicinity of the machine
- operating the machine without authorization
- failure to follow the manufacturer's operation guidelines
- vision obstructed when operating the machine
- presence of naked lights, smoking or running of engine during refuelling
- human errors
- personal protective equipment not in place or incorrect use of them
- not conversant with in-house regulations
- improper parking
- improper towing of machine
- harmful or toxic exhaust fumes

Possible causes of and prevention strategies for common accidents associated with the **operation of Locomotive** should include:

- failure of permit-to-work system and signalling system
- break-down of electrical and mechanical system of the locomotive
- failure of communication system
- mal-practice of system authorities and occupation of tracks
- human errors in the operation of the locomotive
- injury to those working in the vicinity of the locomotive
- falling from height
- unsafe system of work for working in confined space
- collision of the locomotive or associated attachments with other stationary or moving objects in the close vicinity
- improper handling of dangerous materials

- unsafe operation in inclement weather and emergency conditions
 - exceeding the safe working load/speed of the locomotive
 - instability of the locomotive while loading, unloading and travelling
5. Basic operating skills for all types of Loadshifting Machine (**except Locomotive**) are described in the table at **Annex 5**. Depending on the types of loadshifting machine, some of the skills described in the table may not be applicable.
 6. As locomotive is fundamentally distinct from other types of loadshifting machine, course providers should develop their basic operating skills of the locomotive with reference to the manufacturer's specifications and operation/maintenance manual.
 7. Safety attitude to safeguard themselves as operators of loadshifting machines and other workers while operating the loadshifting machines.
 8. Overview of typical/alarming accidents (including causes and related preventive measures) associated with the operation of loadshifting machine, in particular those occurred during the five years preceding the conduct of the course.
 9. Overview of new technological advancements and developments in work procedure or equipment usage associated with the operation of loadshifting machine, particularly those that occurred during the five years preceding the conduct of the course.
 10. Types, purpose, correction selection and proper use of personal protective equipment commonly used, including:
 - safety helmet;
 - safety shoes / boots;
 - safety harness with lifeline and fall-arresting device;
 - safety gloves;
 - ear and eye protectors; and
 - respirator.

Annex 5

**Skills associated with the operation of
loadshifting machine (except Locomotive)**

No.	Duties	Specific tasks
1	Conduct routine checks	<p>External check of equipment is conducted in accordance with manufacturer's specifications and operation/maintenance manual or equivalent</p> <p>Attachments are inspected to ensure security</p>
2	Plan work	<p>Work area is inspected to identify hazards and appropriate prevention/control measures for the hazards, where identified as mentioned Item 3 at Annex 4, are implemented</p> <p>Site/non-site personnel are safeguarded (protected) by a variety of measures, including the erection of barricades and posting of signs consistent with principles of the hierarchy of control</p> <p>Working area is inspected to determine appropriate path of movement for loads and machine</p> <p>Permits required to carry out the job are obtained from authorized personnel</p> <p>Job requirements are confirmed with relevant site personnel, ensuring:</p> <ul style="list-style-type: none"> • determination of appropriate machine for operation, including selection and fitting of attachments • compliance of job with accepted occupational safety and health practices

No.	Duties	Specific tasks
3	Check controls and equipment	<p>Pre-operational and post start-up equipment checks are carried out in accordance with manufacturer's specifications and operation/maintenance manual ensuring:</p> <ul style="list-style-type: none"> • hazards warning systems, for example, lights and horns, are functional • attachment movements and control functions are smooth and comply with operating requirements • start-up conforms with manufacturer's specifications and operation/maintenance manual • communication signals to be used are confirmed with appropriate personnel <p>Defects and damage are reported according to site procedures</p>
4	Shift load (not applicable for compactor)	<p>Material is shifted using appropriate machine</p> <p>Weight of load is assessed to ensure compliance with the specified loadshifting machine capacity</p> <p>Controls and levers are applied to ensure safe and effective operation of machine ensuring:</p> <ul style="list-style-type: none"> • force applied to shift load is appropriate to the material • path of movement is monitored for obstacles and hazards • hazard control measures are selected and applied to ensure safe movement of load <p>Speeds of machine are maintained to safe operating limits</p> <p>Communications are correctly given and interpreted with co-workers and other relevant persons</p> <p>Loads are placed to ensure stability of material and avoidance of hazards on site</p> <p>Emergency procedures are carried out minimizing risk to personnel</p>
5	Shut down machine	<p>Parking to ensure:</p> <ul style="list-style-type: none"> • machine safety locks are in place • implements/attachment to be rendered safe

No.	Duties	Specific tasks
		Shut down is conducted in accordance with manufacturer's specifications and operation/ maintenance manual to isolate machine Post operational check is complete ensuring: <ul style="list-style-type: none"> • minor servicing requirements are carried out • defect and damage reported to site requirements
6	Secure site	Secure site after operation, ensuring: <ul style="list-style-type: none"> • access ways are clear • machine is away from overhangs/fuelling sites • excavations are fenced off and made secure • securing against unauthorized movement