



DOCUMENT NO : <b>JKKP GP (BM)</b> xx/2004	TITLE : <b>GUIDELINES ON ACCREDITATION OF CRANE OPERATOR TRAINING CENTRE</b>	REVISION <b>00</b>
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## **1.0 INTRODUCTION**

In August, 1997 The Minister of Human Resources made an announcement that all crane operators are required to register with the Department of Occupational Safety and Health (DOSH) before they are allowed to operate cranes. Types of cranes meant by The Minister are tower cranes, mobile cranes (wheeler) and mobile cranes (crawler) .

To enforce this directive, the Department will use provision 26(1) of the Factories and Machinery (Notification, Certificate of Fitness And Inspection) Regulations, 1970 to stipulate that all the said cranes must be operated by certificated operators.

Crane operator is required to undergo Crane Operator course at training centre recognised by DOSH. This is to ensure that their skill level would increase and to enable them to learn and handle the crane correctly and safely. Every training centre intending to organise the said course is required to get the accreditation from this department.

## **2.0 OBJECTIVE**

To describe the procedure how to obtain the approval and thus accreditation from DOSH as crane operator training centre for tower crane, mobile crane (wheeled) and mobile crane (crawler)

## **3.0 APPLICATION FOR ACCREDITATION**

The application to obtain the accreditation shall be forwarded to :-  
Director General,  
Department of Occupational Safety and Health,  
Level 2, 3 & 4, Block D3, Parcel D,  
Federal Government Administrative Centre ,  
62530 Putrajaya.

**Telephone No : 03-88865000**

**Fax No : 03-88892339**

#### 4.0 DEFINITION

##### **Crane Operator Training Centre**

Company or organisation conducting the competency course to crane operator for tower cranes, mobile crane (wheeler) and mobile crane (crawler) which is approved by DOSH.

##### **In-house instructor/ trainer**

A person employed on full time permanently to conduct crane operator course at the specified training centre.

##### **Contract instructor/trainer**

A person employed full-time by contract to conduct crane operator course at the specified training centre for a minimum period of 24 months by the training centre.

##### **Construction personnel**

A person who is at least having a minimum of six (6) months experience in operating crane.

##### **Non-construction personnel**

A person other than construction personnel, including school leaver youth.

##### **Tower crane**

Jib or boom type crane installed on tower structure either permanently or portable type, including hammer head and luffing type.

##### **Mobile crane (wheeled)**

Crane mounted on truck or lorry using boom or jib that can be turned or slew.

##### **Crawler crane (derrick)**

Crane of the type of 'strut-boom' pivoted under or at the bottom end of the boom and the movement up- and- down of the boom is by the control of derricking rope.

#### 5.0 TYPES OF ACCREDITATION

Accreditation of crane operator training centre is given in accordance to the following classifications :-

- i. Trainee category : a. construction personnel  
b. non-construction personnel (school leaver)
- ii. Crane type : a. tower crane

- b. mobile crane (wheeled)
- c. mobile crane (crawler)

## **6.0 APPLICATION DOCUMENTS**

An application shall include the following particulars :-

- i. Application letter;
- ii. Duely filled Registration form for training centre (**form I**);
- iii. Background and organisation chart of the company;
- iv. List and particulars of instructors/trainers (**form II**);
- v. Relevant copies of instructors/trainers certificates;
- vi. Course module including list of topics and contact hours according to crane types;
- vii. Complete course notes according to crane types;
- viii. Lesson plan according to module provided;
- ix. Lecture presentation slides;
- x. Place/premise for practical training (enclose site layout plan for conducting practical);
- xi. Particulars about crane going to be used including DOSH registration number (PMA No.);
- xii. Internal participants assessment system for theory and practical;
- xiii. Course participant feedback form;
- xiv. Participant Records keeping;
- xv. Copies of relevant agreement letters;
- xvi. Supporting documents.

### **6.1 APPLICATION LETTER**

Every application shall include a letter stating clearly its purpose and complete particulars about the course requested.

### **6.2 TRAINING CENTRE REGISTRATION FORM**

Applicant is required to fill-in particulars in the training centre registration form (form I) and sent together with the application.

### **6.3 BACKGROUND AND ORGANISATION CHART**

An application shall include the background and company profile stating total number of staff, organisation chart and management system in general.

### **6.4 COURSE INSTRUCTOR/TRAINER**

- a. Applicant who wish to apply for Accreditation shall employ at least one in-house instructor/trainer to conduct the course;

- b. All instructors/trainer either employed permanently or by contract shall have written approval by DOSH;
- c. Additional instructors/trainers may be employed permanently or by contract. For contract instructor/trainer, minimum agreement period should not be less than 24 months;
- d. Course instructor/trainer qualification:-
  - i. Has been registered with DOSH as crane operator correspond to the type of crane to be taught;
  - ii. Had at least six (5) years working experience in crane operation after being registered with DOSH; and
  - iii. Had been attending 'Train The Trainer' course at NIOSH or any organisation recognised by DOSH;
- e. The following particulars should be included in the application :
  - i. List and particulars of instructors/trainers (**form II**);
  - ii. Copy of personal biodata (curriculum vitae);
  - iii. Copies of the following certificates :-
    - a. Crane operator registration certificate from DOSH;
    - b. Crane operator course qualification certificate; and
    - c. Copy of ' train the trainer' course certificate
  - iv. Instructor/trainer appointment letter;
  - v. Acceptance letter from instructor/trainer;
  - vi. Copy of EPF payment slip (for permanent instructor/trainer); and
  - vii. Copy of agreement letter between the training centre and instructor/trainer with duty stamped (if the instructor/trainer is employed by contract)

*Notes : Certificates copies shall be certified or forward the original certificates to DOSH for verification.*

## **6.5 COURSE MODULE**

Applicant shall prepare course module stating main topics and sub-topics which is given specialisation and also total hours allocated. Course module shall be prepared in accordance to type of crane requested for accreditation.

The syllabus should be at least to cover all the topics as per attachment B1 or B2 according to type of accreditation requested. All course module, notes, lessons plan and presentation slides should included in softcopy and hardcopy.

## **6.6 COURSE NOTES**

Applicant shall submit a complete set of course notes as what is going to be given to the course participants. The notes should cover all the topics according to crane types as specified in the course module.

## **6.7 LESSON PLAN**

Lesson Plan shall be prepared based on the specified course module. It has to be used as a guide by the instructor/trainer during conducting the course. Please use format as per attachment B3.

## **6.8 PRESENTATION SLIDES**

Presentation slides shall be prepared based on prescribed modules. It has to be used by the instructor/trainer during conducting the course. The slides shall be prepared either in microsoft power point format or in transperancies.

## **6.9 PLACE/ PREMISE FOR THE COURSE TO BE CONDUCTED**

Applicant is required to state the address of place/premise where the course is going to be conducted together with the list of teaching facilities and equipment including facilities for practical training available at the place. The approval will depend on the premise inspection.

### **6.9.1 PLACE/PREMISE FOR LEARNING THEORY**

Place/premise for learning theory has to have the following facilities :

- a. The place/premise must be owned or rented full time and its management and administration shall be under the control of applicant completely for the period of approval;
- b. Closed lecture room, should have adequate lighting and ventilation as well as enough space area for capacity of 15 participants ;
- c. Suitable tables and chairs should be used for the classroom;
- d. Application of teaching equipment such as audio-visual equipment, blackboard, etc.;
- e. Basic facilities such as recreation room, toilets, etc.; and
- f. Emergency equipment to cater for emergency such as first aid box, fire extinguishers, etc.

### **6.9.2 PLACE/PREMISE FOR PRACTICAL TRAINING**

Place/premise for conducting practical training should comply with the following conditions:-

- i. Office or cabin should be provided for course participants and assessors from NIOSH;
- ii. Basic facilities such as toilets etc.
- iii. Size/area of the place/ premise for conducting practical should be at least as follows :
  - Mobile crane (wheeled) course : min ( 25 m X 50 m )
  - Mobile crane (crawler)course : min ( 30 m X 60 m )
  - Tower crane course : \*min (130% of maximum crane working radius)

*Notes : ♦ Site layout plan for conducting practical should be prepared by stating area of the place/premise and all building structures or near-by objects.*

### **6.9.3 PLACE/PREMISE NOT OWNED, OR RENTED BY APPLICANT FOR CONDUCTING THEORY AND PRACTICAL TRAINING**

If the place/premise for conducting theory and practical training is not belong to the applicant or is only rented, copies of the following documents shall be attached together with the application :-

- i. Copy of duely stamped agreement letter between applicant and the owner of the place/premise by stating the agreement period and the conditions agreed; and
- ii. Copy of document containing name of the owner of the place/premise.

### **6.10 EQUIPMENT FOR PRACTICAL TRAINING**

Applicant is required to provide the following equipment for conducting practical training :-

- i. Crane with a valid certificate of fitness and in accordance to type of course to be conducted. Copy of the CF should be attached ;

*(For rented crane, the agreement letter between applicant and the owner shall be attached .)*

- ii. Equipment necessary to be used by course participants for conducting inspection and operating of the crane such as personal protective equipment (PPE), load chart, etc.; and

iii. Safety appliances such as safety shoes and helmets and other safety appliances necessary for the course. menjalankan pemeriksaan dan pengendalian kren seperti peralatan keselamatan (PPE), carta beban (load chart) dan lain-lain peralatan yang sebagainya; dan

- i. Peralatan keselamatan yang diperlukan seperti topi dan kasut keselamatan serta lain-lain peralatan keselamatan yang diperlukan

*Notes : ♦ Applicant need to identify the crane going to be used all along during the approval period . Copy of document stating name of the owner and copy of certificate of fitness of the crane also need to be attached.*

#### **6.11 PARTICIPANTS COURSE EVALUATION AND FEEDBACK**

Applicant should prepare and forward to the Department the following informations :

- i. Internal evaluation system shall be prepared for course participants from theory and practical point of view to measure their level of understanding before the real assessment done by NIOSH assessors; and
- ii. Course feedback form by the participants about the course attended by them.

#### **6.12 RECORD KEEPING OF COURSE PARTICIPANTS**

- i. All the record of course participants consisting of the following informations shall be kept safely :-
  - a. Participant name;
  - b. Identity card number;
  - c. Course type;
  - d. Date of the course held;
  - e. Results of the course;
  - f. Serial number of NIOSH Certificates;
  - g. Name of NIOSH Assessor;
  - h. Records of internal evaluation of participants for theory and practical;
  - i. Course feedback form by each of participants
- ii. All documents and records related to training centre shall be kept in the headquarters.

#### **6.13 SUPPORTING INFORMATION**

Applicant is required to submit supporting documents explaining how course handling and management are conducted such as document for participant and instructor evaluation system, flyers about the courses, including examination system and entrance qualification conditions. Applicant may submit any recognition or testimonial received from any organisation or professional bodies (if any).

#### **7.0 ACCREDITATION APPROVAL PERIOD**

For applicant who has fulfilled the prescribed conditions, the accreditation will be granted for a period of **15 months** from the date of the approval letter is issued.

**Note:** *It is the responsibility of applicant to ensure that any agreement or contract made is still valid while running the course.*

#### **8.0 EXTENSION OF ACCREDITATION APPROVAL**

Application for extension of accreditation approval shall be made three (3) months before expiring. The application should be enclosed with the following particulars:-

- i. Application letter for extension;
- ii. Latest organisation chart;
- iii. All courses conducted during last approval period;
- iv. List of in-house or contract instructors/trainers;
- v. Copy of EPF payment slip for in-house instructors/trainers;
- vi. Copy of contract agreement letter for contract instructors/trainers;
- vii. All the relevant agreement letters.

#### **9.0 SUSPENSION AND CANCELLATION OF ACCREDITATION**

The Department may suspend or revoke the Accreditation of training centre if any prescribed condition stated by the Department has been violated.

The accreditation also will be null and void if the training centre fails to submit an extension application for accreditation within the specified period.

#### **10.0 BRANCH OF TRAINING CENTRE**

Training centre is not allowed to run any course at place other than the place stated in the accreditation approval letter. However, the training centre may submit application to DOSH requesting approval for a new branch.

**10.1 BRANCH APPROVAL**

The accredited training centre who wish to open a branch, shall submit written application to the Department of Occupational Safety and Health (DOSH).

For the branch training centre, all facilities for the purposes of learning theory and practical shall comply with conditions stipulated by the department.

**10.2 ADDITIONAL INFORMATION AND DOCUMENTS**

The following particulars shall be submitted for branch application:-

- i. Application letter;
- ii. Particulars of training centre and list of instructors/trainers (please fill-in **form I and II**);
- iii. Branch organisation chart;
- iv. Place /premise for learning theory; and
- v. Place /premise for practical training (attach layout plan of the premise for practical )

**10.3 ADMINISTRATION AND OPERATION MANAGEMENT**

The following matters shall be under the responsibility and full control of head office management :-

- i. Program arrangement during the course;
- ii. Instructors/trainers involved for the course would be held;
- iii. Course module and lecture notes;
- iv. Participants record keeping;
- v. All arrangements with DOSH.

DI SEDIAKAN OLEH :  <b>SEKSYEN KAJIAN DASAR &amp; PERUNDANGAN BAHAGIAN KESELAMATAN INDUSTRI</b>	TARIKH PINDAAN TERAKHIR :  <b>Mei 2004</b>
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<b>SYLLABUS FOR TOWER CRANEOPERATOR PRACTICAL PROGRAMME FOR CONSTRUCTION PERSONNEL</b>
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**1.0 Legislative Requirement (1hour)**

- 1.1 Occupational Safety and Health Act 1994 (Act 514) and its regulations
- 1.2 Factories and Machinery Act 1967 (Act 139) and its regulations
- 1.3 Construction Industry Development Board Act 1994 (Act 520) and personnel accreditation and registration regulations
- 1.4 Other related Acts, regulations, codes of practices pertaining to tower crane operation.

**2.0 Introduction to Tower Cranes (1 hour)**

- 2.1 Types of tower cranes.
- 2.2 Terminology on tower crane structure.
- 2.3 Mechanical principles.
- 2.4 Safety features.
- 2.5 Periodical Inspection, Testing and Maintenance.

**3.0 Calculation of Mass (1 Hour)**

- 3.1 General mathematical formulae on calculations of area and volume of various shapes of material.
- 3.2 Basic mass calculation for various shapes of loads normally engaged during tower crane operation.

**4.0 Slinging Methods (2 hours)**

- 4.1 Determination of safety factor, breaking force, safe working load (SWL) and working load limit (WLL).
- 4.2 Sling angles and their limitations (angle factors).
- 4.3 Load factors for round, rectangular or square loads.
- 4.4 Using various types of clamps.

**5.0 Lifting Appliances (2 hours)**

- 5.1 Care, maintenance, selection and inspection on slinging material e.g. wire ropes, fibre ropes, webbing slings, chains, shackles, sheaves, hooks etc.
- 5.2 Use of slings / hoists and tag line.
- 5.3 Determination of SWL.
- 5.4 Defective parts and accessories identification.

**6.0 Load Chart (4.5 hours)**

- 6.1 Understand various load charts based on types of tower crane.
- 6.2 Interpretation of the respective load charts.
- 6.3 Estimation of allowable lifting load.

**7.0 Personnel and General Safety (1 hour)**

- 7.1 Proper safety equipment.
- 7.2 Correct use of PPE (Personnel Protective Equipment).
- 7.3 Site hazards assessment.

- 7.4 Safe operations and recommended practices.
- 7.5 Ground assessment.
- 7.6 Guards and protective structures.

**8.0 Signals and Communications (1/2 hour)**

- 8.1 Hand signals.
- 8.2 2-way radio (Walkie – talkie)

**9.0 Pre-operation and Post-operation Inspections (1 hour)**

- 9.1 Machine assembly and set-up.
- 9.2 Checklist for steps in pre-operation and post-operation inspection of tower crane.
- 9.3 The use and maintenance of log book.
- 9.4 Management and operators' responsibilities.

**10.0 Practical Training (8 hours)**

- 10.1 Pre-operational checks.
- 10.2 Operating procedures and precautions.
- 10.3 Proper slewing and hoisting.
- 10.4 Mastering tower crane operations.
- 10.5 Post-operational checks.

**SYLLABUS FOR MOBILE CRANE OPERATOR PRACTICAL PROGRAMME FOR CONSTRUCTION PERSONNEL**

**1.0 Legislative Requirement (1 hour)**

- 1.1 Occupational Safety and Health Act 1994 (Act 514) and its regulations.
- 1.2 Factories and Machinery Act 1967 (Act 139) and its regulations.
- 1.3 Construction Industry Development Board Act 1994 (Act 520) and personnel accreditation and registration regulations.
- 1.4 Other related Acts, regulations, codes of practices pertaining to mobile crane operation.

**2.0 Introduction to Mobile Cranes (1 hour)**

- 2.1 Types of mobile cranes.
- 2.2 Terminology on mobile crane structure.
- 2.3 Mobile crane selection.
- 2.4 Safety features.
- 2.5 Periodical Inspection, Testing and Maintenance.

**3.0 Calculation of Mass (1 Hour)**

- 3.1 General mathematical formulae on calculations of area and volume of various shapes of material.
- 3.2 Basic mass calculation for various shapes of loads normally engaged during mobile crane operation.

**4.0 Slinging Methods (2 hours)**

- 4.1 Determination safety factor, breaking force, safe working load (SWL) and working load limit (WLL).
- 4.2 Sling angles and their limitations (angle factors).
- 4.3 Load factors for round, rectangular or square loads.
- 4.4 Using various types of clamps.

**5.0 Lifting Appliances (2 hours)**

- 5.1 Care, maintenance, selection and inspection on slinging material e.g. wire ropes, fibre ropes, webbing slings, chains, shackles, sheaves, hooks etc.
- 5.2 Use of slings/hoists and tag line.
- 5.3 Determination of SWL

**6.0 Load Chart (4.5 hours)**

- 6.1 Understand various load charts based on types of mobile crane
- 6.2 Interpretation of the respective load charts.
- 6.3 Estimation of allowable lifting load.

**7.0 Personnel and General Safety (1 hour)**

- 7.1 Proper safety equipment.
- 7.2 Correct use of PPE (Personnel Protective Equipment).
- 7.3 Site hazards assessment.
- 7.4 Safe operations.
- 7.5 Ground assessment.
- 7.6 Guards and protective structures

**8.0 Signals and Communications (1/2 hour)**

- 8.1 Hand signals.
- 8.2 Whistle.

**9.0 Pre-Operation and Post-Operation Inspections (1 hour)**

- 9.1 Machine assembly and set-up.
- 9.2 Checklist for steps in pre-operation and post-operation of mobile crane.
- 9.3 The use and maintenance of log book.
- 9.4 Management and operators' responsibilities.

**10.0 Practical Training ( 8 hours )**

- 10.1 Pre-operational checks.
- 10.2 Operating procedures and precautions
- 10.3 Proper slewing and hoisting.
- 10.4 Mastering mobile crane operations.
- 10.5 Post-operational checks.

**SYLLABUS FOR CRANE OPERATOR PRACTICAL PROGRAMME  
FOR SCHOOL LEAVER YOUTHS**

**1.0 (Legislative - (4 hours )**

- 1.1 Factories and Machinery Act 1967 (Act 139) and its regulations
- 1.2 Occupational Safety and Health Act 1994 (Act 514) and its regulations
- 1.3 Construction Industry Development Board Act 1994 (Act 520)
- 1.4 Other related Acts, regulations and codes of practice

**2.0 Introduction to cranes - (6 hours )**

- 2.1 Crane prime functions
- 2.2 Types of cranes
- 2.3 Terminology of crane structure
- 2.4 Mechanical principle
- 2.5 Crane safety features
- 2.6 Periodical inspection, testing and maintenance.

**3.0 (Mass Calculations) - (12 hours)**

- 3.1 General mathematical formulae on calculations of area and volume of various shapes of material.
- 3.2 Calculations of area and volume of various shapes of leads
- 3.3 Mass calculation for various shapes of loads

**4.0 Load lifting methods(Sliding Method) - (12 hours )**

- 4.1 Determination of safety factor, breaking force, safe working load (SWL) and working load limit (WLL).
- 4.2 Sling angles and their limitations (angle factors).
- 4.3 Load factors for various shapes of loads
- 4.4 Method of gird and tie on loads
- 4.5 Load center

**5.0 Lifting Appliances - (12 hours)**

- 5.1 Selection, inspection, caring and maintenance slinging materials,e.g.,wire rope, fibre rope, chains and synthetic webbing slings,
- 5.2 Use of sling and tag line
- 5.3 Determination of defects on the lifting appliances

5.4 Determination of SWL and WLL.

**6.0 Auxiliary lifting equipment - (12 hours)**

- 6.1 Material selection, inspection, care and maintenance
- 6.2 Shackle
- 6.3 Eyebolt
- 6.4 Hook block
- 6.5 Pulley
- 6.6 Tumbuckles
- 6.7 Spreader Beam
- 6.8 Plate clamp
- 6.9 Determination of SWL dan WLL

**7.0 Load Chart - (24 hours)**

- 7.1 Understand various load chart of various crane models/types
- 7.2 Interpretation of the various load charts.
- 7.3 Estimation of allowable lifting load.

**8.0 Communication equipment - (6 hours)**

- 8.1 Hand signals / whistle
- 8.2 Two-way radio signals

**9.0 Personal Protective equipment (PPE)- (6 hours)**

- 9.1 Types of PPE
- 9.2 Using procedures of PPE.

**10.0 General safety - (10 hours)**

- 10.1 Identification and evaluation of hazards at construction site
- 10.2 Ground assessment at construction site
- 10.3 Safety measures during crane installation and dismantling setting-up
- 10.4 Safe operation and recommended practices

**11.0 Pre-operation and during operation Inspections (12 hours)**

- 11.1 Installation of machine and set-up
- 11.2 Checklist for steps in pre-operation and during operation inspection
- 11.3 Log Book and its application
- 11.4 Operator's manual book.
- 11.5 Management and operators' responsibilities

**12.0 Practical Training (558 hours)**

12.1 Climbing-up and -down technique for tower crane

12.2 Pre-operation inspection

- i. Inspection of power source
- ii. Inspection of the base
- iii. Inspection of the mask and counterweight for tower crane
- iv. Inspection of the cabin
- v. Inspection of crane safety features

12.3 Demonstration of crane operation

12.4 Introduction to operation wire rope control and switches

12.5 Crane movement

12.6 Load control techniques

12.7 Up and down of loads at hidden area

12.8 Up and down of loads at high and low placei

12.9 Crane Operational skill in various conditions

12.10 Inspection during operation

12.11 Lifting appliance repair/connection techniques

**Lesson Plan**

1. Course name :
2. Lesson title :
3. Objective :
4. Scope :
5. Reference material

Contents / Activity	Duration	Instructor/trainer remarks
<b>Total period</b>		