

## FESHM 10180: MOBILE ELEVATING WORK PLATFORMS (MEWPs), a.k.a. Aerial Lifts

### Revision History

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## 1.0 INTRODUCTION AND SCOPE

Man-lifts, articulating boom lifts, scissor lifts, and other lifts are used throughout Fermilab to perform a variety of functions. Equipment of this type is often grouped together under the title “mobile elevating work platforms” or MEWP. The use of MEWPs creates a potential for serious injury and property loss. This chapter contains procedures to ensure that the operation, inspection, and maintenance of MEWPs are conducted in a safe manner and that operators are qualified to operate the MEWP safely.

This chapter applies to any MEWPs used at Fermilab and at sites managed by Fermi Research Alliance. Examples of MEWPs include:

- Scissor lifts
- Extensible (telescoping) boom platforms
- Aerial ladders
- Articulating boom platforms
- Vehicle mounted lifts
- Elevating work platforms

## 2.0 DEFINITIONS

Articulating Lift – a lift that has a personnel basket or platform that can be maneuvered up, down, over, and sideways. There are one or more hinged boom sections.

Control(s) – a device actuated by an operator to affect a response from the MEWP.

Competent person – a person who has acquired through training, qualification or experience, or a combination of these, the knowledge and skills to carry out a particular task.

Group A MEWP – MEWPs on which the vertical projection of the platform is inside the tipping lines at maximum inclination in all platform configurations.

Group B MEWP – MEWPs not in Group A, typically identified as boom-type lifts.

Elevated travel position – configuration of the MEWP for travel outside of the lowered travel position.

Familiarization – providing the necessary information regarding the features, functions, devices, limitations, and operating characteristics as defined by the manufacturer in the operator’s manual, in order to properly utilize a specific model MEWP, to include the location of the manufacturer’s operation manual.

Mobile Elevating Work Platform (MEWP) – Machine/device intended for moving persons, tools and material to working positions, consisting of at least a work platform with controls, an extending structure and a chassis.

Occupant – An individual on the work platform who is not the operator.

Personal Aerial Man-lift – Portable aerial device that lifts vertically, but not horizontally. They are usually lightweight and designed for one person to use indoors.

Powered Platform – a working platform where the hoist used to raise or lower the platform is mounted on the platform.

Qualified Operator – An individual deemed competent by management after successfully completing the Training and Qualification requirements of this chapter.

Qualified Person – A person who, by possession of a recognized degree in an applicable field or a certificate of professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

Scissor lift – An aerial device that lifts straight up and down, but not horizontally. They extend into the air via crisscross supports.

Stabilizers – devices that increase the stability of the MEWP but are not capable of lifting or leveling the MEWP.

Type 1 MEWP – MEWP for which travelling is allowed only when in the stowed position.

Type 2 MEWP – MEWP for which traveling with the work platform in the elevated travel position is controlled from a point on the chassis.

Type 3 MEWP – MEWP for which travelling with the work platform in the elevated travel position is controlled from a point on the work platform.

Work Platform – component of the MEWP intended for carrying personnel along with their necessary tools and materials.

## **3.0 RESPONSIBILITIES**

### **3.1 Division/Section/Project Heads**

- Implement the requirements associated with the use of MEWPs.
- Ensure that MEWP operators are trained and qualified to perform their assigned duties.
- Ensure that inspections are performed.
- Ensure that all MEWPs within their areas of responsibility are included in the program and shall inform FESS of times of availability.

### **3.2 Facilities Engineering Services Section (FESS)**

- Administer a maintenance and repair program for all MEWPs owned by Fermilab.
- Conduct quarterly and annual inspections of all MEWPs owned and operated by Fermilab.
- Distribute inspection, testing and maintenance reports to the Division/Section/Project Head upon request.

### **3.3 ES&H Section**

- Provide a qualified person to review work plans that include exiting/entering a MEWP at height and will provide a determination if the work will be approved.
- Review and revise this program to reflect any changes in regulatory requirements, as necessary.
- Coordinate with training providers to obtain qualified trainers.
- Maintain the lesson plan and training materials.

### **3.4 Mechanical Safety Subcommittee (MSS)**

- The Mechanical Safety Subcommittee will serve in a consulting capacity to ES&H and D/S/P in all matters concerning the inspection, maintenance and operation of MEWPs.

### **3.5 WDRS Professional Development and Learning**

- Maintain documentation of all classroom training, on-the-job training and evaluations.

### **3.6 Supervisors of Mobile Elevating Work Platform (MEWP) Operators**

- Attend required training for supervisors of MEWP Operators.
- Ensure that employees/users who operate MEWPs have received training appropriate to their assigned tasks.
- Ensure that employees/users who operate MEWPs do so in a safe manner.
- Ensure that equipment under their responsibility is properly inspected and maintained in a safe operating condition.
- Provide appropriate fall protection equipment to operators and occupants as required by this program and the manufacturer.
- Ensure a fall rescue plan is developed prior to using any lift that will require the use of fall arrest equipment. See FESHM 7060 for further guidance.

### **3.7 Mobile Elevating Work Platform (MEWP) Operators**

- Complete all required training and evaluations prior to operating any MEWP.
- Operate only those MEWPs for which they are authorized, trained, and familiar with.
- Complete a pre-use inspection, risk assessment and rescue plan prior to operation and submit to supervisor.
- Immediately cease operations when any problems, hazardous conditions, or malfunction arise. Operations may only continue after all issues have been corrected.
- If an untrained occupant accompanies the operator in the MEWP, the operator must provide instructions to the occupant to ensure they have a basic level of knowledge to work safely on the MEWP. The occupant must be taught how to operate the MEWP controls, in case of an

emergency where the operator becomes incapacitated. This only gives the occupant the authority to operate the MEWP in an emergency. The operator must verify the occupant's training completion for Fall Protection Orientation if fall protection use is required by the manufacturer. Refer to the MEWP Occupant Knowledge in Technical Appendix 7.1.

## 4.0 POLICY

The operation, inspection, maintenance, and testing of powered mobile elevating work platforms (MEWPs) shall be in accordance with mandatory standards. These standards are listed under References in Section 6.0.

Requirements applicable to all MEWPs are highlighted in this procedure. Other requirements may exist that are specific to a certain style, size, or use of a particular piece or type of equipment. The appropriate standards are to be consulted by those assigned responsibility for MEWP operations to identify specific requirements, recommendations, and guidance for the safe operation and use of this equipment. Assistance with the implementation of these standards can be obtained from the Division Safety Officer (DSO) or ES&H Section, if requested.

## 5.0 PROCEDURES

### 5.1 Training and Qualifications

#### 5.1.1. Employee

Operator training and qualification shall include those requirements identified in regulatory standards. Operators utilizing MEWPs on any roads must hold a valid driver's license from any of the fifty states.

#### 5.1.2. Non-Employee

Non-Employees requesting to operate MEWPs owned by Fermilab are expected to have completed training that is equivalent to the training offered by Fermilab. Documentation will be required. A hands-on instruction and evaluation by a qualified instructor must be completed prior to operation of MEWPs owned/leased by Fermilab.

Qualification of non-employees requesting to operate MEWPs owned by Fermilab shall be made by attendance of training and a hands-on evaluation by a qualified instructor. In all cases, where previous training and experience is used as the basis for accepting qualification, such training and experience shall be certified in writing by the employer as meeting the requirements of regulatory standards. When there are special hazards/features associated with a particular piece of equipment, e.g., unfamiliar controls or modifications to the original design, a qualified division/section/project Operator will determine whether the non-employee operator(s) shall receive documented job instructional training from Fermilab personnel.

Operators utilizing MEWPs on any roads must hold a valid driver's license from any of the fifty states.

In the case of subcontractor personnel, follow the procedures under the section "Loaning of MEWPs."

### **5.1.3. Qualification Training**

Operator training and qualification shall include both a classroom and performance evaluation phase. At a minimum, the training shall meet the learning objectives specified in the training course. Demonstration of the operator's abilities to perform all activities expected or anticipated for the job will be part of the qualification process during the performance phase. Individuals may be qualified for scissor-style lifts, boom-style lifts, or both. A qualified trainer shall observe the operator's performance and document the performance results on the Mobile Elevating Work Platform Evaluation Form.

### **5.1.4. Certification Records**

Training records certifying operator qualification shall include the name of the trainee, date of training, and the signature of the trainer or evaluator. Training dates will be documented in the TRAIN database.

### **5.1.5. Remedial Training**

Remedial training will be provided to individuals who do not successfully pass the qualification course. The course instructor or supervisor will determine the level of remedial training required. Remedial training will be provided also to operators involved in an accident, a near-miss incident, or who are observed operating a MEWP in an unsafe manner. The operator's supervisor in consultation with the Division Safety Officer will determine the level of remedial training needed under these circumstances.

### **5.1.6. MEWP-Operator Supervisor Training**

All personnel who supervise MEWP operators are required to complete training that covers the following topics:

- Proper selection of the correct MEWP for the work to be performed
- The rules, regulations and standards that apply to MEWPs, including the provisions for safe use as defined in ANSI A92.22, training and familiarization, and the work being performed
- Potential hazards associated with use of MEWPs and the means to protect against identified hazards
- Knowledge that the manufacturer's operation manuals are an integral part of the MEWP and need to be stored properly in the weather-resistant compartment on the MEWP.



## 5.2 Inspections

### 5.2.1. Daily Pre-use Inspections

A safety inspection shall be completed for each lift prior to the start of each shift, or prior to the first use of the day for equipment not in continuous service. A qualified operator shall conduct the inspection, and preferably one that is familiar with the specific equipment. Documentation of daily pre-use inspections is not required.

Daily inspections are not required for equipment that is not in service.

### 5.2.2. Annual Inspection

A documented, annual inspection shall occur. The annual inspection shall be arranged by FESS.

Annual inspections are not required for equipment that is not in service. Prior to being placed back into service, an annual inspection shall be completed.

## 5.3 Preventative Maintenance and Repair Program

FESS will administer a maintenance and repair program for all MEWPs owned by Fermilab. This program will provide for quarterly preventive inspections and maintenance and an annual inspection for all equipment (one of the quarterly inspections serves as the annual); and for any unforeseen maintenance and repair work necessary to keep the equipment in safe operating condition.

These services shall be conducted by FESS or, as their agent, a qualified maintenance contractor determined by a "Request for Proposal (RFP) with Qualifications" to assure professional services. The program will be carried out in conjunction with the division/section/project head responsible for the equipment. The division/section/project head is responsible for ensuring that all MEWPs within their areas of responsibility are included in the program and shall establish and inform FESS of times of availability. All costs for inspection, testing, and maintenance shall be the responsibility of the division/section/project that owns the equipment.

*Note: Maintenance and repair of rental MEWPs and associated equipment is the responsibility of the vendor as per contract documents unless the division/section/project administering the contract specifies otherwise.*

### 5.3.1. Preventative Maintenance Inspection

A documented inspection shall occur at least quarterly as part of the Preventative Maintenance and Repair program described in this chapter.

Quarterly inspections are not required for equipment that is not in service. Prior to being placed back into service, the quarterly inspection shall be completed by Facility Engineering Services Section (FESS).

### 5.3.2. Repair

A qualified vendor working under the direction of FESS shall complete repairs on all MEWPs.

### 5.3.3. Acceptance Testing

FESS shall arrange for documented inspection and testing of new MEWPs before placing in service or after extensive repairs to a damaged one are made. FESS will maintain acceptance testing documentation and can provide copies to the owner upon request.

## 5.4 Operations

MEWPs shall only be used in the environment, atmospheres and surfaces for which the manufacturer designates them.

### 5.4.1. Pre-Use Risk Assessment and Rescue Plan

Personnel planning any work that will utilize a MEWP must conduct a pre-use risk assessment (hazard analysis). See FESHM 2060. The pre-use risk assessment will review the area where the MEWP will be used in order to select the appropriate MEWP and evaluate the hazards associated with the task.

The work planner shall prepare a hazard analysis that addresses any hazards identified with appropriate control measures and safe work procedures.

The work planner must also develop a rescue plan. The rescue plan should either be incorporated in the hazard analysis or prepared on the [FESHM 7060 Fall Rescue Plan Form](#).

The rescue plan must consider the following situations:

- a. A system failure of the MEWP that results in the loss of platform control functions may be addressed using either:
  - i. The MEWP auxiliary power function of the controls
  - ii. The MEWP secondary manual emergency descent controls.
    1. Follow the manufacturer's directions in the use of these systems. This plan should be included in operator training/familiarization and occupant instructions.
- b. A fall from the platform when using a fall arrest system will require a rescue plan to determine how the affected worker will return safely to the platform or ground. The plan must be in writing. All occupants shall receive training that explains procedures to follow if they fall and await rescue or witness another worker's fall.
  - i. The rescue may be a self-rescue (by person involved), assisted rescue (by others in the work area), or technical rescue (by emergency services).

- c. Rescue from the MEWP work platform if the machine is unable to be lowered for any reason. In the case of platform entanglement, the operator and occupants must be removed from the platform prior to making attempts to free the platform.
- d. MEWPs which have tipped beyond their center of gravity shall be stabilized and secured before attempting rescue.

#### **5.4.2. Workplace Inspection**

Before and during the use of the MEWP, the work planner and operator must conduct a workplace inspection in the area where the MEWP will be used, checking for possible hazards, such as:

- a) Drop-offs or holes
- b) Slopes
- c) Bumps, floor obstructions and electric cables
- d) Debris
- e) Overhead obstructions
- f) Electrical conductors
- g) Hazardous atmospheres and/or hazardous locations
- h) Surfaces inadequate to sustain the ground-bearing pressures imposed by the MEWP in all operating configurations
- i) Wind and weather conditions
- j) Presence of personnel and other mobile equipment
- k) Traffic hazards

#### **5.4.3. Use of Fall Protection**

Anyone working from a telescoping and/or articulating boom lift and bucket trucks (Group B MEWP) must wear a personal fall arrest harness with an appropriate lanyard attached to the manufacturer's designated anchorage point. Fall Protection Orientation training (FN000304/CR/01) is required for any personnel who will utilize fall protection equipment.

The use of a personal fall arrest system is not required on scissor lifts if the guardrail system is intact, unless required by the manufacturer.

#### **5.4.4. Exiting (or Entering) a MEWP at height**

MEWPs are not designed for transferring personnel from one level to another or for leaving the work platform. When a work plan identifies a worker exiting/entering an elevated MEWP, the work plan must be approved by a qualified person from the ES&H Section, and include provisions for the following:

- a) Require the personnel exiting/entering only do so through the gate within 1 foot or less from the structure
- b) 100% tie off required utilizing a double-leg lanyard, one tied to the MEWP tie-off point, the other to the structure. Personnel may not disconnect from the MEWP tie-off until the second lanyard has been connected/secured to the structure tie-off
- c) Fall prevention of persons during the transfer from the work platform to the structure
- d) Fall prevention of tools/materials during transfer from the work platform to the structure

- e) Sudden movement of the MEWP or work platform
- f) Additional loads or changing of loads imposed on the MEWP for which it was not designed which could affect stability or overload the machine
- g) Dynamic and impact loads from personal fall protection equipment
- h) Damage to the MEWP or structure by an unintentional movement of the MEWP
- i) Stranding of people
- j) Use of extending decks and gates.

#### **5.4.5. Additional MEWP Operational Rules**

- Electrical Hazards:
  - When working in an area of energized conductors, the operator must comply with the following:
    - Stay at least 10 feet away from power lines with any part of their body, conductive object or any part of the MEWP.
    - If work requires worker nearer than 10 feet, stop and consult with the Division Safety Officer who will identify a qualified person to determine de-energizing and grounding options.
    - If the power lines may carry more than 50 kV, a qualified person with respect to electrical transmission and distribution must be consulted before proceeding.
- Footing for Personnel:
  - Climbing by occupants on the toe board, mid-rail or top rail of the MEWP is prohibited. Use of planks, ladders, or any other devices on the work platform to gain addition height or reach is prohibited.

#### **5.4.6. Parking of MEWPs**

The MEWPs should be parked in an area inaccessible to unauthorized persons.

Upon completion of the work, the MEWP must be parked with the engine/motor switched off, the work platform lowered to its stowed position and the brake applied. The MEWP must not be left unattended with the work platform in an elevated position unless approved by the manufacturer.

#### **5.4.7. Control of Access to MEWPs**

Means shall be provided to prevent MEWP use by unqualified personnel (e.g., restricting access, locking operating controls, removing ignition keys, posting each truck with a sign that states: “Trained Personnel Only” or other appropriate measures). This is the responsibility of the division/section/project who owns the equipment.

#### **5.4.8. Damage to MEWPs**

When a MEWP is damaged in an incident, it will be tagged and locked “out of service” by the division/section/project responsible for the lift. Owners will investigate and document incidents resulting in damage to a MEWP. Do not return to service until repaired and, if applicable, until acceptance testing has been completed (See Acceptance Testing in Section 5.3.3).

## 5.5 Loaning of MEWPs

Loaning of a MEWP to sub-contractor personnel must follow the requirements found in [FESHM 7010 or 7020](#). The owner of the MEWP must fill out the Sub-Contractor Acceptance And Use Of Fermilab Tools/Equipment form #20 found in [FESHM 7010 or 7020](#) and verify that the operator meets the training requirements established in this chapter or the training requirements published in the Code of Federal Regulations.

## 5.6 Driving Powered MEWPs on Fermilab Roads

At times it may be necessary to drive a MEWP on Fermilab roads. These are slow moving vehicles that may introduce a collision hazard because of their slow speeds. Operators driving MEWPs on any roads must hold a valid driver’s license from any of the fifty states.

The owner of the lift shall request an escort if necessary. The escort vehicle must have the emergency flashers ON. A MEWP equipped with rotating/flashing/strobe lights and an operating horn does not need an escort as long as the lights and horn are functional, and the lights are turned ON. A MEWP without lights/horn shall require an escort when transiting.

Escort duties are only required when transiting:

- Wilson Road
- Pine Street
- Batavia Road
- Eola Road
- Discovery Road (Road A)
- Road B

## 6.0 REFERENCES

- 29 Code of Federal Regulation (CFR) 1910.67 – Vehicle-mounted Elevating and Rotating Work Platforms
- 29 CFR 1926.452(w) – Mobile Scaffolding
- 29 CFR 1926.453 – Aerial Lifts
- FESHM 2060 – Work Planning and Hazard Analysis
- FESHM 7060 – Fall Protection

- ANSI/SIA A92.2 – Vehicle Mounted Elevating and Rotating Aerial Devices
- ANSI/SAIA A92.20 – Design, Calculations, Safety Requirements and Test Methods for Mobile Elevating Work Platforms (MEWPs)
- ANSI/SAIA A92.22 – Safe Use of Mobile Elevating Work Platforms (MEWPs)
- ANSI/SAIA A92.24 – Training Requirements for the Use, Operation, Inspection, Testing and Maintenance of Mobile Elevating Work Platforms (MEWPs)

## 7.0 TECHNICAL APPENDICES

### 7.1 Occupant Knowledge

The MEWP operator will be responsible for ensuring all occupants have a basic level of knowledge to work safely on the MEWP. The occupant must be provided the knowledge to operate the controls in an emergency where the operator cannot. This instruction does not give the occupant authorization to operate the controls at any time except in an emergency.

Every occupant must be given the following knowledge, at a minimum:

- The requirement to use fall protection and the location of fall protection anchors
- What factors affect the stability of the MEWP, including their actions
- Work procedures the occupants must follow in relation to the operation of the MEWP
- Hazards related to the task at hand and the mitigative measures (e.g. review of the hazard analysis)
- General knowledge of the purpose and function of the MEWP controls and any safety-related items specified by the manufacturer, including emergency shut-down and lowering procedures, to the extent required to lower the MEWP safely to the ground or stowed position; and
- Manufacturer's warnings and instructions.