

<h1>PPPL</h1>	PRINCETON PLASMA PHYSICS LABORATORY ES&H DIRECTIVES		
	ES&HD 5008SECTION 9, CHAPTER 8 Forklifts		
Approved:	Date: 11/22/00	Revision 2	Page 1 of 9

CHAPTER 8 - FORKLIFTS, WORK PLATFORMS, AND SPECIAL PURPOSE VEHICULAR REQUIREMENTS

8.1 INTRODUCTION

The use of rigging tackle and lifting and handling devices to hoist people, materials, and equipment involves hazards having potential consequences ranging from minor injuries and/or minor property damage, to fatalities and/or major property losses. Reduction of these hazards to risk levels that are acceptable to Laboratory management requires the proper design, maintenance, and use of mechanical devices; care and common sense; proper training and supervision; and the careful adherence to approved work procedures.

The hoisting and rigging program managed by the PPPL lift manager involves the use of cranes, hoists, slings, and rigging tackle. The practical application of the hoisting and rigging program at PPPL is specified in ENG-021.

This section will only address the use of fork trucks, elevating and rotating work platforms, and special purpose vehicular equipment, e.g., graders, loader dozers, self-propelled graders, front end loaders, and backhoes.

8.2 DEFINITIONS

Forklift Operator - A person who meets all of the training requirements through Human Resources and has demonstrated the ability to operate a forklift safely.

Forklift Rigger – an individual who has taken and passed the PPPL Hoisting & Rigging training and the PPPL Forklift Operator training and is therefore qualified to attach appropriate rigging to forklifts as required.

Qualified Person – an individual who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated an ability to recognize, evaluate and resolve concerns regarding the specific subject matter.

Work Platform Operator - A person who meets all of the training requirements through Human Resources and has demonstrated the ability to operate a work platform safely.

Special Purpose Vehicle Operator - A person who meets all of the training requirements through Human Resources and has demonstrated the ability to operate earth-moving equipment safely.

8.3 GENERAL REQUIREMENTS

8.3.1 Fuel Handling

- A. Changing of propane (liquefied petroleum) fuel cylinders shall be done in a well-ventilated area.

- B. Connections shall be checked for leaks prior to placing equipment back into service.

8.3.2 Battery Charging

- A. Battery charging shall only be done in areas designated for that purpose.
- B. Charging areas shall be well ventilated and shall be equipped with eyewash facilities.
- C. Brakes shall be applied before charging batteries in equipment.
- D. No smoking, open flames, sparks or electric arcs are permitted in charging areas.

8.3.3 Modifications or additions that affect capacity or safe operations of any equipment shall only be made with written approval from the manufacturer.

8.4 FORKLIFTS

8.4.1 Operators

- A. Operators shall have a current valid driver’s license in order to operate any forklift at PPPL.
- B. The physical ability of an operator shall be verified by an instructor during the practical training evaluation.

8.4.2 Training and Qualification

In order to qualify as a forklift truck operator or a forklift rigger, the employee must successfully complete the training. The following requirements must be met:

Forklift Operator

Training

Forklift Training Class
 Forklift Training Class
 Forklift Training Class

Testing

Written Exam
 Practical One
 Practical Two
 (Within 90 days of Practical One)

Renewal

Every 3 years
 Every 3 years
 Every 3 years

Forklift Rigger

Training

Forklift Training Class
 Hoisting and Rigging

Testing

Written Exam & Practicals
 Written Exam & Practical

Renewal

Every 3 years
 Every 3 years

8.4.3 Forklift Identification

Every truck shall have attached to it a legibly inscribed, corrosion-resistant nameplate with the model and/or serial number, weight of the truck with attachments, and the capacity of the truck with attachments at maximum elevation with load laterally centered. Attachments allowed shall be listed on the truck. Attachments must be approved by the manufacturer. Attachments shall have a nameplate that lists the forklift truck on which they may be used.

8.4.4 Inspections

- A. Materiel Control shall ensure forklift trucks receive a preventive maintenance inspection by a qualified person **or inspector** at a minimum of every six months.
- B. If an inspection has not been completed by the end of the sixth month, the equipment shall be tagged out-of-service by Materiel Control.
- C. Forklifts shall be inspected when assigned to service and annually thereafter by a qualified inspector provided by the subcontractor. This annual inspection will include a **thorough** visual Non-destructive Evaluation (NDE) on visible areas of the forklift tines (forks). If the visual inspection discovers cracks, linear indications, laps, or seams **on either fork**, Materiel Control will have **both forks** replaced.
- D. Maintenance and inspections shall be performed according to the manufacturer's recommendations and as a minimum shall meet the requirements of OSHA, 29 CFR 1910, ANSI B56.1, **and DOE-STD-109-98, Chapter 10**.
- E. A tag with an inspection date, expiration date, and the inspector's signature shall be attached to the equipment.
- F. A visual inspection shall be performed by the operator prior to use, once per shift. If any part is found deteriorated or operation is not as designed, the equipment shall be taken out of service until it is repaired. Special attention shall be given to the following (no documentation required):
 - 1. **Condition of** tires and inflation pressure
 - 2. Warning devices
 - 3. Lights
 - 4. Battery
 - 5. Controller
 - 6. Lift and tilt systems, load-engaging means, chains, cables, and limit switches
 - 7. Brakes
 - 8. Steering mechanism
 - 9. Fuel system

8.4.5 Load Testing

- A. Prior to initial use, all new, **rented**, or extensively repaired or altered forklifts shall be tested and inspected by **a qualified person or inspector**.
- B. Load testing shall be in accordance with OSHA and ANSI standards.
- C. **All** load testing shall be performed by a qualified person **or inspector**.

8.4.6 Purchasing

Acquisitions for all forklift trucks must be approved by Industrial Hygiene (IH) in consultation with Materiel Control, M&O and/or a PPPL Lift Engineer as appropriate by using Form 8.13-2, Non-Chemical Requisition Review Sheet (Found in Section 8, Chapter 13 of this Manual).

8.4.7 Records

- A. Inspection reports shall be maintained by Materiel Control.
- B. Non-destructive examination reports shall be prepared by the contractor and retained by Materiel Control.
- C. Load testing reports shall be prepared by the qualified inspector, and shall be retained by Materiel Control.
- D. Records shall be retained in the Materiel Control Transportation Services master files for the life of the equipment while at PPPL.

8.4.8 Operations

- A. Equipment shall not be driven up to anyone standing in front of a bench or other fixed object.
- B. No person shall be allowed to stand or pass under the elevated portion of any equipment, whether empty or loaded.
- C. No personnel other than the operator shall be allowed to ride any forklift.
- D. Keep arms and legs from between uprights of the mast or outside the running lines of the forklift.
- E. When a forklift is left unattended, the load shall be fully lowered, controls shall be neutralized, power shall be shut off, and brakes set. If on an incline, the wheels shall also be blocked.
- F. If at any time a forklift is found to be in need of repair, defective, or in any way unsafe, the forklift shall be taken out of service until restored to a safe operating condition.
- G. Fuel tanks shall not be filled with the engine running.
- H. No truck shall be operated with a leak in the fuel system.
- I. Adequate lighting shall be provided at all times. If overhead light is not adequate temporary lighting or vehicle mounted lights may be used.

8.4.9 Travelling

- A. A safe distance shall be maintained from the edge of any ramps or platforms.

- B. When loading or unloading from trucks or trailers, brakes shall be set and wheel blocks shall be in place to prevent movement of the truck or trailer. Flooring of trucks and trailers shall be inspected for breaks and weakness prior to driving a forklift onto them.
- C. Ensure sufficient headroom under overhead installations, lights, pipes, and sprinkler systems for the mast and the load.
- D. All traffic regulations shall be observed, including speed limits. A safe distance shall be maintained (approximately three car lengths) from the vehicle ahead.
- E. Slow down and sound horn at cross aisles and other locations where vision is obstructed.
- F. If the load obscures vision, the forklift shall be driven with the load trailing.
- G. When travelling up or down slopes, loaded trucks shall be driven with the load upgrade, slowly.
- H. On slopes, the load shall be tilted back, if applicable, and raised only as far as necessary to clear the road surface.
- I. Horseplay is not permitted.
- J. Safe driving practices must be followed at all times, including slowing down for wet or slippery floors.
- K. Avoid running over loose objects on the floor or roadway.

8.4.10 Loading

- A. Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads that cannot be centered.
- B. Only loads within the rated capacity of the forklift shall be handled.
- C. Forks or other load engaging means shall be placed as far as possible under the load. The mast shall be carefully tilted backward to stabilize the load.

8.5 ELEVATING AND ROTATING WORK PLATFORMS (AERIAL LIFTS)

This section addresses the operation of vehicle-mounted devices—telescoping, articulating, or both—which are used to position personnel and/or tools and/or equipment above or below the normal work surface (**Aerial Boom Lifts**). It also addresses the operation of manually- and self-propelled platforms such as scissor lifts.

8.5.1 Operators

Elevating and rotating work-platform operators shall have a valid drivers license and shall demonstrate physical ability to operate the work platform as in paragraph 8.4.1.

8.5.2 Certification

When an individual has passed the written and practical test for work-platform operation, a card will be issued to the individual. The individual must successfully complete the following training:

<u>Training</u>	<u>Testing</u>	<u>Renewal</u>
Aerial Boom Lift	Written	Every 3 years
Aerial Boom Lift	Practical	Every 3 years
Scissor Lift	Written	Every 3 years
Scissor Lift	Practical	Every 3 years

8.5.3 Identification

Each work platform shall have attached to it a legibly inscribed, durable, corrosion-resistant nameplate consisting of make and model, rated-load capacity, aerial-device height and reach, maximum pressure of the hydraulic system, maximum voltage of the electrical system, cautions and restrictions of operation, date of inspection, and expiration date.

8.5.4 Inspections

- A. Materiel Control shall ensure that a preventative maintenance inspection of elevating and rotating work platforms is conducted at a minimum of every six months and is performed by a qualified person **or inspector**.
- B. If a periodic inspection has not been performed within the last six months, the equipment shall be tagged out-of-service by Materiel Control.
- C. A tag with the date of inspection, expiration date, and the inspector's signature shall be attached to the equipment.
- D. A visual inspection shall be performed by the operator prior to use, once per shift. If any parts are determined to be partially disabled or not operating as designed, the equipment shall be tagged out by the user. Special attention shall be given to the following (no documentation required):
 1. Operating controls and associated mechanisms for conditions interfering with proper operation.
 2. Operating controls and associated mechanisms for excessive component wear and contamination by foreign material.
 3. Visual and audible safety devices.
 4. Hydraulic or pneumatic systems.
 5. **Condition of** tires and inflation pressure.
 6. Damage or contamination of fiberglass or other insulating components.
 7. Battery.

8. Controller.
9. Chains, cables, and limit switches.
10. Brakes.
11. Steering mechanism.
12. Fuel system.

8.5.5 Load Testing

Prior to initial use, all new or extensively repaired or altered work platforms shall be tested and inspected by or under the direction of a **qualified person or inspector**. Testing shall be done on level ground, and the boom shall be extended through its entire range of operation. Load testing shall be in accordance with manufacturer's recommendations.

8.5.6 Purchasing

Acquisitions for all work platforms must be approved by Industrial Hygiene (IH) **in consultation with Materiel Control, M&O and/or a PPPL Lift Engineer as appropriate** by using Form 8.13-2, Non-Chemical Requisition Review Sheet (**Found in Section 8, Chapter 13 of this Manual**).

8.5.7 Records

- A. Periodic inspection reports shall be maintained by Materiel Control.
- B. Load testing reports shall be prepared by M&O and retained by Materiel Control.
- C. Periodic inspection and load testing reports shall be retained for the life of the equipment in Materiel Control Transportation Service master files while at PPPL.

8.5.8 Operations

- A. **Only trained persons shall operate any lift.**
- B. **Tying off to an adjacent pole, structure, or equipment while working from within an aerial lift is not permitted.**
- C. **Employees shall always stand firmly on the floor of the basket or platform, and shall not sit or climb on the edge of the basket or guardrails. No use of planks, ladders, or other devices is permitted as a work platform from the aerial lift. If exiting the lift at elevation six feet or more above a lower surface, workers must utilize proper fall protection. Workers are permitted to climb the edge of the basket or guardrails only to exit the lift at high elevation, and only when properly protected from falls.**
- D. **All employees using an aerial boom lift will be equipped with a full body harness and lanyard attached to a designated connection point near the floor of the lift or on the boom. Employees working on scissor lifts are not required to wear harness and lanyard as long as they remain within the guardrail of the lift, and the guardrail is in good condition (chains connected across any openings).**

- E. Brakes shall be set and outriggers, when used, shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using and aerial lift on an incline.
- F. Boom and basket load limits shall not be exceeded.

8.6 SPECIAL PURPOSE VEHICULAR EQUIPMENT

8.6.1 Operators

Special-purpose vehicular equipment operators shall have a valid driver's license and demonstrate a physical ability to operate the equipment as in paragraph 8.4.1. A separate certification is required for each type of special purpose vehicle.

8.6.2 Certification

When an individual has passed the practical field test of the equipment and has shown the ability to safely operate the equipment, a card will be issued. The individual must successfully complete the following training:

<u>Training</u>	<u>Testing</u>	<u>Renewal</u>
Vehicle Training	Written Exam (when available) Practical Evaluation	Every 3 years Every 3 years

8.6.3 Identification

All special-purpose vehicular equipment shall have attached to it a tag with the date of inspection, the expiration date, and the inspector's signature.

8.6.4 Maintenance and Inspections

Maintenance and preventive maintenance inspections on special-purpose vehicular equipment shall be performed in accordance with the manufacturer's recommendations. Materiel Control shall ensure that maintenance is performed by a qualified person or inspector.

8.6.5 Requirements

All special-purpose vehicular equipment shall meet the requirements of OSHA Construction Industry, Parts 1926.600, 1926.601, and 1926.602.

8.6.6 Purchasing

Acquisitions for special-purpose vehicular equipment must be approved by Industrial Hygiene (IH) in consultation with Materiel Control, M&O and/or a PPPL Lift Engineer as appropriate by using Form 8.13-2, Non-Chemical Requisition Review Sheet (Found in Section 8, Chapter 13 of this Manual).

8.6.7 Records

- A. Records of special-purpose vehicular equipment shall be maintained by Materiel Control.
- B. Maintenance and inspection reports shall be retained for the life of the equipment while at PPPL by the Materiel Control Division.

8.7 REFERENCES

ENG-021, "Hoisting and Rigging Program" (Previously TOP 23.027).

ANSI B56.1, "Low Lift and High Lift Trucks."

ANSI B56.2, "Powered Industrial Trucks, Type Designation, and Area of Use" (NFPA 505).

ANSI B56.3, "Electric Battery-Powered Industrial Trucks" (UL 558).

ANSI MH11.4, "Forks and Forks Carriers for Powered Industrial Forklift Truck."

OSHA 29 CFR 1910.

OSHA Construction Industry, Part 1926.600, 1926.601, 1926.602.

Material Control Policy and Procedures.