TEMPORARY CHANGE REQUEST

TCR NO. TCR-ESHD 5008 Section 9 Chapter 8, R3-002
(e.g., TCR-ENG-021,R0-001)

The Temporary Change Request (TCR) Form is to be used to process urgent or minor changes for PPPL Policies, Organization/Mission Statements and Procedures. The TCR should be used when changes are:
1) urgent, and can not wait the 2-4 week period for Department Head review/comment, or
2) minor, and do not warrant Department Head review.

Person Requesting Change: Andy Morrison **Phone Ext:** 2841

Department Name: Best Practices

Document Number: ESHD 5008 Section 9 Chapter 8 **Revision No.:** 3

Document Title: Forklifts, Work Platforms, and Special Purpose Vehicles and Equipment Requirements

Reason for change:
Changes of organization names and minor editing from 3 year review.
Add references to new Engineering Standard ES-MECH-014, Refueling and Recharging Vehicles and Equipment.

Change description: (Summarize and attach changed pages, with changes clearly indicated)
Changed M&ES to Material Services and M&O to Facilities and Site Services
Add: More detail regarding fueling (recharging) may be found in Engineering Standard ES-MECH-014 Refueling and Recharging Vehicles and Equipment to 8.3.1 and 8.3.2

1. Does this TCR significantly alter the intent or scope of the document? **YES:**____ **NO:X**____

2. Does this TCR significantly impact **ES&H**? **YES:**____ **NO:X**____

If 1 or 2 is **YES**, Explain why the changes should not be routed for Department Head review:

Bill Slavin **2/27/15**
Department/Division Head Approval **Date**

John DeLooper **2/27/15**
Head, Best Practices and Outreach/designee **Date**

Release/Effective date of this TCR: **3/2/15**

Incorporate this TCR into next revision of this document? **YES:X**____ **NO:**____

CHAPTER 8 - FORKLIFTS, WORK PLATFORMS, AND SPECIAL PURPOSE VEHICLES AND EQUIPMENT 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 vehicles and equipment.

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.

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.

Special Purpose Vehicles and Equipment – Special purpose vehicles include Skid Steers and Backhoes, and special purpose equipment includes Construction and Demolition Equipment, Vehicle Attachments and Portable Equipment. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

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.

C. Fueling shall not take place while the engine is running.

D. Proper personal protective equipment shall be worn during handling of fuel or containers.

E. More detail regarding fueling may be found in Engineering Standard ES-MECH-014 Refueling and Recharging Vehicles and Equipment. TCR-ESHD 5008 Section 9 Chapter 8, R3-002

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 and adequate fire protection.

C. Brakes shall be applied before charging batteries in equipment.

D. No smoking, open flames, sparks or electric arcs are permitted in charging areas.

E. Reinstalled batteries shall be properly positioned and secured in the vehicle.

F. When charging batteries, acid shall be poured into water; water shall not be poured into acid. Proper personal protective equipment must be worn.

G. Ensure that vent caps are functioning and the battery compartment cover is open to dissipate heat.

H. Tools and metallic objects shall be kept away from the tops of uncovered batteries.

I. More detail regarding battery charging may be found in Engineering Standard ES-MECH-014 Refueling and Recharging Vehicles and Equipment. TCR-ESHD 5008 Section 9 Chapter 8, R3-002

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.

8.3.4 Training

A. Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator's performance in the workplace.

B. All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train operators and evaluate their competence. Trainer qualifications will be evaluated and documented by Human Resources

C. The following topics will be covered in the training program where applicable to the operation of the vehicles.

1. Operating instructions, warnings, and precautions for the types of vehicle the operator will be authorized to operate;

2. Differences between the vehicle and an automobile;

3. Vehicle controls and instrumentation: where they are located, what they do, and how they work;

4. Engine or motor operation;

5. Steering and maneuvering;

6. Visibility (including restrictions due to loading);

7. Fork and attachment adaptation, operation, and use limitations;

8. Vehicle capacity;

9. Vehicle stability;

10. Any vehicle inspection and maintenance that the operator will be required to perform;

11. Refueling and/or charging and recharging of batteries;

12. Operating limitations;

13. Any other operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

14. Surface conditions where the vehicle will be operated;

15. Composition of loads to be carried and load stability;

16. Load manipulation, stacking, and unstacking;

17. Pedestrian traffic in areas where the vehicle will be operated;

18. Narrow aisles and other restricted places where the vehicle will be operated;

19. Hazardous (classified) locations where the vehicle will be operated;

20. Ramps and other sloped surfaces that could affect the vehicle's stability;

21. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust;

22. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

D. Refresher training in relevant topics shall be provided to the operator when:

1. The operator has been observed to operate the vehicle in an unsafe manner;

2. The operator has been involved in an accident or near-miss incident;

3. The operator has received an evaluation that reveals that the operator is not operating the truck safely;

4. The operator is assigned to drive a different type of vehicle; or

5. A condition in the workplace changes in a manner that could affect safe operation of the vehicle.

E. An evaluation of each operator's performance shall be conducted at least once every three years.

F. Human Resources shall document that each operator has been trained and evaluated as required by this Chapter. This qualification documentation shall include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation.

8.4 FORKLIFTS

8.4.1 Training and Qualification

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

Forklift Operator

Training	Testing	Renewal
Forklift Training Class	Written Exam	Every 3 years
Forklift Training Class	Practical One	Initial only.

Forklift Training Class	Practical Two (Within 90 days of Practical One)	Every 3 years

8.4.2 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.

8.4.3 Inspections

A. Materiel Services shall ensure forklift trucks receive a preventive maintenance inspection by a qualified person or inspector at a minimum of every six months. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

B. If an inspection has not been completed by the end of the sixth month, the equipment shall be tagged out-of-service by Material Services. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

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, Material Services will have both forks replaced. An evaluation of engine operation for excess carbon monoxide output will also be performed, and corrective measures taken as needed. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

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

8.4.4 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.

8.4.5 Purchasing

Acquisitions for all forklift trucks must be approved by Industrial Hygiene (IH) in consultation with Material Services, Facilities and Site Services (F&SS) and/or a PPPL Lift Engineer as appropriate by using Form 8.13-2, Non-Chemical Requisition Review Sheet (as described in Section 8, Chapter 13 of this Manual). TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

8.4.6 Records

A. Inspection reports shall be maintained by Material Services. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

B. Non-destructive examination reports shall be prepared by the contractor and retained by Material Services. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

C. Load testing reports shall be prepared by the qualified inspector, and shall be retained by Material Services. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

D. Records shall be retained in the Material Services Transportation Services master files for the life of the equipment while at PPPL. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

8.4.7 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.

8.4.8 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.

8.4.9 Loading

TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

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 Qualification

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:

Training	Testing	Renewal
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

8.5.2 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.

8.5.3 Inspections

A. Material Services 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. An evaluation of engine operation for excess carbon monoxide output will also be performed at least annually, and corrective measures taken as needed. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

B. If a periodic inspection has not been performed within the last six months, the equipment shall be tagged out-of-service by Material Services. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

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.

8.5.4 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.

8.5.5 Purchasing

Acquisitions for all work platforms must be approved by Industrial Hygiene (IH) in consultation with Material Services Facilities and Site Services and/or a PPPL Lift Engineer as appropriate by using Form 8.13-2, Non-Chemical Requisition Review Sheet (as described in Section 8, Chapter 13 of this Manual). TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

8.5.6 Records

A. Periodic inspection reports shall be maintained by Material Services. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

B. Load testing reports shall be prepared by F&SS or a contractor performing the test and retained by Material Services. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

C. Periodic inspection and load testing reports shall be retained for the life of the equipment in Material Services Transportation Service master files while at PPPL. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

8.5.7 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 an aerial lift on an incline.

F. Boom and basket load limits shall not be exceeded.

G. No aerial lift truck shall be moved while the boom is in an elevated, working position, with employees in the basket unless the equipment is specifically designed for this type of operation.

H. Before moving an aerial lift for travel, the operator shall verify that the boom is properly cradled and the outriggers are stowed.

8.6 SPECIAL PURPOSE VEHICULAR EQUIPMENT

8.6.1 Qualification

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. A separate qualification is required for each type of special purpose vehicle. The individual must successfully complete the following training:

Training	Testing	Renewal
Vehicle Training	Written Exam (when available)	Every 3 years
	Practical Evaluation	Every 3 years

8.6.2 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.

8.6.3 Maintenance and Inspections

Maintenance and preventive maintenance inspections on special-purpose vehicular equipment shall be performed in accordance with the manufacturer's recommendations. Material Services shall ensure that maintenance is performed by a qualified person or inspector. Inspection will include an evaluation of engine operation for excess carbon monoxide output when appropriate, and corrective measures shall be taken as needed. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

8.6.4 Requirements

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

8.6.5 Purchasing

Acquisitions for special-purpose vehicular equipment must be approved by Industrial Hygiene (IH) in consultation with Material Services, F&SS and/or a PPPL Lift Engineer as appropriate by using Form 8.13-2, Non-Chemical Requisition Review Sheet (as described in Section 8, Chapter 13 of this Manual). TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

8.6.6 Records

A. Records of special-purpose vehicular equipment shall be maintained by Material Services. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

B. Maintenance and inspection reports shall be retained for the life of the equipment while at PPPL by the Material Services Branch. TCR-ES&HD 5008, Section 9, Chapter 8, R3-002

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.

Materiel Services Branch Policy and Procedures.

Engineering Standard ES-MECH-014, Refueling and Recharging Vehicles and Equipment