

MINOR CHANGE REQUEST FORM

MCR NO. ES-MECH-012.R2-002

(e.g., MCR-ENG-021,R0-001)

The Minor Change Request (MCR) Form is to be used to process Minor, or in some necessary cases, Urgent or Temporary changes to PPPL Lab-wide procedures). The MCR should be used when changes are:

- 1) **minor** and do not warrant further SME review;
- 2) **urgent** and cannot wait the 2-4 week period for further SME review; or
- 3) **temporary**, to revert to original state by a given expiration date (must be within 6 months).

For questions about definitions of “minor,” “urgent,” and “temporary” changes, please review Lab-wide Procedure GEN-001, **Development, Review, and Approval of Lab-wide Documents**.

Person Requesting Change: M. Viola

Phone Ext: 3655

Department Name: Engineering

Document Number: ES-MECH-12

Revision No.: 2

Document Title: Manlifts

Reason for change:

Update “Service Report” forms in chapters to include a third requirement check box: “All product recalls and safety improvements have been installed.” ; Add list of chapters to Introduction

Change description: (Summarize and attach changed pages, with changes clearly indicated)

Added “All product recalls and safety improvements have been installed” as a check box in each “Service Report” ; added list of chapters to introduction, section 1.

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

2. Does this change significantly impact ES&H? **YES: ___ NO: X**

If 1 or 2 is **YES**, explain why the changes should not be submitted as a revision:

3. Place a check mark next to the appropriate type of change request:

- Minor change? _____
- Urgent change? (revision must follow within 2 weeks) _____
- Temporary change? _____

If “temporary change” is checked, provide expiration date, allowing document to revert to original state (must be within 6 months): _____

Management System Owner/Designee Approval

Date

Head, PPRM/designee

Date

Release/Effective date of this MCR: 11/30/18

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Subject: <div>Manlifts</div>		Effective Date: February 12, 2014		Initiated: Manlift Manager	
		Supersedes: Rev 1 May 31, 2013		Approved: Head, Engineering	
		Chapter 1 Introduction			

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1.0 SCOPE/APPLICABILITY

This Engineer Standard covers the requirements for the safe operation of powered and manually operated manlifts while on the PPPL site, as well as equipment inspection, testing, maintenance, procurement and the training of operators for this type of equipment. Only qualified operators shall operate manlifts at PPPL. This chapter does not cover ladders, ladder stands or firefighting equipment. This standard applies to all workers at PPPL including PPPL employees, subcontractors, visitors and students.

2.0 INTRODUCTION

The use of specialized equipment to raise men, tools and materials to a position to perform work at elevation involves hazards having potential consequences ranging from minor injuries and minor property damage, to fatalities and major property losses. This standard will address the reduction of these hazards to risk levels that are acceptable through the use of defined controls such as the proper design, periodic inspection, maintenance, and use of mechanical devices; care and common sense; proper training and supervision; and the careful adherence to approved work and safety procedures.

3.0 REFERENCES

OSHA 29 CFR 1910 Occupational Safety and Health Standards

OSHA 29 CFR 1926 Safety and health Regulations for Construction

ESH 5008 PPPL Safety Manual

ANSI SIA A92.2 2009 American National Standard for Vehicle-Mounted Elevating and Rotating Aerial Devices

ANSI SIA A92-3 2006 American National Standard for Manually Propelled Elevating Aerial Platforms

ANSI SIA A92-5 2006 American National Standard Boom-Supported Elevating Work Platforms

ANSI SIA A92-6 2006 Self-Propelled Elevating Work Platforms

ANSI/NFPA 30 Flammable and Combustible Liquids Code

ANSI/NFPA 505 Fire Safety Standard for Powered Industrial Trucks

Manufacturer's Operating Manuals

PPPL Procedure ESH-001

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4.0. CHAPTERS

1.0 Introduction

2.0 Aerial Lifts

3.0 Scissor Lifts

4.0 Truck Mounted Aerial Lifts

5.0 Procurement

6.0 Definitions MCR-ES-MECH-012,R2-002

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1.0 INTRODUCTION

For purposes of this Engineering Standard, all boom supported elevated platforms shall be referred to as aerial lifts. There are two types of aerial lifts in use at PPPL, the telescoping boom and the articulated boom. This chapter will cover both types of lifts. Operators must be qualified on the machine they are using.

For all electrical work requiring the use of aerial lifts, the requirements for aerial lifts and aerial work found in OSHA 1910.269 shall apply.

2.0 TRAINING

2.1 TRAINING REQUIREMENTS

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

- A. Personnel who have not been trained to operate aerial lifts may operate an aerial lift for the purposes of training only, and only under the direct supervision of the Instructor. This training should be conducted in an area away from other vehicles, obstacles, and pedestrians.
- 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. Instructor qualifications will be evaluated and documented by Human Resources per TR-005
- C. The following topics will be covered in the training program of aerial lifts.
 - i. Operating instructions, warnings, and precautions;
 - ii. Vehicle controls and instrumentation: where they are located, what they do, and how they work;
 - iii. Safety Systems, including interlocks if any, and how they work;
 - iv. Engine or motor operation;
 - v. Responsibilities associated with problems or malfunctions affecting the operation of the lift;
 - vi. Work place inspection;
 - vii. Steering and maneuvering;
 - viii. Visibility (including restrictions due to loading);
 - ix. Raising, lowering and positioning of the platform for work;
 - x. Vehicle capacity;
 - xi. Vehicle stability;
 - xii. Any vehicle inspections and maintenance that the operator will be required to perform;

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2.1 TRAINING REQUIREMENTS (continued)

- xiii. Fueling and/or battery recharging;
 - xiv. Operating limitations;
 - xv. Any other operating instructions, warnings, or precautions listed in the operator's manual for aerial lifts;
 - xvi. Tagout procedures per PPPL Procedure ESH-001;
 - xvii. Ramps and other sloped surfaces that could affect the equipment's stability;
 - xviii. LPG tank handling and safety issues.
- D. The trainee operator shall have sufficient actual operation time under the direction of a qualified instructor to demonstrate proficiency in actual operation of the lift the operator is qualifying for.
- E. Refresher training in relevant topics shall be provided to the operator when:
- i. Every three years, including an evaluation of the operator's performance;
 - ii. The operator has been observed to operate the equipment in an unsafe manner;
 - iii. The operator has been involved in an accident or near-miss incident;
 - iv. The operator has received an evaluation that reveals that the operator is not operating the aerial lift safely;
 - v. A condition in the workplace changes in a manner that could affect safe operation of the manlift.
- F. Human Resources shall document that each operator has been trained and evaluated by a Qualified Person as required by this Chapter. This qualification documentation shall include the name of the operator, indications of the Operator's performance, the date of the training, or evaluation, and the identity of the person(s) performing the training or evaluation.
- G. It is the responsibility of the supervisor to assure the Operator maintains the ability to operate the aerial lift during the 3 years of the qualification.

2.2 TRAINING AND QUALIFICATION

In order to qualify as an aerial lift operator, the employee must successfully complete the training. The following requirements must be met:

Training

Aerial Lift
Documented
Instruction

Testing

Written

Renewal

Every 3 Years

Aerial Lift OJT

Practical

Every 3 Years

	Aerial Lift Operator
Prerequisite	Valid Driver's License
Documented Instruction* and Testing	Aerial Lift Instruction, Written Test
Fall Protection	Yes
Initial OJT and Test	Aerial Lift
3 Year Requalification	OJT and Written Test

* (e.g., lecture, discussion, interactive computer learning, video, written material).

Supervisors are responsible to assure that aerial lift operators maintain proficiency in the operation of the aerial lifts. Failure to maintain this proficiency will require the operator to retake the Practical Operations test.

2.3 TRAINING PROCEDURES

A. INITIAL TRAINING AND QUALIFICATION RESPONSIBILITIES

This section details the training and qualification requirements for aerial lift operators. Qualified personnel or trainees shall be at least 18 years old, be able to read and understand the posted warning labels on the aerial lift and be able to understand the Instructor.

Responsibility	Action
Candidate's Supervisor or Manager	1. Requests training and qualification of personnel by contacting Human Resources.

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- | | |
|----------------------|--|
| Human Resources | <p>2. Select a qualified instructor to provide classroom training, practical training, and required tests, as applicable. [Courses are approved PPPL courses or outside training approved by Manlift Manager.]</p> <p>3. Schedule training and make all necessary logistical arrangements for the training.</p> <p>4. Notify the candidate(s) of scheduled training and arranges for practical training, as necessary, verifies that candidate has a valid driver's license.</p> |
| Candidate | <p>5. Attend the scheduled training course, or arranges to challenge any required training and tests through Human Resources.</p> |
| Qualified Instructor | <p>6. Provide the appropriate training and testing. If manlift qualification is requested, the candidate is evaluated on each type of manlift to be used and the instructor documents the training on a Performance Evaluation Checklist (see examples in Section 5.0 and Section 6.0). Signs evaluation.</p> |
| Human Resources | <p>7. Prepare and maintain a qualification package for each successful candidate.</p> <p>8. Prepare a PPPL Qualification Card with the appropriate qualification and expiration date entered on the qualification card. PPPL qualifications are valid for a period not to exceed three (3) years from the date of the practical or written test, whichever date is earliest.</p> <p>9. Sign the PPPL Qualification Card for Manlift Operators.</p> <p>10. Copy the completed card (both sides) for file, and distributes the card to the individual.</p> <p>11. Maintain training and qualification records.</p> <p>12. Monitor due dates and notifies the individual's manager or supervisor of actions needed to maintain or renew qualifications.</p> |

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B. CONTINUING TRAINING AND QUALIFICATION RESPONSIBILITIES

This section outlines the continuing (ongoing) training and qualification requirements for the aerial lift Qualifications listed in Training and Qualifications Requirements, Sections 2.2.

Responsibility	Action
Human Resources	<ol style="list-style-type: none"> 1. Notify the individual's supervisor or manager of continuing training and qualification requirements that require completion. <p>NOTE: Initial qualifications are issued for an effective period not to exceed three (3) years, unless otherwise specified or revoked, at which time requalification is required. If it is determined at any time that the capabilities of an individual are not in accordance with the qualifications specified for that job, that individual shall be removed from that job. Such removals shall be handled on a case-by-case basis by the PPPL Manlift Manager and the applicable supervisor.</p>
Individual's Supervisor and Manager	<ol style="list-style-type: none"> 2. Notify the individual of these continuing training and qualification requirements (such as medical examinations).
Human Resources	<ol style="list-style-type: none"> 3. Arrange for refresher training and required tests for applicable qualifications. 4. Schedule On the Job Training (OJT) and make all necessary logistical arrangements for Manlift Operator qualifications. 5. Notify the individual of scheduled practical training.
Individual/Candidate	<ol style="list-style-type: none"> 6. Complete refresher training and challenge tests through Human Resources. Note: Written tests must be current in order to renew Manlift Operator OJT.
Qualified Instructor	<ol style="list-style-type: none"> 7. Provide the OJT and evaluation for Manlift Operator qualifications and documents it on a Performance Evaluation Checklist (Section 5.0 and Section 6.0).

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B. CONTINUING TRAINING AND QUALIFICATION RESPONSIBILITIES (continued)

- Human Resources
8. Prepare a PPPL Qualification Card with the appropriate qualifications and expiration date entered on the card. PPPL qualifications are valid for a period not to exceed three (3) years from the date of the practical or written test, whichever date is earliest.
 9. Sign the PPPL Qualification Card for Manlift Operators.
 10. Copy the completed card (both sides) for file, and distribute the card to the individual.
 11. Maintain training and qualification records.
 12. Monitor due dates and notify the individual's manager or supervisor of actions needed to maintain or renew qualifications.

C. PERFORMANCE EVALUATIONS

1. Performance evaluations are based on the performance items listed in the Aerial Lift Performance Evaluation Checklist by a Qualified Person.
2. No numerical value is assigned to operational evaluations. The candidate's demonstrations are evaluated by the examiner as "satisfactory" or "unsatisfactory" based upon the following criteria:
 - i. The individual exhibits a basic ability in the performance area.
 - ii. The individual is capable of correctly performing the action after some clarification by the examiner.
3. The examiner's evaluation shall be documented.
4. The operational evaluation score for qualification shall be a composite grade of all individual operational evaluations. The composite score for operational evaluations shall be "satisfactory," with no outstanding "unsatisfactory" items (i.e., 100% of demonstrations must be "satisfactory").

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2.4 Aerial Lift Personnel Qualification Requirements (Records and Examinations)

A. Qualification Records

- i. Personnel qualifications shall be documented in an easily auditable format and shall include, as a minimum, the following types of information:
 - a) Records of training completed at PPPL, or elsewhere, such as attendance sheets or computer summaries or certificates.
 - b) Record of training and performance evaluations.

B. Written Examinations

- i. Written examinations with a score of 85% or higher are required to pass any individual examination.
- ii. Written examinations are required for initial qualification and every 3 years thereafter.

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3.0 AERIAL LIFT OPERATOR PERFORMANCE EVALUATION CHECKLIST

Aerial Lift Operator Performance Evaluation

Operator's Name _____ Date _____
(Please Print)

Instructor _____ Supervisor _____
(Please Print) (Please Print)

*For each statement below, check either S (Satisfactory) or U (Unsatisfactory).
For items that do not apply, use NA (Not Applicable).*

- | | | |
|--|-------|-------|
| 1. Performed Operator's Daily Checklist (ODCL) including function test(s). | _____ | _____ |
| 2. Checked the operational functions of the Aerial Boom from
ground control prior to operating from the platform. | _____ | _____ |
| 3. Mounted the Aerial Boom properly. | _____ | _____ |
| 4. Observed all danger and warning signs. | _____ | _____ |
| 5. Did not operate on slope in excess of 5 degrees. | _____ | _____ |
| 6. Traveled with boom in the stored position. | _____ | _____ |
| 7. Secured work area(s) prior to operations.
(e.g. roped or coned off area.) | _____ | _____ |
| 8. Operated equipment only on a stable/firm surface. | _____ | _____ |
| 9. Cleared obstacles at a safe distance. | _____ | _____ |
| 10. Demonstrated proper operation of controls. | _____ | _____ |
| 11. Demonstrated proper maneuvering skills. | _____ | _____ |
| 12. Used fall protection properly. | _____ | _____ |
| 13. Performed proper shut down procedure. | _____ | _____ |
| 14. Raised and operated the Aerial Boom to its highest point. | _____ | _____ |
| 15. Dismounted the Aerial Boom properly. | _____ | _____ |
| 16. Refueled/Recharged equipment properly. | _____ | _____ |
| 17. Inspected workplace site for equipment suitability. | _____ | _____ |

Restrictions: _____

Comments: _____

Approved by: _____
Instructor's Signature

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4.0 MANLIFT OPERATOR'S CHECKLIST OF TRAINING PROVIDED

Operator's Name _____ Date _____ <div style="text-align: center; margin-top: 5px;">Please Print</div>		
To be completed after all training is finished <input type="checkbox"/> Aerial Lift <input type="checkbox"/> Scissor Lift <input type="checkbox"/> Truck Lift		
Training Point	Covered	Not Covered
1. Operating instructions, warnings, and precautions for the vehicle the operator will be authorized to operate		
2. Vehicle controls and instrumentation: where they are located, what they do, and how they work		
3. Safety Systems, including interlocks if any, and how they work		
4. Engine or motor operation		
5. Responsibilities associated with problems or malfunctions affecting the operation of the lift		
6. Work place inspection		
7. Steering and maneuvering		
8. Visibility (including restrictions due to loading)		
9. Raising, lowering and positioning of the platform for work		
10. Vehicle capacity		
11. Vehicle stability		
12. Any vehicle inspections and maintenance that the operator will be required to perform		
13. Fueling and/or battery recharging		
14. Operating limitations		
15. 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		
16. Surface conditions where the vehicle will be operated		
17. Composition of loads to be raised and load stability		
18. Pedestrian traffic in areas where the equipment will be operated		
19. Hazardous (classified) locations where the equipment will be operated		
20. Ramps and other sloped surfaces that could affect the equipment's stability		
21. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or exhaust		
22. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation		
I confirm that these items were presented in the training		

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Operator's Signature _____		MCR-ES-MECH-012,R2-002 TR Form 28/29A 4/2013

5.0 OPERATIONS

Only trained, qualified operators may operate aerial lifts at PPPL. Subcontractors wishing to operate an aerial lift must provide proof of training and certification to the Manlift Manager to operate the aerial lift they intend to use. All safety requirements must be followed at all times in order to avoid the chance of serious injury or death.

5.1 OPERATIONAL REQUIREMENTS

- A. An ODCL inspection shall be performed before every shift, the ODCL form (Section 3.0) shall be kept on the equipment.
- B. Only trained and qualified operators carrying a current PPPL Qualification card and driver's license operate an aerial lift, unless authorized in writing by the Manlift Manager to use training by their employer rather than having a PPPL qualification card.
- C. Prior to the operation of any aerial lift, the operator shall have read the operator's manual for the particular lift being operated.
- D. If at any time an aerial lift is found to be in need of repair, defective, or in any way unsafe, the unit shall be tagged out of service until restored to a safe operating condition per PPPL Procedure ESH-001.
- E. Tying off to an adjacent pole, structure, or equipment while working from within an aerial lift is not permitted.
- F. 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.
- G. All employees using an aerial lift will be equipped with a full body harness and lanyard (fall protection) attached to a designated connection point near the floor of the lift.
- H. No operator of an aerial lift may work alone as Fall Protection is a requirement. A minimum of 1 Ground Crew member, who must be a qualified operator for the operation of the ground controls of the aerial lift, must be attendance at all times the lift is in operation.
- I. 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.
- J. Boom and basket load limits shall not be exceeded.
- K. 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.

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- L. Before moving an aerial lift for travel, the operator shall verify that the boom is properly cradled and the outriggers are stowed.
- M. Overhead cranes that can travel through the planned work space that must be locked and tagged out.
- N. Fuel tanks shall not be filled with the engine running.
- O. Fueling and battery charging shall follow the requirements specified in ES-MECH-014, Refueling and Recharging Vehicles and Equipment.
- P. No aerial lift shall be operated with a leak in the fuel system.
- Q. Equipment custodians shall keep and maintain a copy of the operating and maintenance manual(s) in the weather resistant storage compartment provided by the manufacturer. The manual(s) is considered an integral part of the aerial lift and is vital to communicate necessary safety information to operators.
- R. Before the aerial lift is used and during use, the user shall check the area in which the aerial lift is to be used for possible hazards such as, but not limited to:
 - i. Drop-offs or holes, including those concealed by water, ice, mud, etc.
 - ii. Slope(s).
 - iii. Bumps and floor obstructions.
 - iv. Debris.
 - v. Overhead obstructions and high voltage conductors.
 - vi. Inadequate surface and support to withstand all load forces imposed by the aerial lift in all operating configurations.
 - vii. Wind and weather conditions.
 - viii. Presence of unauthorized persons.
 - ix. Other possibly unsafe conditions.

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5.2 OPERATING PROCEDURE

Responsibility	Action
Aerial Lift Operator	<ol style="list-style-type: none"> 1. Identifies the aerial lift is the proper equipment for the job. 2. Perform, or verify, a daily inspection of the aerial lift using the proper Operator's Daily Check List (ODCL) for the aerial lift to be used following the steps in Section 8.0 of this Chapter including verification that the periodic inspection is current. 3. Verify the operator is carrying a current qualification card for operating the aerial lift and any attachments to be used and valid driver's license. 4. Perform a function test on the aerial lift. 5. Confirm the locations the aerial lift is to be used is suitable for its capabilities. 6. Position the aerial lift in proper location where work is to be performed. 7. Use aerial lift safely to perform work. 8. After completion of job perform the Shut Down Procedure per the Operator's Manual. 9. Submit the full Signature Sheet to the Equipment Contact.
Equipment Contact	<ol style="list-style-type: none"> 10. Check aerial lift periodically to assure that completed sign off sheets are turned in. Submits all completed sign off sheets to their supervisor.
Supervisor	<ol style="list-style-type: none"> 11. Signs and send the Signature Sheet to the Operations Center for filing. 12. Periodically check that the ODCL has been performed on the aerial lift, initial and date the ODCL.

6.0 ODCL SIGN OFF SHEET

ODCL INSPECTION SIGN OFF

Equipment: _____

Prop. #: _____

Equipment Contact _____

DATE	TIME	CHK BY (print name)	PASS (X)	FAIL (X)	COMMENTS

Note: if the machine does not pass ODCL inspection, tag the machine out of service, do not use the machine and notify supervisor immediately explaining the cause of the failure.

Contact's Supervisor Signature _____ Date _____
Send to Operations Center for filing

Revised 2/14/13

7.0 TRAVELLING

- A. The operator shall limit travel speed according to conditions such as:
 - i. Condition of surface support
 - ii. Visibility
 - iii. Slope
 - iv. Location of personnel
 - v. Any other factors leading to hazards
- B. Stunt driving is prohibited
- C. Area personnel must be aware of the unit's travel
- D. A safe distance shall be maintained from all hazards while traveling

8.0 INSPECTION

8.1 DAILY INSPECTIONS

A complete listing of Operator's Daily Check Lists for all equipment may be found at the follow site:

<https://sites.google.com/a/pppl.gov/equipment-safety-inspection-list/>

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ODCL's shall be maintained by Material Services, changes may be authorized by the Subject Matter Expert (see Attachment 1, Page 1). Before use each day or at the beginning of each shift, the aerial lift shall be given an Operator's Daily Check List inspection consisting of visual inspection and functional tests including but not limited to the following:

- A. Platform assembly for loose or missing parts.
- B. Slave cylinder for damage or leaks.
- C. Boom sections, hoses and cylinders for damage or leaks.
- D. Drive motor and brakes.
- E. Operating and emergency controls for proper functioning.
- F. Safety devices.
- G. Air, hydraulic and fuel system levels and leaks.
- H. Cables and wiring harness.
- I. Loose or missing parts.
- J. Tires and wheels.
- K. Placards, warnings, control markings, and operating manual(s).
- L. Outriggers, stabilizers, and other structures.
- M. Guardrail system.
- N. Items specified by the manufacturer.
- O. The daily ODCL shall be maintained in holders installed on each aerial lift. The ODCL inspector will sign the Signature Sheet at the completion of the inspection if there are no concerns. The Signature Sheet will be given to the aerial lift's Contact's Supervisor when full. The Supervisor will send the Signature Sheet to the Operations Center for record keeping once the sheet has been signed and completed.
- P. If during the inspection of the aerial lift it is found to be in need of repair or becomes unsafe in any way, it shall be reported to the operator's supervisor immediately and the aerial lift shall be tagged out, with a Caution Tag, and not be operated until repaired and restored to a safe operating condition. The Operator's Supervisor will contact the Manlift Manager for service.

8.2 FREQUENT INSPECTIONS

NOTE: Due to the low operational hours for some aerial lifts, sections of the frequent inspection criteria may be moved to less often inspections if warranted and documented using the ODCL change form found in Attachment 1, Page 1. In no case shall any inspection time frame be greater than 1 year.

The Manlift Manager shall ensure that frequent inspections are performed in accordance with the manufacturer's instructions, for the aerial lift. Any malfunctions and problems identified in the inspection shall be corrected before the aerial lift is returned to service.

Inspections are typically required for:

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- A. Equipment that has been in service for three (3) months or 150 hours, whichever comes first;
- B. Equipment that has been out of service for a period longer than three months;
- C. Equipment that was purchased used;

The inspection shall be made by a person qualified as a mechanic on the specific type of aerial lift or one having similar design characteristics. The inspection shall be in accordance with items specified by the manufacturer for a frequent inspection and shall include, but not be limited to the following:

- A. All functions and their controls for speed(s) smoothness, and limits of motion;
- B. Lower controls including the provisions for overriding of upper controls
- C. All chain and cable mechanisms for adjustment and worn or damaged parts;
- D. All emergency and safety devices;
- E. Lubrication of all moving parts, inspection of filter element(s), hydraulic oil, engine oil, and coolant as specified by the manufacturer;
- F. Visual inspection of structural components and other critical components such as fasteners, pins, shafts and locking devices as specified by the manufacturer;
- G. Placard, warnings and control markings;
- H. Emergency lowering means;
- I. Additional items specified by the manufacturer.

8.3 ANNUAL INSPECTIONS

The Fleet Coordinator shall ensure that an annual inspection is performed on the aerial lifts no later than thirteen (13) months from the date of the prior annual inspection. The inspection shall be performed by a person(s) qualified as a mechanic on the specific make and model of the aerial lift or one having similar design characteristics. The inspection shall be in accordance with items specified by the manufacturer for an annual inspection. The equipment custodian shall not place the aerial lift into service until all malfunctions and problems have been corrected.

9.0 MAINTENANCE AND REPAIR

A. PROCEDURE FOR OBTAINING MAINTENANCE AND REPAIR FOR AERIAL LIFTS

Responsibility	Action
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Fleet Coordinator	1. Maintain the inspection records for periodic inspection/maintenance. Monitors due dates for periodic inspections/maintenance and notifies the equipment owners and Manlift Manager of actions required to maintain compliance.
Manlift Manager	2. When the aerial lift is approaching the expiration date for maintenance or inspection, initiates the procurement paperwork to have a qualified inspector or outside vendor perform the work. If the maintenance or inspection is not completed the aerial lift shall be CAUTION tagged OUT OF SERVICE until such time as the required actions are completed per PPPL Procedure ESH-001. 3. Determine if each aerial lift is to be kept in service. a. If aerial lift is not to be kept in service, request the equipment owner to CAUTION tag item OUT OF SERVICE per PPPL Procedure ESH-001. 4. Determine when, during the calendar year, each aerial lift annual inspection/maintenance is due.
Qualified Inspector or Qualified Subcontractor	5. Perform required aerial lift maintenance per the manufacturer's recommendations and periodic inspection as per the aerial lift Inspection Criteria under observation of Manlift Manager or a technically qualified designee.

Note: Prior to the commencement of any service or repair, the aerial lift shall be turned off with the key removed and in the possession of the repairman. Any potential energy (such as a raised platform) shall be blocked or restrained. (Per OSHA response regarding 1910.147 - 9/27/95) Any sources of hydraulic pressure shall be removed or released. If the service or repair requires work in the engine compartment, then the aerial lift battery cable shall be disconnected as well (Cable shall be tagged with a Danger Tag if service person must be away from unit).

- Record the inspection/maintenance on a Service Report (Attachment 2) while on site and sign report(s) and give them to the Manlift Manager or a technically qualified designee.

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A. PROCEDURE FOR OBTAINING MAINTENANCE AND REPAIR FOR AERIAL LIFTS

(continued)

- | | |
|-------------------|--|
| Manlift Manager | 7. Determine if deficiencies are found. <ul style="list-style-type: none"> a. If no, sign and submit service report to the Fleet Coordinator, copy to Manlift Manager, and affix inspection sticker, showing expiration date to the aerial lift, and to the attachment if so equipped. b. If yes, sign and submit service report to Fleet Coordinator, copy to Manlift Manager, and apply CAUTION tag OUT OF SERVICE PPPL Procedure ESH-001. |
| Fleet Coordinator | 8. Review and file all service reports and update inspection status list. |

B. REQUIREMENTS FOR MAINTENANCE AND REPAIR FOR AERIAL LIFTS

- i. When parts or components are replaced, they shall be OEM aerial lift parts or components equivalent as to the safety of those used in the original design.
- ii. Prior to the commencement of any service or repair, the aerial lift shall be turned off with the key removed and in the possession of the repairman. Any potential energy (such as a raised platform) shall be blocked or restrained. (Per OSHA response regarding 1910.147 - 9/27/95) Any sources of hydraulic pressure shall be removed or released. If the service or repair requires work in the engine compartment, then the aerial lift battery cable shall be disconnected as well (Cable shall be tagged with a Danger Tag if service person must be away from unit).
- iii. The Manlift Manager shall ensure only qualified personnel inspect and maintain the aerial lift in accordance with the manufacturer's recommendations.
- iv. Maintenance shall be performed according to the manufacturer's recommendations and as a minimum shall meet the requirements of OSHA 29 CFR 1910, OSHA 29 CFR 1926, ESH-001 (Tagout).
 - a. Power plant shall be stopped and starting means rendered inoperative.
 - b. All controls in the off position and all operating systems secured from inadvertent motion by brakes, blocks or other means.
 - c. Elevating assembly and platform lowered to the full down position or otherwise secured by blocking or cribbing to prevent dropping.
 - d. Hydraulic oil pressure relieved from all hydraulic circuits before loosening or removing hydraulic components.
 - e. Other manufacturer specified precautions.
- v. Scheduled maintenance, lubrication and inspection shall be based on the manufacturer's recommendations.

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- vi. Only trained and authorized personnel shall be permitted to maintain, repair, adjust and inspect aerial lifts.
- vii. Unusual maintenance or repairs require consultation with the manufacturer and approval of the Manlift Manager.

B. REQUIREMENTS FOR MAINTENANCE AND REPAIR FOR AERIAL LIFTS (continued)

- viii. Aerial lifts shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts. Any manufacturer approved changes must also be approved by the Manlift Manager.
- ix. Repaired Aerial lifts shall be inspected prior to be returned to service by qualified inspectors or sub contractors. The service report will be signed by the service person and the Manlift Manager, or the Designee, and be given to the Fleet Coordinator to be filed in the equipment's file.
- x. Safety switches and functionality shall not be impaired by service technicians.

10.0 IDENTIFICATION

Every aerial lift shall have attached to it a legibly inscribed, corrosion-resistant nameplate with the model and/or serial number, weight of the lift, and the capacity of the lift at maximum elevation with load laterally centered.

11.0 TRANSPORTING/TOWING

If an aerial lift is to be transported or towed, the operator's shall follow all of the manufacturer's requirements found in the manuals for the unit.

12.0 MODIFICATIONS

- A. Modifications to equipment are a rare requirement. (Modifications should not be confused with the use of manufacturer approved and supplied attachments designed to be used with the equipment.)
- B. Equipment shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts without manufacturer's written approval.
- C. All requests for modifications should be documented on the form in Attachment 1, Page 2, Request to Alter Equipment. No changes can be made until the manufacturer provides written approval for the modification. A copy of E-mail correspondence documenting requests and manufacturer's approvals may be used as written approval. All requests and manufacturer's approvals must be kept in the equipment's file.

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- D. If the manufacturer is unresponsive for more than a year or if the manufacturer no longer exists, alterations to equipment may only be made using the Request to Alter Equipment Form, Attachment 1, Page 2, with the PPPL Subject Matter Expert's approval of the modification and the concurrence of a Professional Engineer (OSHA response 4/11/97, Question 1). All requests and SME/PE approvals must be kept in the equipment's file.
- E. When approved modifications are made, appropriate changes to capacity plates, operation and maintenance manuals, any affected decals and/or tags must reflect any modifications.
- F. After any modifications, the equipment must be inspected by a qualified inspector.

13.0 RECORDS

- A. Inspection reports shall be maintained by Material Services.
- B. Records shall be retained in the Material Services Transportation Services master files for the life of the equipment while at PPPL.
- C. The equipment file for each unit shall include:
 - i. Serial number and date of delivery.
 - ii. Written records of the frequent and annual inspections and repairs performed. The record shall include deficiencies found, corrective action accomplished and identification of the person(s) performing the inspection and repairs.
 - iii. Written records of repairs accomplished on the aerial lift. The records shall include corrective action accomplished and identification of the person(s) performing the repairs.
 - iv. Pre-delivery preparation performed prior to each delivery.
 - a. Name of the person(s) trained.
 - b. Name of person(s) providing training.
 - c. Name of person(s) receiving familiarization upon delivery, unless the individual has been provided with familiarization on the same model, or one having characteristics consistent with the one being delivered, within the prior 90 days
 - d. Name of person(s) providing familiarization upon delivery.

14.0 INITIAL INSPECTIONS

- A. Prior to initial use, all new, rented, or extensively repaired or altered aerial lifts shall be tested and inspected by a qualified person or inspector.

ATTACHMENTS:

1. ODCL Change Request Form and Equipment Alteration Request Form
2. Service Report

Request to move inspection item from Daily to Monthly

Equipment Type _____

Manufacturer _____ Model _____

Serial Number(s) _____

Property Number(s) _____

Equipment Contact(s) _____

Equipment Custodian(s) _____

Subject Matter Expert _____

Item to be moved	Reason for move	Frequency of Inspection item is moved to

Requested by: _____ Date _____

Approved by: _____ Date _____
Subject Matter Expert

Comments _____

Distribution: _____, _____, _____

Request to Alter Equipment

Manufacturer _____ Model _____

Serial Number(s) _____

Property Number(s) _____

Equipment Contact(s) _____

Equipment Custodian(s) _____

Subject Matter Expert _____

Manufacturer's Approval Letter ID _____

Provide detail of changes/modifications requested and reasons:

Requested by: _____ Date _____

Approved by: _____ Date _____

Subject Matter Expert

Approved by: _____ Date _____

Professional Engineer

Comments _____

Distribution: _____, _____, _____

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Chapter 2 Aerial Lifts - Service Report		Page 1 of 2

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PPPL Equipment Service Report

To be completed by PPPL	Equipment Type _____ Date _____ Manufacturer _____ Model _____ Serial Number _____ Property Number _____
	Equipment Problem/Service Requested: _____ Requestor: _____ _____ _____ _____
To be completed by Service Technician	Work/Service Performed and comments: _____ _____ _____ _____ _____ _____ _____

When service work has been completed:

1. Perform Operator's Daily Checklist Inspection
2. Every Inspection – Check that all safety devices, interlocks, lights and alarms are functioning properly
3. All product recalls and safety improvements have been installed.

Sat	Unsat
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

NOTE: Any and all malfunctioning safety devices, interlocks, lights and alarms must be brought to the immediate attention of the PPPL escort regardless of the nature of the service call.

Check One: <input type="checkbox"/> (PASS – SATISFACTORY TO USE) <input type="checkbox"/> (FAIL) INSPECTOR (PRINT): _____ SIGNATURE: _____ DATE: _____
Check One: <input type="checkbox"/> (PASS – SATISFACTORY TO USE) <input type="checkbox"/> (FAIL – TAGGED OUT, PTR NOTIFIED) Escort (PRINT): _____ SIGNATURE: _____ DATE: _____

This form must be completed at end of service call, give to Fleet Coordinator, copy to PTR

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1.0 INTRODUCTION

This chapter covers both self propelled and manually propelled elevating work platforms. These types of work platforms will be referred to as scissor lifts. Please note that as of this writing, OSHA classifies scissor lifts under the scaffolds regulations.

For all electrical work requiring the use of scissor lifts, the requirements for aerial lifts and aerial work found in OSHA 1910.269 shall apply.

2.0 TRAINING

2.1 TRAINING REQUIREMENTS

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

- A. Personnel who have not been trained to operate scissor lifts may operate a scissor lift for the purposes of training only, and only under the direct supervision of the Instructor. This training should be conducted in an area away from other vehicles, obstacles, and pedestrians.
- 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. Instructor qualifications will be evaluated and documented by Human Resources per TR-005
- C. The following topics will be covered in the training program of scissor lifts.
 - i. Operating instructions, warnings, and precautions;
 - ii. Vehicle controls and instrumentation: where they are located, what they do, and how they work;
 - iii. Safety Systems, including interlocks if any, and how they work;
 - iv. Engine or motor operation;
 - v. Responsibilities associated with problems or malfunctions affecting the operation of the lift;
 - vi. Work place inspection;
 - vii. Steering and maneuvering;
 - viii. Visibility (including restrictions due to loading);
 - ix. Raising, lowering and positioning of the platform for work;
 - x. Vehicle capacity;
 - xi. Vehicle stability;
 - xii. Any vehicle inspections and maintenance that the operator will be required to perform;
 - xiii. Fueling and/or battery recharging;

Chapter 3 Scissor Lifts**MCR-ES-MECH-012,R2-002****2.1 TRAINING REQUIREMENTS (continued)**

- xiv. Operating limitations;
 - xv. Any other operating instructions, warnings, or precautions listed in the operator's manual for scissor lifts;
 - xvi. Tagout procedures per PPPL Procedure ESH-001;
 - xvii. Ramps and other sloped surfaces that could affect the equipment's stability;
 - xviii. LPG tank handling and safety issues.
- D. The trainee operator shall have sufficient actual operation time under the direction of a qualified instructor to demonstrate proficiency in actual operation of the lift the operator is qualifying for.
- E. Refresher training in relevant topics shall be provided to the operator when:
- i. Every three years, including an evaluation of the operator's performance;
 - ii. The operator has been observed to operate the equipment in an unsafe manner;
 - iii. The operator has been involved in an accident or near-miss incident;
 - iv. The operator has received an evaluation that reveals that the operator is not operating the scissor lift safely;
 - v. A condition in the workplace changes in a manner that could affect safe operation of the scissor lift.
- F. Human Resources shall document that each operator has been trained and evaluated by a Qualified Person as required by this Chapter. This qualification documentation shall include the name of the operator, indications of the Operator's performance, the date of the training, or evaluation, and the identity of the person(s) performing the training or evaluation.
- G. It is the responsibility of the supervisor to assure the Operator maintains the ability to operate the scissor lift during the 3 years of the qualification.

2.2 TRAINING AND QUALIFICATION

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

Training

Scissor Lift
Documented
Instruction

Testing

Written

Renewal

Every 3 Years

Scissor Lift OJT

Practical

Every 3 Years

	Scissor Lift Operator
Prerequisite	Valid Driver's License
Documented Instruction* and Testing	Scissor Lift Instruction, Written Test
Initial OJT and Practical Test	Scissor Lift
3 Year Requalification	OJT and Written Test

* (e.g., lecture, discussion, interactive computer learning, video, written material).

Supervisors are responsible to assure that scissor lift operators maintain proficiency in the operation of the scissor lifts. Failure to maintain this proficiency will require the operator to retake the Practical Operations test.

2.3 TRAINING PROCEDURES

A. INITIAL TRAINING AND QUALIFICATION RESPONSIBILITIES

This section details the training and qualification requirements for scissor lift operators. Qualified personnel or trainees shall be at least 18 years old, be able to read and understand the posted warning labels on the scissor lift and be able to understand the Instructor.

Responsibility	Action
Candidate's Supervisor or Manager	1. Requests training and qualification of personnel by contacting Human Resources.

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- | | |
|----------------------|--|
| Human Resources | <p>2. Select a qualified instructor to provide classroom training, practical training, and required tests, as applicable. [Courses are approved PPPL courses or outside training approved by Manlift Manager.]</p> <p>3. Schedule training and make all necessary logistical arrangements for the training.</p> <p>4. Notify the candidate(s) of scheduled training and arranges for practical training, as necessary, verifies that candidate has a valid driver's license.</p> |
| Candidate | <p>5. Attend the scheduled training course, or arranges to challenge any required training and tests through Human Resources.</p> |
| Qualified Instructor | <p>6. Provide the appropriate training and testing. If scissor lift qualification is requested, the candidate is evaluated on each type of scissor lift to be used and the instructor documents the training on a Performance Evaluation Checklist (see examples in Section 5.0 and Section 6.0). Signs evaluation.</p> |
| Human Resources | <p>7. Prepare and maintain a qualification package for each successful candidate.</p> <p>8. Prepare a PPPL Qualification Card with the appropriate qualification and expiration date entered on the qualification card. PPPL qualifications are valid for a period not to exceed three (3) years from the date of the practical or written test, whichever date is earliest.</p> <p>9. Sign the PPPL Qualification Card for Manlift Operators.</p> <p>10. Copy the completed card (both sides) for file, and distributes the card to the individual.</p> <p>11. Maintain training and qualification records.</p> <p>12. Monitor due dates and notifies the individual's manager or supervisor of actions needed to maintain or renew qualifications.</p> |

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B. CONTINUING TRAINING AND QUALIFICATION RESPONSIBILITIES

This section outlines the continuing (ongoing) training and qualification requirements for the scissor lift Qualifications listed in Training and Qualifications Requirements, Sections 2.2.

Responsibility	Action
Human Resources	<ol style="list-style-type: none"> 1. Notify the individual's supervisor or manager of continuing training and qualification requirements that require completion. <p>NOTE: Initial qualifications are issued for an effective period not to exceed three (3) years, unless otherwise specified or revoked, at which time requalification is required. If it is determined at any time that the capabilities of an individual are not in accordance with the qualifications specified for that job, that individual shall be removed from that job. Such removals shall be handled on a case-by-case basis by the PPPL Manlift Manager and the applicable supervisor.</p>
Individual's Supervisor and Manager	<ol style="list-style-type: none"> 2. Notify the individual of these continuing training and qualification requirements (such as medical examinations).
Human Resources	<ol style="list-style-type: none"> 3. Arrange for refresher training and required tests for applicable qualifications. 4. Schedule On the Job Training (OJT) and make all necessary logistical arrangements for Scissor Lift Operator qualifications. 5. Notify the individual of scheduled practical training.
Individual/Candidate	<ol style="list-style-type: none"> 6. Complete refresher training and challenge tests through Human Resources. Note: Written tests must be current in order to renew Scissor Lift Operator OJT.
Qualified Instructor	<ol style="list-style-type: none"> 7. Provide the OJT and evaluation for Scissor Lift Operator qualifications and documents it on a Performance Evaluation Checklist (Section 5.0 and Section 6.0).

Chapter 3 Scissor Lifts**MCR-ES-MECH-012,R2-002****B. CONTINUING TRAINING AND QUALIFICATION RESPONSIBILITIES
(continued)**

- Human Resources
8. Prepare a PPPL Qualification Card with the appropriate qualifications and expiration date entered on the card. PPPL qualifications are valid for a period not to exceed three (3) years from the date of the practical or written test, whichever date is earliest.
 9. Sign the PPPL Qualification Card for Scissor Lift Operators.
 10. Copy the completed card (both sides) for file, and distribute the card to the individual.
 11. Maintain training and qualification records.
 12. Monitor due dates and notify the individual's manager or supervisor of actions needed to maintain or renew qualifications.

C. PERFORMANCE EVALUATIONS

1. Performance evaluations are based on the performance items listed in the Scissor Lift Performance Evaluation Checklist by a Qualified Person.
2. No numerical value is assigned to operational evaluations. The candidate's demonstrations are evaluated by the examiner as "satisfactory" or "unsatisfactory" based upon the following criteria:
 - i. The individual exhibits a basic ability in the performance area.
 - ii. The individual is capable of correctly performing the action after some clarification by the examiner.
3. The examiner's evaluation shall be documented.
4. The operational evaluation score for qualification shall be a composite grade of all individual operational evaluations. The composite score for operational evaluations shall be "satisfactory," with no outstanding "unsatisfactory" items (i.e., 100% of demonstrations must be "satisfactory").

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2.4 Scissor Lift Personnel Qualification Requirements (Records and Examinations)

A. Qualification Records

- i. Personnel qualifications shall be documented in an easily auditable format and shall include, as a minimum, the following types of information:
 - a) Records of training completed at PPPL, or elsewhere, such as attendance sheets or computer summaries or certificates.
 - b) Record of training and performance evaluations.

B. Written Examinations

- i. Written examinations with a score of 85% or higher are required to pass any individual examination.
- ii. Written examinations are required for initial qualification and every 3 years thereafter.

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3.0 SCISSOR LIFT OPERATOR PERFORMANCE EVALUATION
CHECKLIST

Scissor Lift Operator Performance Evaluation

Operator's Name _____ Date _____
(Please Print)Instructor _____ Supervisor _____
(Please Print) (Please Print)

*For each statement below, check either S (Satisfactory) or U (Unsatisfactory).
For items that do not apply, use NA (Not Applicable).*

- | | | |
|--|-------|-------|
| 1. Performed Operator's Daily Checklist (ODCL) including function test(s). | _____ | _____ |
| 2. Mounted the vehicle properly. | _____ | _____ |
| 3. Observed all danger and warning signs. | _____ | _____ |
| 4. Demonstrated proper operation of controls. | _____ | _____ |
| 5. Demonstrated proper maneuvering skills. | _____ | _____ |
| 6. Started vehicle moving smoothly. | _____ | _____ |
| 7. Operated equipment only on a stable/firm surface. | _____ | _____ |
| 8. Secured work area(s) prior to operations
(E.g. roped or coned off area.) | _____ | _____ |
| 9. Operated equipment only on a level surface. | _____ | _____ |
| 10. Traveled with the platform in the stored position. | _____ | _____ |
| 11. Cleared obstacles at a safe distance. | _____ | _____ |
| 12. Performed proper shut down procedure. | _____ | _____ |
| 13. Raised and operated the lift to its highest point. | _____ | _____ |
| 14. Dismounted the vehicle properly. | _____ | _____ |
| 15. Refueled/recharged equipment properly. | _____ | _____ |
| 16. Inspected workplace site to determine proper equipment location. | _____ | _____ |

Restrictions: _____

Comments: _____

Approved by: _____
Instructor's Signature

TR-Form-29 REV 4 2/2013

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4.0 MANLIFT OPERATOR'S CHECKLIST OF TRAINING PROVIDED

Operator's Name _____ Date _____
Please Print

To be completed after all training is finished

☐

Aerial Lift

☐

Scissor Lift

☐

Truck Lift

Training Point	Covered	Not Covered
1. Operating instructions, warnings, and precautions for the vehicle the operator will be authorized to operate		
2. Vehicle controls and instrumentation: where they are located, what they do, and how they work		
3. Safety Systems, including interlocks if any, and how they work		
4. Engine or motor operation		
5. Responsibilities associated with problems or malfunctions affecting the operation of the lift		
6. Work place inspection		
7. Steering and maneuvering		
8. Visibility (including restrictions due to loading)		
9. Raising, lowering and positioning of the platform for work		
10. Vehicle capacity		
11. Vehicle stability		
12. Any vehicle inspections and maintenance that the operator will be required to perform		
13. Fueling and/or battery recharging		
14. Operating limitations		
15. 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		
16. Surface conditions where the vehicle will be operated		
17. Composition of loads to be raised and load stability		
18. Pedestrian traffic in areas where the equipment will be operated		
19. Hazardous (classified) locations where the equipment will be operated		
20. Ramps and other sloped surfaces that could affect the equipment's stability		
21. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or exhaust		
22. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation		

I confirm that these items were presented in the training

Operator's Signature _____

TR Form 28/29A

4/2013

Chapter 3 Scissor Lifts**MCR-ES-MECH-012,R2-002****5.0 OPERATIONS**

Only trained, qualified operators may operate scissor lifts at PPPL. Subcontractors wishing to operate a scissor lift must provide proof of training and certification to the Manlift Manager to operate the scissor lift they intend to use. All safety requirements must be followed at all times in order to avoid the chance of serious injury or death.

5.1 OPERATIONAL REQUIREMENTS

- A. An ODCL inspection shall be on all scissor lifts before every shift, the ODCL form shall be kept on the equipment. The inspector shall sign the ODCL Signature Sheet. The Signature Sheet will be given to the scissor lift's Contact's Supervisor when full. The Supervisor will send the Signature Sheet to the Operations Center for record keeping.
- B. Only trained and qualified operators carrying a current PPPL Qualification card and driver's license shall operate a scissor lift, unless authorized in writing by the Manlift Manager to use training by their employer rather than having a PPPL qualification card.
- C. Prior to the operation of any scissor lift, the operator shall have read the operator's manual for the particular lift being operated.
- D. If at any time a scissor lift is found to be in need of repair, defective, or in any way unsafe, the unit shall be taken out of service, following PPPL Procedure ESH-001, until restored to a safe operating condition.
- E. No scissor lift shall be operated with a leak in the fuel system.
- F. Fueling and battery charging shall follow the requirements specified in ES-MECH-014, Refueling and Recharging Vehicles and Equipment.
- G. Equipment custodians shall keep and maintain a copy(ies) of the operating and maintenance manual(s) in the weather resistant storage compartment provided by the manufacturer. The manual(s) is considered an integral part of the scissor lift and is vital to communicate necessary safety information to users and operators.
- H. 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).
- I. Before the scissor lift is used and during use, the user shall check the area in which the scissor lift is to be used for possible hazards such as, but not limited to:
 - i. Drop-offs or holes, including those concealed by water, ice, mud, etc.
 - ii. Slope(s).
 - iii. Bumps and floor obstructions.
 - iv. Debris.
 - v. Overhead cranes that can travel through the planned work space that must be locked and tagged out.
 - vi. Overhead obstructions and high voltage conductors.
 - vii. Inadequate surface and support to withstand all load forces imposed by the scissor lift.
 - viii. Wind and weather conditions.

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5.2 OPERATING PROCEDURE

Responsibility	Action
Scissor Lift Operator	<ol style="list-style-type: none"> 1. Identifies the scissor lift is the proper equipment for the job. 2. Perform, or verify, a daily inspection of the scissor lift using the proper Operator's Daily Check List (ODCL) for the scissor lift to be used following the steps in Section 8.0 of this Chapter including verification that the periodic inspection is current. 3. Verify the operator is carrying a current qualification card for operating the scissor lift and any attachments to be used and valid driver's license. 4. Perform a function test on the scissor lift. 5. Confirm the locations the scissor lift is to be used is suitable for its capabilities. 6. Position the scissor lift in proper location where work is to be performed. 7. Use scissor lift safely to perform work. 8. After completion of job perform the Shut Down Procedure per the Operator's Manual. 9. Submit the full Signature Sheet to the Equipment Contact.
Equipment Contact	<ol style="list-style-type: none"> 10. Check scissor lift periodically to assure that completed sign off sheets are turned in. Submits all completed sign off sheets to their supervisor.
Supervisor	<ol style="list-style-type: none"> 11. Signs and send the Signature Sheet to the Operations Center for filing. 12. Periodically check that the ODCL has been performed on the scissor lift, initial and date the ODCL.

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6.0 ODCL SIGN OFF SHEET

ODCL INSPECTION SIGN OFF

Equipment: _____

Equipment Contact _____

Prop. #: _____

DATE	TIME	CHK BY (print name)	PASS (X)	FAIL (X)	COMMENTS

Note: if the machine does not pass ODCL inspection, tag the machine out of service, do not use the machine and notify supervisor immediately explaining the cause of the failure.

Contact's Supervisor Signature _____ Date _____
Send to Operations Center for filing

Revised 5/3/13

7.0 TRAVELLING

- A. The operator shall limit travel speed according to conditions such as:
 - i. Condition of surface support
 - ii. Visibility
 - iii. Slope
 - iv. Location of personnel
 - v. Any other factors leading to hazards
- B. Stunt driving is prohibited
- C. Area personnel must be aware of the unit's travel
- D. A safe distance shall be maintained from all hazards while traveling

Chapter 3 Scissor Lifts**MCR-ES-MECH-012,R2-002****8.0 INSPECTION****8.1 DAILY INSPECTIONS**

A complete listing of Operator's Daily Check Lists for all equipment may be found at the follow site:

<https://sites.google.com/a/pppl.gov/equipment-safety-inspection-list/>

ODCL's shall be maintained by Material Services, changes may be authorized by the Subject Matter Expert, see Attachment 1, Page 1. Before use each day or at the beginning of each shift, the scissor lift shall be given an Operator's Daily Check List inspection consisting of visual inspection and functional tests including but not limited to the following:

- A. Operating and emergency controls.
- B. Safety devices such as horn, limit switches, alarms.
- C. Air, hydraulic and fuel system leaks.
- D. Hydraulic hose condition and hydraulic fluid level.
- E. Cables, electrical components and wiring harness.
- F. Drive motors, battery condition and fluid levels.
- G. Operating and emergency control systems.
- H. Loose or missing parts.
- I. Tires and wheels.
- J. Placards, warnings, control markings, and operating manual(s).
- K. Outriggers and stabilizers.
- L. Guardrail system.
- M. Items specified by the manufacturer.
- N. The daily ODCL shall be maintained in holders installed on each scissor lift. The ODCL inspector will sign the Signature Sheet at the completion of the inspection if there are no concerns. The Signature Sheet will be given to the scissor lift's Contact's Supervisor when full. The Supervisor will send the Signature Sheet to the Operations Center for record keeping.
- O. If during the inspection of the scissor lift it is found to be in need of repair or becomes unsafe in any way, it shall be reported to the operator's supervisor immediately and the scissor lift shall be tagged out, in accordance with a Caution Tag, and not be operated until repaired and restored to a safe operating condition. The Operator's Supervisor will contact the Manlift Manager for service.

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8.2 FREQUENT INSPECTIONS

NOTE: Due to the low operational hours for some scissor lifts, sections of the frequent inspection criteria may be moved to less often inspections if warranted and documented using the ODCL change form found in Attachment 1, Page 1. In no case shall any inspection time frame be greater than 1 year.

The Manlift Manager shall ensure that a frequent inspections are performed in accordance with the manufacturer's instructions, for the scissor lift. All malfunctions and problems identified in the inspection shall be corrected before the scissor lift is returned to service.

Inspections are typically required for:

- A. Equipment that was purchased used. This inspection shall be accomplished unless it is determined that the frequent and annual inspections are current;
- B. Equipment that has been in service for three (3) months or 150 hours, whichever comes first;
- C. Equipment that has been out of service for a period longer than three months;

The inspection shall be made by a person qualified as a mechanic on the specific type of scissor lift or one having similar design characteristics. The inspection shall be in accordance with items specified by the manufacturer for a frequent inspection and shall include, but not be limited to the following:

- A. All functions and their controls for speed(s) smoothness, and limits of motion;
- B. Lower controls including the provisions for overriding of upper controls;
- C. All emergency lowering means;
- D. All chain and cable mechanisms for adjustment and worn or damaged parts;
- E. All emergency and safety devices;
- F. Lubrication of all moving parts, inspection of filter element(s), hydraulic oil, engine oil, and coolant as specified by the manufacturer;
- G. Visual inspection of structural components and other critical components such as fasteners, pins, shafts and locking devices as specified by the manufacturer;
- H. Placard, warnings and control markings;
- I. Additional items specified by the manufacturer.

8.3 ANNUAL INSPECTIONS

The Fleet Coordinator shall ensure that an annual inspection is performed on the scissor lift no later than thirteen (13) months from the date of the prior annual inspection. The inspection shall be performed by a person(s) qualified as a mechanic on the specific make and model of the scissor lift or one having similar design characteristics. The inspection shall be in accordance with items specified by the manufacturer for an annual inspection. The equipment custodian shall not place the scissor lift into service until all malfunctions and problems have been corrected.

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9.0 MAINTENANCE AND REPAIR

A. PROCEDURE FOR OBTAINING MAINTENANCE AND REPAIR FOR SCISSOR LIFTS

Responsibility	Action
Fleet Coordinator	1. Maintain the inspection records for periodic inspection/maintenance. Monitors due dates for periodic inspections/maintenance and notifies the equipment owners and Manlift Manager of actions required to maintain compliance.
Manlift Manager	2. When the equipment is approaching the expiration date for maintenance or inspection, initiates the procurement paperwork to have outside vendor perform the work. If the maintenance or inspection is not completed the equipment shall be CAUTION tagged OUT OF SERVICE until such time as the required actions are completed per PPPL Procedure ESH-001. 3. Determine if each scissor lift is to be kept in service. a. If scissor lift is not to be kept in service, request the equipment custodian to CAUTION tag item OUT OF SERVICE per PPPL Procedure ESH-001. 4. Determine when during the calendar year each scissor lift annual inspection/maintenance is due.
Qualified Inspector or Qualified Subcontractor	5. Perform required scissor lift maintenance per the manufacturer's recommendations and periodic inspection as per the Inspection Criteria under observation of the Manlift Manager or their technically qualified designee. Note: Prior to the commencement of any service or repair, the scissor lift shall be turned off with the key removed and in the possession of the repairman. Any potential energy (such as a raised platform) shall be blocked or restrained. (Per OSHA response regarding 1910.147 - 9/27/95) Any sources of hydraulic pressure shall be removed or released. If the service or repair requires work in the engine compartment, then the scissor lift battery cable shall be disconnected as well (Cable shall be tagged with a Danger Tag if service person must be away from unit). 6. Record the inspection/maintenance on a Service Report (Attachment 2) while on site and sign report(s) and give them to the Manlift Manager or their technically qualified designee.
Manlift Manager	7. Determine if deficiencies are found.

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- a. If no, sign and submit service report to Fleet Coordinator, copy to Manlift Manager, and affix inspection sticker, showing expiration date to the scissor lift.
- b. If yes, sign and submit service report to Fleet Coordinator, copy to the Manlift Manager, and apply CAUTION tag OUT OF SERVICE per PPPL Procedure ESH-001.

Fleet Coordinator 8. Review and file all service reports and update inspection status list.

B. MAINTENANCE REQUIREMENTS

- i. Maintenance shall be performed according to the manufacturer's recommendations and shall meet the requirements of OSHA 29 CFR 1910, 29 CFR 1926 and ESH-001(Tagout).
 - a. Power plant shall be stopped and starting means rendered inoperative.
 - b. All controls in the off position and all operating systems secured from inadvertent motion by brakes, blocks or other means.
 - c. Elevating assembly and platform lowered to the full down position or otherwise secured by blocking or cribbing to prevent dropping.
 - d. Hydraulic oil pressure relieved from all hydraulic circuits before loosening or removing hydraulic components.
 - f. Prior to the commencement of any service or repair, the scissor lift shall be turned off with the key removed and in the possession of the repairman. Any potential energy (such as a raised platform) shall be blocked or restrained. (Per OSHA response regarding 1910.147 - 9/27/95) Any sources of hydraulic pressure shall be removed or released. If the service or repair requires work in the engine compartment, then the scissor lift battery cable shall be disconnected as well (Cable shall be tagged with a Danger Tag if service person must be away from unit).
 - g. Other manufacturer specified precautions.
- ii. When parts or components are replaced, they shall be OEM scissor lift parts or components equivalent as to the safety of those used in the original design.
- iii. The Manlift Manager shall ensure only qualified personnel inspect and maintain the scissor lift in accordance with the manufacturer's recommendations.
- iv. Scheduled planned maintenance, lubrication and inspection shall be followed based on the manufacturer's recommendations.
- v. Only trained and authorized personnel shall be permitted to maintain, repair, adjust and inspect scissor lifts.
- vi. Unusual maintenance or repairs require consultation with the manufacturer and approval of the Manlift Manager.

Chapter 3 Scissor Lifts**MCR-ES-MECH-012,R2-002****B. MAINTENANCE REQUIREMENTS (continued)**

- vii. Scissor lifts shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts. Any manufacturer approved changes must also be approved by the Manlift Manager.
- viii. Repaired scissor lifts shall be inspected prior to be returned to service by qualified inspectors or subcontractors. The service report will be signed by the service person, the Manlift Manager, or the Designee, and be given to the Fleet Coordinator to be filed in the equipment's file.
- ix. Safety switches and functionality shall not be impaired by service technicians.

10.0 IDENTIFICATION

Every scissor lift shall have attached to it a legibly inscribed, corrosion-resistant nameplate with the model and/or serial number, weight of the lift, and the capacity of the lift with attachments at maximum elevation with load laterally centered.

11.0 LOADING FOR TRANSPORT

If a scissor lift is to be transported, the operator's shall follow all of the manufacturer's requirements found in the manuals for the unit.

12.0 MODIFICATIONS

- A. Modifications to equipment are a rare requirement. (Modifications should not be confused with the use of manufacturer approved and supplied attachments designed to be used with the equipment.)
- B. Equipment shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts without manufacturer's written approval.
- C. All requests for modifications should be documented on the form in Attachment 1, Page 2, Request to Alter Equipment. No changes can be made until the manufacturer provides written approval for the modification. A copy of E-mail correspondence documenting requests and manufacturer's approvals may be used as written approval. All requests and manufacturer's approvals must be kept in the equipment's file.
- D. If the manufacturer is unresponsive for more than a year or if the manufacturer no longer exists, alterations to equipment may only be made using the Request to Alter Equipment Form, Attachment 1, Page 2, with the PPPL Subject Matter Expert's approval of the modification and the concurrence of a Professional Engineer (OSHA response 4/11/97, Question 1). All requests and SME/PE approvals must be kept in the equipment's file.

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- E. When approved modifications are made, appropriate changes to capacity plates, operation and maintenance manuals, any affected decals and/or tags must reflect any modifications.
- F. After any modifications, the equipment must be inspected by a qualified inspector.

13.0 RECORDS

- A. Inspection reports shall be maintained by Material Services.
- B. Records shall be retained in the Material Services Transportation Services master files for the life of the equipment while at PPPL.
- C. The equipment file for each unit shall include:
 - i. Serial number and date of delivery.
 - ii. Written records of the frequent and annual inspections and repairs performed. The record shall include deficiencies found, corrective action accomplished and identification of the person(s) performing the inspection and repairs.
 - iii. Written records of repairs accomplished on the scissor lift. The records shall include corrective action accomplished and identification of the person(s) performing the repairs.
 - iv. Pre-delivery preparation performed prior to each delivery.
 - a. Name of the person(s) trained.
 - b. Name of person(s) providing training.
 - c. Name of person(s) receiving familiarization upon delivery, unless the individual has been provided with familiarization on the same model, or one having characteristics consistent with the one being delivered, within the prior 90 days
 - d. Name of person(s) providing familiarization upon delivery.

ATTACHMENTS:

- 1. ODCL Change Request Form and Equipment Alteration Request Form
- 2. Service Report

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Request to move inspection item from Daily to Monthly

Equipment Type _____

Manufacturer _____ Model _____

Serial Number(s) _____

Property Number(s) _____

Equipment Contact(s) _____

Equipment Custodian(s) _____

Subject Matter Expert _____

Item to be moved	Reason for move	Frequency of Inspection item is moved to

Requested by: _____ Date _____

Approved by: _____ Date _____

Subject Matter Expert

Comments _____

Distribution: _____, _____, _____

Request to Alter Equipment

Manufacturer _____ Model _____

Serial Number(s) _____

Property Number(s) _____

Equipment Contact(s) _____

Equipment Custodian(s) _____

Subject Matter Expert _____

Manufacturer's Approval Letter ID _____

Provide detail of changes/modifications requested and reasons:

Requested by: _____ Date _____

Approved by: _____ Date _____

Subject Matter Expert

Approved by: _____ Date _____

Professional Engineer

Comments _____

Distribution: _____, _____, _____

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PPPL Equipment Service Report

To be completed by PPPL	Equipment Type _____ Date _____ Manufacturer _____ Model _____ Serial Number _____ Property Number _____
	Equipment Problem/Service Requested: _____ Requestor: _____ - _____ _____ _____
To be completed by Service Technician	Work/Service Performed and comments: _____ _____ _____ _____ _____ _____ _____

When service work has been completed:

1. Perform Operator's Daily Checklist Inspection
2. Every Inspection – Check that all safety devices, interlocks, lights and alarms are functioning properly
3. All product recalls and safety improvements have been installed.

Sat	Unsat
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

NOTE: Any and all malfunctioning safety devices, interlocks, lights and alarms must be brought to the immediate attention of the PPPL escort regardless of the nature of the service call.

Check One: <input type="checkbox"/> (PASS – SATISFACTORY TO USE) <input type="checkbox"/> (FAIL) INSPECTOR (PRINT): _____ SIGNATURE: _____ DATE: _____
Check One: <input type="checkbox"/> (PASS – SATISFACTORY TO USE) <input type="checkbox"/> (FAIL – TAGGED OUT, PTR NOTIFIED) Escort (PRINT): _____ SIGNATURE: _____ DATE: _____

This form must be completed at end of service call, give to Fleet Coordinator, copy to PTR

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Additional writing space on reverse

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1.0 INTRODUCTION

The use of a truck mounted aerial lift, also known as a bucket truck, can be a hazardous operation having potential consequences ranging from minor injuries and minor property damage, to fatalities and major property losses if not performed in a safe manner. Reduction of these hazards to risk levels that are acceptable 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 and safety procedures.

For all electrical work requiring the use of any type of aerial lift, the requirements for aerial lifts and aerial work found in OSHA 1910.269 shall apply.

Fire Department and PSE&G utility company workers are authorized to work on the PPPL campus at any time without the need to provide proof of training and inspection.

2.0 TRAINING

Only trained, qualified operators may operate aerial lifts at PPPL. Subcontractors wishing to operate a truck mounted aerial lift must provide proof to the Manlift Manager of every operator's training and certification to operate the aerial lift they intend to use. Qualified personnel shall be at least 18 years old and be able to read and understand the posted warning labels on the aerial lift.

2.1 TRAINING REQUIREMENTS

Prior to any operation of truck mounted aerial lifts on the PPPL campus, the operator's proof of training must be provided to the Manlift Manager. The proof may be provided using the form found in Section 9.0 of this Chapter.

The training program for truck mounted aerial lifts shall have as a minimum;

- A. The operator shall have read the operator's manual for the equipment to be used.
- B. The operator shall be instructed on how to perform an Operator's Daily Check List inspection.
- C. Operator's responsibilities with problems and/or malfunctions with truck mounted aerial lift
- D. Stability issues
- E. Locations and meanings of warning and informational labels and decals
- F. How to perform a workplace inspection
- G. Safety rules for the equipment and operation
- H. The need for and use of fall protection
- I. How to recognize Electrical Hazards
- J. Definition of and requirements for Bare hand work and truck mounted aerial lift requirements
- K. Classes of truck mounted aerial lifts

Training certifications must be recertified at least every 3 years.

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3.0 OPERATIONS

All safety requirements must be followed at all times in order to avoid the chance of serious injury or death.

- A. An ODCL inspection shall be performed before every shift, the ODCL form shall be kept on the equipment. The inspection shall be based on the manufacturer's requirements and meet, as a minimum, the requirements listed in the Inspection section of this chapter.
- B. If at any time a truck mounted aerial lift is found to be in need of repair, defective, or in any way unsafe, the unit shall be tagged out of service until restored to a safe operating condition per PPPL Procedure ESH-001.
- C. Tying off to an adjacent pole, structure, or equipment while working from within a truck mounted aerial lift is not permitted.
- D. Operators 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 truck mounted aerial lift.
- E. All employees using a truck mounted aerial lift will be equipped with a full body harness and lanyard (fall protection) attached to a designated connection point near the floor of the basket.
- F. No operator of a truck mounted aerial lift may work alone as Fall Protection is a requirement. A minimum of 1 Ground Crew member, who must be a qualified operator for the operation of the ground controls of the truck mounted aerial lift, must be attendance at all times the lift is in operation.
- G. Brakes shall be set and outriggers, when used, shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using a truck mounted aerial lift.
- H. Boom and basket load limits shall not be exceeded.
- I. 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.
- J. Insure that guardrails are properly installed and gates are closed.
- K. Before moving a truck mounted aerial lift for travel, the operator shall verify that the boom is properly cradled and the outriggers are stowed.
- L. No truck mounted aerial lift shall be operated with a leak in the fuel system.
- M. Fueling and battery charging shall follow the requirements specified in ES-MECH-011 Chapter 7, 8.4 for SPCC.
- N. Equipment owners shall keep and maintain a copy of the operating and maintenance manual(s) in the truck at all times. The manual(s) is(are) considered an integral part of the truck mounted aerial lift and is vital to communicate necessary safety information to operators.

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- O. Before the truck mounted aerial lift is used and during use, the user shall check the area in which the truck mounted aerial lift is to be used for possible hazards such as, but not limited to:
- i. Drop-offs or holes, including those concealed by water, ice, mud, etc.
 - ii. Slope(s).
 - iii. Bumps and floor obstructions.
 - iv. Debris.
 - v. Overhead obstructions and high voltage conductors.
 - vi. Inadequate surface and support to withstand all load forces imposed by truck mounted aerial lift in all operating configurations.
 - vii. Wind and weather conditions.
 - viii. Presence of unauthorized persons.
 - ix. Other possibly unsafe conditions.
- P. When working near energized lines or equipment, aerial lift trucks shall be grounded or be barricaded and considered as energized equipment, or the aerial lift truck shall be insulated for the work being performed
- Q. With the exception of equipment certified for work on the proper voltage, truck mounted aerial lifts shall not be operated closer to any energized line or equipment than the clearances set forth in OSHA 1926.950(c).
- R. Electric equipment and lines shall be considered to be energized until determined to be de-energized by tests or other appropriate methods.
- S. Refueling of truck mounted aerial lifts shall be performed with the following requirements:
- i. Park truck mounted aerial lift, set brake, lower platform, turn truck and lift off and remove key.
 - ii. No smoking, open flames, sparks or electric arcs are permitted in any fueling areas.
 - iii. Fueling shall not take place while the engine is running.
 - iv. There shall be no one on the truck mounted aerial lift during refueling procedures.
 - v. Fueling areas shall be well ventilated and shall be equipped with appropriate fire protection.
 - vi. Any spilled fuel must be reported immediately by calling x3333.

4.0 INSPECTIONS

NOTE: Electrical tests shall be performed in conformance with the requirements of ANSI A92.2 and all critical pneumatic and hydraulic components shall comply with provisions of ANSI A92.2

A. Frequent Inspections and Test

The operator shall provide proof of the daily inspections based on the manufacturer's requirements with a minimum of:

- i. Visual walk around inspection
- ii. Proper operation of all controls
- iii. Visual and audible check of safety items

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- iv. Insulating components check for damage and contamination
- v. Missing or illegible warning labels and decals
- vi. Visual check of hydraulic and/or pneumatic systems for deterioration and leaks
- vii. Check of electrical systems for malfunctions and/or wear
- viii. Functional testing of all components and emergency controls

B. Periodic Inspection and Test

The operator shall provide proof of periodic inspections and tests as required by the manufacturer with a minimum of:

- i. Structural members for deformation, cracks or corrosion.
- ii. Parts, such as pins, bearings, shafts, gears, rollers, locking devices, chains, chain sprockets, wire and synthetic ropes, and sheaves for wear, cracks or distortion.
- iii. Hydraulic and pneumatic relief valve settings.
- iv. Hydraulic system for proper oil level.
- v. Hydraulic and pneumatic fittings, hoses, and tubing for evidence of leakage, abnormal deformation or excessive abrasion.
- vi. Compressors, pumps, motors, and generators for loose fasteners, leaks, unusual noises or vibrations, loss of operating speed and/or excessive heating.
- vii. Hydraulic and pneumatic valves for malfunction and visible cracks in the external valve housing, leaks, and/or sticking spools.
- viii. Visually inspect any vacuum prevention systems and verify function of such systems.
- ix. Hydraulic and pneumatic cylinders and holding valves for malfunction and/or visible damage.
- x. Hydraulic and pneumatic filters for cleanliness or the presence of foreign material in the system indicating other component deterioration.
- xi. Electrical systems and components for deterioration or wear including those not readily visible on a frequent inspection.
- xii. Performance test of all boom movements.
- xiii. Condition and tightness of bolts and other fasteners in accordance with any manufacturer's recommendations.
- xiv. Welds, as specified by the manufacturer.
- xv. Legible and proper identification, operational, and instructional markings.
- xvi. If the aerial device is rated as an insulating device, the electrical insulating components and system(s) shall be thoroughly inspected for lack of cleanliness and other conditions that compromise insulation. Then these components and system(s) shall be tested for compliance with the rating of the aerial device in accordance with one of the applicable methods and procedures as outlined in ANSI A92.2 section 5.
- xvii. If the aerial device has upper controls equipped with high electrical resistance components and the manufacturer so indicates, they shall be maintained as high electrical resistance components and should be electrically tested per ANSI A92.2, 5.4.3.6. Any suspected items shall be carefully examined or tested and a

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determination made by a qualified person as to whether they constitute a safety hazard. All unsafe items shall be replaced or repaired before use.

5.0 INSULATION CATEGORIES FOR TRUCK MOUNTED AERIAL LIFTS

All truck mounted aerial lifts shall be defined as to the type of insulation category the aerial device is. All electrical requirements stated in ANSI A92.2 shall be met for each aerial lift device. All truck mounted aerial devices shall be tested per the requirements of ANSI A92.2 and shall have the results recorded from the electrical testing available for inspection at any time during use. Any failure of the electrical testing will require the aerial device to be tagged out of service until repairs have been made and the device is capable of passing the tests required. Insulating buckets shall have no drain holes or access openings and shall be constructed from non-conductive material

A. Category A.

Aerial devices which are designed and manufactured for work in which the boom is considered primary insulation, (bare-hand work), shall have all conductive components at the platform end bonded together to accomplish equipotential of all such components. Such aerial devices shall be marked at the platform indicating such bonding. These aerial devices shall be equipped with a lower test electrode system. When these aerial devices are qualified for work above 138 kV, they shall be equipped with a gradient control device and conductive shield(s) over the lower test electrode system. For those aerial devices with ratings 138 kV and below, conductive shield(s) over the lower test electrode system are required. The necessity of a gradient control device is to be determined by the Qualification test.

B. Category B.

Aerial devices which are equipped with a lower test electrode system but are designed and manufactured for work in which the boom is not considered as primary insulation, but secondary, such as that using insulating (rubber) gloves. Category B aerial devices can be rated higher than 46kV in order to facilitate changing them to Category A aerial devices for 'bare-hand work'. Using Category B aerial devices on voltage levels above 46kV requires the use of live line tools with appropriate dielectric ratings. These tools are to be depended upon for primary protection, just as in all cases where the boom is used as secondary protection (Categories B and C).

C. Category C.

Aerial devices which are not equipped with a lower test electrode system and are designed and manufactured for work in which the boom is not considered as primary insulation, but secondary, such as that using insulating (rubber) gloves. These aerial devices are designed for voltages of 46kV and below.

6.0 IDENTIFICATION

Every truck mounted aerial lift shall have attached to it a legibly inscribed, corrosion-resistant nameplate with a confirmation the unit complies with ANSI A92.2, the model and/or serial number, type of insulation(s) if any, voltage qualification, if unit is equipped with upper control high electrical resistance, system pressure and the capacity of the lift at maximum elevation with load laterally centered.

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7.0 MODIFICATIONS

No modifications or alterations to the truck mounted aerial lift shall be made without the approval and certification of the manufacturer in writing. Any modifications made must be represented on the manufacturer supplied name plate.

8.0 TRUCK MOUNTED AERIAL LIFT PURCHASED SERVICES REQUIREMENTS

The requirements of this chapter must be a part of the Statement of Work or Specifications being written that include this type of work and must approved by the Manlift Manager.

PPPL requires conformance with all applicable OSHA, ANSI and ASME Standards regarding truck mounted aerial lift applications. Procurement shall ensure the following requirements are passed down to all sub-tiered contractors and the PPPL Procurement Technical Representative shall ensure that the PPPL Manlift Manager is notified in a timely fashion to verify compliance with all requirements. A checklist is provided at the end of Chapter 5 of this Engineering Standard to aid the timely flow of information. Please note that failure to abide by the suggested advance notice may result in disallowance of the truck mounted aerial lift onsite. These requirements shall include but are not limited to adherence to:

§ OSHA 1926.453

§ OSHA 1926.950

§ OSHA 1926.952

§ OSHA 1910.269

§ OSHA 1910.67

ANSI A92.2 (Current version, minimum 2009)

In addition to these standards, PPPL requires the following:

- A. Procedural Steps - Prior to award, proposing truck mounted aerial lift subcontractor shall provide details of all work procedures and proposed equipment to be used.
- B. PPPL requires integration of PPPL requirements per PPPL Policy P-072 for all subcontracted work.
- C. Truck Mounted Aerial Lift Operator Qualifications - Prior to any work, the subcontractor shall provide the designated operators qualifications including:
 - i. Training Certification.
 - ii. Short narrative of recent and frequent experience with proposed equipment.
- D. Current Inspection Reports for all truck mounted aerial lifts to be used on site.
- E. Every truck mounted aerial lift will have an ODCL performed on it daily.
- F. Every truck mounted lift operator shall understand PPPL tagout procedures and shall tagout any truck that fails an ODCL.
- G. Fire Department and PSE&G utility company workers are authorized to work on the PPPL campus at any time during an emergency without providing proof of compliance.

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9.0 CHECKLIST OF REQUIREMENTS FOR PROCURED AERIAL LIFT SERVICES

Note: Failure to abide by the suggested advance notice
may result in disallowance of the equipment onsite.

Contract Number: _____

Work Planning Number: _____

PPPL Technical Representative: _____

Subcontractor Contact Person: _____

Phone: _____ FAX: _____

1 Week in advance

Pre-job onsite discussion (>1 week in advance): _____

Site survey performed: _____

Reason for work: _____

Work Plan Provided: _____

Special (e.g. Electrical) considerations: _____

3 Days in advance

Equipment Make and Model: _____

Special characteristics, if any: _____

Owner: _____

Current Periodic Inspection (copy provided) Date: _____

Operators: _____

Certification Dates: _____

Job Hazard Analysis (JHA) provided: _____

JHA reviewed by Industrial Hygiene: _____

JHA reviewed by PPPL Electrical Safety Specialist (electrical work): _____

E-mail to Michael Viola at mviola@pppl.gov

**Fire Department and PSE&G utility company operators are authorized
at any time to operate their equipment on the PPPL campus**

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1.0 INTRODUCTION

All personnel involved in the procurement of Manlifts, related components and Manlift Equipment Services shall be technically qualified and understand the needs and requirements of the specific Manlift Equipment operation, inspection, maintenance and repair in order to satisfy the requirements of the PPPL Procurement Policies and Procedures Manual and QA-020 Identifying and Dispositioning Suspect Parts.

Acquisitions for all Manlift Equipment must be approved by Industrial Hygiene (IH) in consultation with Material Services, Facilities and Site Services Division (F&SSD) and the PPPL Manlift Manager as appropriate by using Form 8.13-2, Non-Chemical Requisition Review Sheet (as described in Section 8, Chapter 13 of ESHD 5008).

2.0 SCISSOR LIFTS

- A. All Scissor Lifts purchased shall meet the requirements of ANSI A92.3 or ANSI A92.6, OSHA CFR 29 1910 and OSHA CFR 29 1926 for safety and performance. (Note that OSHA references Scissor Lifts as Scaffolds)
- B. Manufacturer shall supply documentation and instruction manuals regarding operation, maintenance, training, inspections, lubrication, repair, operating and safety concerns for the purchased Scissor Lift Elevated Platform.
- C. All Scissor Lifts must have an affixed plate defining the capacity of the vehicle including load, reach and grade.
- D. A test certificate shall be provided by the manufacturer referencing the specific Scissor Lifts, date of test, and amount of load applied. The test results shall be signed and dated by the manufacturer's authorized representative. The test must meet the stability, curb, depression, vertical, horizontal, static, level and slope requirements set forth in ANSI A92.6. (For powered Scissor Lifts only)
- E. A Proof Test including movement of the platform with a 150% of the rated load through the range of motion. The platform shall remain stable during this test and a visual confirmation that the test has produced no adverse effects on any component. The proof test shall be signed and dated by the manufacturer's authorized representative. (Manually Powered Scissor Lifts only)
- F. The Dealer shall provide initial training on the operation of the Scissor Lift.
- G. The Dealer shall provide an annual inspection upon delivery of the equipment.
- H. The Dealer shall notify and copy PPPL with any safety related bulletins as received from the manufacturer.

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3.0 AERIAL LIFTS

- A. All Boom Supported Elevated Aerial Lifts OSHA CFR 29 1910 and OSHA CFR 29 1926 for safety and performance.
- B. Manufacturer shall supply documentation and instruction manuals regarding operation, maintenance, training, inspections, lubrication, repair, operating and safety concerns for the purchased Aerial Lift.
- C. All Aerial Lifts must have an affixed plate defining the capacity of the vehicle including load, reach and grade.
- D. A test certificate shall be provided by the manufacturer referencing the specific Aerial Lift, date of test, and amount of load applied. The test results shall be signed and dated by the manufacturer's authorized representative. The test must meet the stability, curb, depression, level and slope requirements set forth in ANSI 92.5.
- E. The Dealer shall provide initial training on the operation of the Aerial Lift.
- F. The Dealer shall provide an annual inspection upon delivery of the equipment.
- G. The Dealer shall notify and copy PPPL with any safety related bulletins as received from the manufacturer.
- H. The Dealer shall supply a copy of a Load Test for used equipment being acquired.

4.0 SERVICE AND REPAIR

- A. Subcontracts for Manlift Equipment maintenance, repair and inspections shall be prepared by the Manlift Manager and approved by the Responsible Line Manager per ENG-006. The Manlift Manager shall ensure that all requirements regarding training, qualifications, safety and authorization in PPPL Policy P-072 have been met prior to any work being performed.
- B. All Maintenance and repair contracts will require that an inspection of the Manlift Equipment is performed after the work is completed verifying that all safety equipment and interlocks function correctly and that the equipment is safe to use and working properly.

All repairs must comply with and be performed following the requirements of the appropriate Manlift Equipment Chapter of this Standard, including the use of tagout.

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5.0 PURCHASED SERVICES REQUIRING THE USE OF A MANLIFT

All Purchased Services Contracts that include the need for a manlift to perform the service must meet the following requirements:

- A. The manlift operators must be qualified to operate the manlifts and the subcontractor shall provide proof of the qualification to the Manlift Manager.
 - i. The qualification must show that the use of equipment safety interlocks and warning devices were part of the qualification.
- B. The manlift operators shall perform an ODCL inspection every day on the manlifts.
- C. The manlift operators must understand PPPL tagout procedures and shall tagout any equipment that fails the ODCL.
- D. Proof of a current periodic inspection for each manlift shall be provided to the Manlift Manager 3 days prior to the equipment coming on site.
- E. All subcontracts shall meet the requirements of PPPL Policy P-072.
- F. ANSI requirements as defined in applicable ANSI Standard for type of equipment to be used.
 - i. ANSI A92-3
 - ii. ANSI A92-5
 - iii. ANSI A92-6
- G. OSHA requirements that must be met within:
 - i. OSHA 1910 Subpart D
 - ii. OSHA 1910 Subpart F
 - iii. OSHA 1926 Subpart L
 - iv. OSHA 1926 Subpart M
- H. Emergency and Power Utility company workers are authorized to operate their equipment on site and do not need to provide proof of training or inspections prior to operating on the PPPL campus.

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6.0 CHECKLIST OF REQUIREMENTS FOR PROCURED MANLIFT SERVICES

Note: Failure to abide by the suggested advance notice may result in disallowance of the equipment onsite.

Contract Number: _____
 Work Planning Number: _____
 PPPL Technical Representative: _____
 Subcontractor Contact Person: _____
 Phone: _____ FAX: _____

1 Week in advance

Pre-job onsite discussion (>1 week in advance): _____
 Site survey performed: _____
 Reason for work: _____
 Work Plan Provided: _____
 Special (e.g. Electrical) considerations: _____

3 Days in advance

Equipment Make and Model: _____
 Special characteristics, if any: _____
 Owner: _____
 Current Periodic Inspection (copy provided) Date: _____
 Operators: _____
 Certification Dates: _____
 Job Hazard Analysis (JHA) provided: _____
 JHA reviewed by Industrial Hygiene: _____
 JHA reviewed by PPPL Electrical Safety Specialist (electrical work): _____

E-mail to Michael Viola at mviola@pppl.gov

Emergency and power utility company operators are authorized at any time to operate their equipment on the PPPL campus

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1.0 DEFINITIONS

Aerial Platform – A mobile device that has an adjustable position platform, supported from the ground level by a structure.

Anchorage – A secure point of attachment to be used with personal fall protection equipment.

Base – The relevant contact points of the aerial platform that form the stability fulcrum (e.g. wheels, casters, outriggers, stabilizers).

Boom – A beam which supports the platform. The beam can be telescopic or articulated to reach height.

Boom Lift – An aerial lift that has a platform that can be positioned completely beyond the base and is used to position personnel and their tools and equipment at a work location.

Configuration – All positions in which an aerial platform or any part thereof can be placed within its operating limits.

Critical Components – Load supporting elements which support or stabilize the platform or aerial platform.

Directional Controls – Controls that initiate functions that affect movement of the platform or the aerial platform.

Elevating Assembly – The mechanisms used to position the platform relative to the aerial platform chassis.

Emergency Stop Device – Readily identifiable stop devices, located at the upper and lower control stations, which will deactivate all powered functions that affect movement of the platform or aerial platform.

Equipment Contact – Individual having physical possession of government personal property items (capital, controlled, other accountable, sensitive, high risk and administratively controlled) charged to their care. Usually reports organizationally or functionally to the custodian.

Equipment Custodian – Individual designated by Division/Department Head or Project Administrator for a particular functional or organizational area of responsibility (usually at section head level or higher). This individual maintains liaison with Material Services Property Management personnel regarding inventories, equipment spot-checks, property loans, intra-lab permanent transfer of property, disposal and other actions/problems regarding equipment within their assigned functional area.

Familiarization – Providing information regarding the control functions and safety devices for the aerial platform(s) to a qualified person or operator who controls the movement of the aerial platform(s).

Fall Protection – A fall protection system that can include guard rails or a harness system to arrest a fall. Requirements for fall protection are defined in ESHD 5008 Section 9 Chapter 16.

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Fleet Coordinator – The Fleet Coordinator is the person in the Material Control Group assigned to maintain DOE required documentation regarding the status of all government owned vehicles at PPPL

Guardrail System – A vertical barrier primarily intended to protect against personnel falling to a lower grade.

Instability – A condition of an aerial platform in which the sum of the moments that tend to overturn the unit exceeds the sum of the moments tending to resist overturning.

Insulated Platform – A platform designed and tested to meet specific electrical insulation ratings consistent with the manufacturer's identification plate.

Interlock – A control or mechanism that, under specified conditions, automatically allows or prevents the operation of another control or mechanism.

Jib – An articulated beam at the end of a telescoping boom that allows the platform to attain a reach position beyond the end of the boom.

Maintenance – The act of upkeep such as inspection, lubrication, refueling, cleaning, adjustment and scheduled part(s) replacement.

Manlift – A piece of equipment, powered or manually operated, that is designed to raise personnel and materials to an elevated location for work.

Manlift Manager – A person appointed by the PPPL Associate Director for Engineering and Infrastructure. Provides oversight, guidance, and support for the implementation of this Engineering Standard.

Maximum Travel Height – The maximum platform height or the most adverse configuration(s) with respect to stability in which travel is permitted by the manufacturer.

Modification – To make a change to an aerial platform that affects the operation, stability, safety factors, rated load or safety of the aerial platform in any way.

Most Adverse Stability Condition(s) – The permitted configuration of the aerial platform most likely to cause instability while maintaining stability. Factors to be considered shall include:

- (1) With zero load to maximum test load.
- (2) Up to and including maximum platform height.
- (3) All positions and configurations of the platform(s).
- (4) All wheel and axle positions.
- (5) Forward and backward configurations of the elevating assembly.
- (6) All other moveable features which affect the stability of the aerial platform.

Multiple Ratings – Two or more different rated workloads based on alternative configurations of the aerial platform.

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Name Plate – A legibly inscribed, durable, corrosion resistant plate attached to the manlift 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.

OEM – Original Equipment Manufacturer.

Operation – Performance of functions of an aerial platform within the scope of its specifications and in accordance with the manufacturer’s instructions, the PPPL’s work rules and applicable government regulations.

Operator – A person who controls the movement and use of equipment who has met, and is current with, the qualification requirements for the type of equipment being operated.

Operator’s Daily Check List (ODCL) – The checklist to be used by the operator to inspect the Forklift at the start of every shift and used to log safety and operating issues that arise during the shift. The ODCL will be kept on the forklift until shift end and then be given to the Supervisor for filing.

Operator’s Manual – The manual(s) supplied by the manufacturer with operation, inspection, maintenance, repair requirements, and may also include specifications and other information. The manual may only be updated and/or replaced by the Equipment Custodian who will be responsible for the proper distribution of the new manual.

Outriggers – Devices that increase the stability of the aerial platform and that are capable of lifting and leveling the aerial platform.

Override – To take over the aerial platform movement control functions at the upper control station by those at the lower control station.

Platform – The portion of an aerial platform intended to be occupied by personnel with their necessary tools and materials.

Platform Height – The vertical distance measured from the floor of the platform to the surface upon which the machine is being supported.

Platform Reach – The horizontal distance measured from the center line of rotation to the outer most edge of the platform.

Powered Functions – Those which control motion of the platform or the aerial platform and are caused by electro-mechanical, hydraulic or pneumatic forces.

Power Plant – Is defined as the power source for the equipment.

Princeton Technical Representative – Individuals designated as PTRs must have successfully completed the following training courses: a. General Employee Training; b. Subcontract Administration for Princeton Technical Representatives; c. Hazard Awareness (JHA training).

Qualified Instructor – An individual with experience, training, or education in Systematic Approach to Training (SAT) Methods and presentation techniques. These individuals are capable of developing

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training courses and materials, approving training courses and materials developed by other instructors, presenting classroom and On-the-Job instruction, evaluating trainees, and evaluating training programs.

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.

Qualified Subcontractor - One whose qualifications have either been evaluated and accepted by Head, Facilities and Site Services, or his designate, or whose parent company qualification program has been evaluated and accepted by the Head Facilities and Site Services and the individual carries documentation (e.g. card) which shows completion of approved training.

Rated Horizontal Force – The maximum permissible horizontal force at the top rail which can be applied to the aerial platform as specified by the manufacturer.

Rated Work Load – The designed safe carrying capacity of the aerial platform as specified by the manufacturer.

Repair – The act of restoring to good condition that which has been broken, damaged or worn due to use, abuse or other reasons.

Scissor Lift – An aerial platform that cannot be positioned completely beyond the base and is used to position personnel and their tools and material at a work location.

Shall – The word shall is to be understood as being mandatory.

Stability/Stable – A condition of an aerial platform in which the sum of the moments that tend to overturn the unit is less than the sum of the moments tending to resist overturning.

Stabilizers – Devices that increase the stability of the aerial platform but are not capable of lifting or leveling the aerial platform.

Subject Matter Expert - An individual with prerequisite background or experience necessary for instructional competency in a specific subject, task, or field of knowledge. Such an individual is qualified by education, training, or experience, and is a recognized expert on a particular subject, task, or system. These individuals are capable of developing training courses and materials, presenting classroom and On-the-Job instruction, and evaluating trainees, within their subject area. The SME for aerial lifts, truck mounted aerial lifts and scissor lifts is the Manift Manager.

Toeboard – A 4 inch high board rising from the platform work surface on all sides. Toeboards may be omitted at the access opening(s).

Unintended Motion – Motion of the aerial platform or platform without activation of any control.

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Unrestricted Rated Workload – The maximum designed carrying capacity of the aerial platform allowed by the manufacturer in all operating configurations.