Bristol Fire Department
Respiratory Protection Program

Approved by: Chief Brett LaRose
November 7, 2016
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Section 1: Introduction

Policy

It is the policy of the Town of Bristol Fire Department to maintain comprehensive occupational safety and health programs based upon sound engineering, education, and enforcement. This document establishes Departmental policy, responsibilities, and requirements for the protection of firefighters whose job requires the use of respiratory protection.

This document will also provide assistance to the firefighter in the use and care of respiratory protection.

The Fire Chief is solely responsible for all facets of this program and has full authority to make necessary decisions to the ensure success of this program. The Fire Chief will develop written detailed instructions covering each of the basic elements in this program, and is the person authorized to amend these instructions.

Section 2: Standard Operating Procedures

General

Firefighters shall wear a self-contained breathing apparatus (SCBA) under the following conditions:

- while engaged in interior structural firefighting;
- while working in confined spaces where toxic products or an oxygen deficient atmosphere may be present;
- during emergency situations involving toxic substances; and
- during all phases of firefighting and overhaul

Firefighters wearing an SCBA must activate the personal alert safety system (PASS) device before entering an area where respiratory protection is required.

Firefighters wearing an SCBA shall conduct a seal check prior to each use.

Firefighters shall not remove the SCBA at any time while working in an IDLH atmosphere. SCBA shall be used in accordance with the manufacturer instructions (see Appendix A).

All firefighters shall continue to wear an SCBA until the officer in charge determines that respiratory protection is no longer required.

Protective Clothing

Firefighters wearing an SCBA shall be fully protected with the use of approved structural firefighting clothing that meet the requirements of the National Fire Protection Association (NFPA) Standard 1971. Protective clothing shall include turnout coat, turnout pants, gloves, boots, helmet, helmet ear/neck protector, and fire resistant hood.
Procedures for Interior Structural Firefighting

In interior structural fires, the department shall ensure that:

- At least two firefighters enter the immediately dangerous to life and health (IDLH) atmosphere and remain in visual or voice contact with one another at all times;
- At least two firefighters will be located outside the IDLH atmosphere; and
- All firefighters engaged in interior structural firefighting will use SCBAs.

*Note:* One of the two firefighters located outside the IDLH atmosphere may be assigned to an additional role, such as Incident Commander in charge of the emergency or Safety Officer, so long as the firefighter is able to perform assistance or rescue activities without jeopardizing the safety or health of any firefighter working at the incident.

Nothing in this section is meant to preclude firefighters from performing emergency rescue activities before an entire team/group has assembled.

There must always be at least two firefighters stationed outside during interior structural firefighting. They must be trained, equipped, and prepared to enter if necessary to rescue firefighters inside. However, the incident commander has the responsibility and flexibility to determine when more than two outside firefighters are necessary given the circumstances of the fire. The two-in/two-out rule does not require an arithmetic progression for every firefighter inside, i.e. the rule should not be interpreted as four-in/four-out, eight-in/eight-out, etc.

Firefighters will wait to commence interior structural firefighting, until the proper number of firefighters can be assembled on scene as required by the response. During this time, the fire will be attacked only from the exterior, size-up will occur and emergency rescue necessary to save lives may take place.

One of the standby firefighters may have other duties such as serving as the incident commander, safety officer, or operator of fire apparatus. However, one of the outside firefighters must actively monitor the status of the inside firefighters and will not be assigned additional duties. The second outside firefighter may be involved in a wide variety of activities. Both of the outside firefighters must be able to provide support and assistance to the two interior firefighters; any assignment of additional duties for one of the outside firefighters must be weighed against the potential for interference with this requirement. Proper assignment of firefighting activities at an interior structural fire must be determined by the incident commander and is dependent on the existing firefighting situation. Consideration of all worksite variables and conditions, and the judgment of the incident commander are critical.

The two firefighters entering an IDLH atmosphere to perform interior structural firefighting must maintain visual or voice communication at all times. Electronic methods of communication such as the use of radios shall not be substituted for direct visual contact between team members in the danger area. However, reliable electronic communication devices are not prohibited and certainly have value in augmenting communication and may be used to communicate between inside team members and outside standby firefighters.
Section 3: Training

Self-Contained Breathing Apparatus Training

Firefighters wearing SCBA shall be trained in proper use, cleaning and maintenance. No firefighter shall wear an SCBA without training as specified in this document.

Training in the use of SCBA shall be done in two phases. Each new firefighter will be given initial training before using SCBA and annual training thereafter.

New Recruit Training

Initial training is to be provided during the Firefighter-I course provided by the Vermont Fire Academy. No firefighter is to use an SCBA unless training has been successfully completed. Firefighters trained at other than a state approved fire academy must be certified as trained by the Fire Chief or his/her designee before wearing an SCBA.

Annual Training

On-going training shall be provided to all firefighters of the Department.

Each firefighter must pass a facepiece fit-test during initial and annual training. Appendix B of this program contains the fit-test protocol and example fit-test record.

Course Content

Initial and annual training in respiratory protection shall be conducted as specified in Appendix C.

Fill Station Training

SCBA cylinders will be filled only by firefighters who have completed fill station training. Retraining will be provided annually.

Course Content

Initial and annual fill station training shall be conducted as specified in Appendix D.

Section 4: Respirator Fitting and Seal Check

Each firefighter must pass a facepiece fit-test during initial and annual training. Appendix B of this program contains an example of a fit-test record.
**Inspection before Use**

When using SCBA, each firefighter shall select and wear the correct size face piece as determined by initial and annual fit testing. A firefighter shall not wear respiratory protection unless the proper size facepiece is available and the equipment is in proper working condition according to the manufacturer’s specifications.

**Effective Seal Required**

An effective face-to-facepiece seal is extremely important when using respiratory protective equipment. Minor leakage can allow contaminants to enter the facepiece, even with a positive pressure SCBA. Any outward leakage will increase the rate of air consumption, reducing the time available for use and safe exit. The facepiece must seal tightly against the skin, without penetration or interference by any protective clothing or other equipment.

Nothing can be between the sealing surface of the facepiece and the face of the wearer, including but not limited to, eyeglasses, protective hoods, and beards or other facial hair.

Firefighters shall perform a seal check prior to every SCBA use. SCBA can only be worn when an adequate seal is achieved. (NOTE: the required seal check procedures are found in Appendix B-1 of the OSHA Respiratory Protection Standard. The OSHA Respiratory Protection Standard is found in Appendix F of this document).

**Section 5: Inspection, Storage, Maintenance, and Air Supply**

**Inspection**

Regular periodic inspections are required to ensure that all respiratory protection equipment is properly operating and available for use.

**Inspection Schedule**

All SCBA and spare cylinders shall be inspected after each use and at least monthly. Guidelines for inspection are in the manufacturer’s instructions found in Appendix A of this program.

After each inspection, the information will be entered in the equipment inventory tracking system. SCBA units determined to be unfit for use shall be taken out of service, and tagged with a description of the particular defect.

In the event replacement or repair of SCBA components is necessary, it shall be performed according to manufacturer’s instructions and only by persons trained and certified by the manufacturer or returned to the manufacturer’s service facility.

Firefighters will not subject SCBA units to unnecessary abuse due to neglect and/or carelessness. Caution must especially be exercised to protect the face piece section of the mask from being scratched or damaged.
Each SCBA shall be cleaned and disinfected after each use (NOTE: the required SCBA Regulator Cleaning/Disinfecting procedure is located in SOP 4-04). Only cleaning/sanitizing solutions for respiratory equipment will be used for cleaning and disinfection.

SCBA cylinders shall be hydrostatically tested every five (5) years. Composite cylinders will be removed from service after fifteen (15) years from the first hydrostatic test date.

**Storage**

All units shall be stored so that they are protected against direct sunlight, dust accumulation, severe temperature changes, excessive moisture, fumes, and damaging chemicals. Care is to be taken so that the means of storage does not distort or damage rubber or elastomeric components.

**Air Supply**

Breathing air in the SCBA cylinder shall meet the requirements of the Compressed Gas Association G-7.1-1989, COMMODITY SPECIFICATION FOR AIR, with a minimum air quality of Grade D. The Department shall ensure that sources supplying compressed breathing air provide a copy of the most recent inspection and certification.

The purity of the air from the Fire Department’s air compressor shall be checked by a competent laboratory at least annually.

The Fire Department shall assure that sufficient quantities of compressed air are available to refill SCBA for all emergencies. This shall be accomplished through use of Poseidon PFU-150 Air Compressor System and Fill Station.

Only personnel who have completed fill station training shall fill SCBA air cylinders. Compressed oxygen shall not be used in open-circuit SCBA.

**Section 6: Physical Examination**

A physical examination to determine the firefighter’s ability to wear a SCBA will be provided. Only firefighters that are medically able to wear SCBA will be allowed to do so. Appendix E contains the physical examination protocol.

**Section 7: Record Keeping**

The Company Officers shall maintain the following records:

- Completed SCBA inspection forms
- Records/results of air quality tests
- Completed fit test records (the department will receive electronic copies of fit test records from the Vermont Fire Academy.
- Fill station training records
The following records shall be maintained:
- Certificates of completion for Firefighter-I courses or equivalent as approved by the AHJ.
- Medical Evaluation documents.

**Summary of Respiratory Protection Program Records**

<table>
<thead>
<tr>
<th>Type of Record</th>
<th>Keep Records For</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCBA Inspection Records</td>
<td>After Use Monthly</td>
</tr>
<tr>
<td></td>
<td>SCBA Maintenance/Repair Records</td>
</tr>
<tr>
<td>Air Quality Tests</td>
<td>1 year</td>
</tr>
<tr>
<td>Fit Test</td>
<td>1 year</td>
</tr>
<tr>
<td>Medical Evaluation</td>
<td>Length of employment, plus seven years</td>
</tr>
<tr>
<td>Training</td>
<td>5 years</td>
</tr>
<tr>
<td>Records Documenting Training for Those Who Fill Cylinders</td>
<td>1 year</td>
</tr>
</tbody>
</table>

**Section 8: Program Evaluation**

**Evaluation Requirements**

The effectiveness of the Respiratory Protection Program shall be evaluated and corrective actions taken to ensure the respiratory protection program is properly implemented. The Department will regularly consult with firefighters to assess their views on the effectiveness of the program and to identify any problems.

The evaluation will be conducted by the Fire Chief or his/her designee. The evaluation will ensure:
- Procedures for purchasing of approved equipment are in place;
- All firefighters are being properly fitted with respiratory protection;
- All firefighters are properly trained;
- The proper equipment, cleaning, inspection, and maintenance procedures are implemented;
- The required records are being kept; and
- Changes are implemented to correct deficiencies.

**Program Monitoring**

Periodic monitoring of the respiratory protection program is necessary to ensure that all firefighters are adequately protected. Random inspections shall be made by the Chief and/or Company Officers to ensure that the provisions of the program are being properly implemented.
Appendix A: Manufacturer’s Instructions

The Bristol Fire Department will maintain a copy of all manufacturers’ instructions for the use of SCBA and fill stations operated by the Department.

Any person may examine a copy of the instructions by making a request to the appropriate Company Officer.
Appendix B: Respirator Fit Test Record

(Provided by Certified Fit Test Technician)

NOTE: Appendix F of this document contains the OSHA Respiratory Protection Standard. Appendix A of the OSHA Respiratory Protection Standard contains all of the mandatory fit test protocols. One of those protocols must be used.
Appendix C: S.C.B.A. Training Outline and Certification

Firefighter Name: ___________________________ Date: ________________

At a minimum, the following topics are to be covered in the SCBA training.

1. Why the SCBA is necessary and how improper fit, usage, or maintenance can compromise the protective effect of the respirator.
2. What the limitations and capabilities of the SCBA are.
3. How to use the SCBA effectively in emergency situations, including situations where the SCBA malfunctions.
4. How to inspect, don and doff, use, and check the seals of the respirator.
5. What the procedures are for maintenance, and storage of the SCBA.
6. How to recognize medical signs and symptoms that can limit or prevent the effective use of the SCBA.
7. Complete department Physical Ability Course (PAC) developed by Chief. PAC is designed to demonstrate use of respirators in routine and reasonably foreseeable emergency situations.

Training Certification

This certification represents:

____ Initial SCBA Certification  _____ Refresher Training Certification

Method of certification:

_____ Firefighter has successfully completed the course of instruction for Firefighter I, and a certificate issued by the Vermont Fire Service Training Council is on file. Firefighter has completed annual requirements for SCBA re-certification to include Bristol Fire Department’s Physical Ability Course. Firefighter is qualified to wear SCBA and to participate in interior firefighting operations.

_____ Firefighter has successfully completed the course of instruction for Firefighter I, and a certificate issued by the Vermont Fire Service Training Council is on file. Firefighter has completed annual requirements for SCBA re-certification. Firefighter has not completed Department Physical Ability Course. Firefighter is qualified to wear SCBA but may NOT participate in interior firefighting operations.

_____ Firefighter has received SCBA certification through the Addison County Firefighters Association Essentials of Firefighting course and a certificate is on file. Firefighter has completed annual requirements for SCBA re-certification to include Bristol Fire Department’s Physical Ability Course. Firefighter is qualified to wear SCBA and to participate in interior firefighting operations.

Certified by:

Chief: ___________________________ Date: ________________

Company Officer: ___________________________ Date: ________________
Appendix D: Air Cylinder Fill Station Training Outline and Certification

Firefighter Name: _______________________________ Date: ________________

At a minimum, the following topics are to be covered in the Air Cylinder Fill Station training.

1. Procedures for inspecting the SCBA cylinder for damage.
2. Information to ensure that the cylinder has the proper hydrostatic test date.
3. Information to ensure that composite cylinders older than the manufacturer and government service life are not refilled and are removed from service.
4. Procedures for safely operating the fill station.
5. Information on the consequences of cylinder failure.
6. The manufacturer’s instructions for the fill station.
7. Record keeping requirements

_________________________ __________________________
Chief: Date:

_________________________ __________________________
Company Officer: Date:

Training Certification

Firefighter has successfully completed the Department’s Air Cylinder Fill Station training program. Firefighter is qualified to operate the fill station to fill SCBA cylinders.

_________________________ __________________________
Chief: Date:

_________________________ __________________________
Company Officer: Date:
Appendix E:  Protocol and Physical Examination

A physical examination will be provided to firefighters before they are fit tested for respirator use. The Department shall work with a qualified healthcare provider to provide a physical examination to all members of the fire department.

Physical Examination procedures are as follows:

The physical examination will be conducted using the required OSHA questionnaire and Bristol Fire Department Firefighter Examination Form.

The following documents can be found on the Bristol Fire Department’s website at www.bristolfiredepartment.org.

- Firefighter Physical Examination letter to Healthcare Provider
- BFD Firefighter Physical Examination form
- OSHA Medical Questionnaire

Firefighters will receive follow-up medical evaluations as required by the OSHA Respiratory Protection Standard, and/or as deemed necessary by their healthcare provider.

Additional medical evaluations will be provided to firefighters under the following circumstances:

- The firefighter reports signs and/or symptoms related to their ability to wear and use an SCBA, such as shortness of breath, dizziness, chest pains, or wheezing;
- The healthcare provider informs the Program Administrator that the firefighter needs to be reevaluated;
- Information from this program, including observations made during fit testing and program evaluation, indicates a need for reevaluation.

All examinations and questionnaires are to remain confidential between the firefighter and the healthcare provider. The Department will keep a copy of the completed physical form on file in firefighters locked personnel file that states the provider has either cleared them for wearing respiratory protection or advised against wearing respiratory protection.

The healthcare provider will provide the Program Administrator and firefighter with a written recommendation regarding the firefighter’s ability to wear a respirator.

Only the following information will be provided:

- A statement on the firefighter’s ability to wear a respirator,
- The need for follow-up medical evaluation if any are necessary, and
- A statement that the medical provider has provided the firefighter with a copy of the recommendation.

Medical records will be maintained in compliance with the OSHA Access to Employee Exposure and Medical Records (29CFR1910.1020).
Appendix F: OSHA Respiratory Protection Standard
29CFR1910.134
(By Reference)
Appendix G: Physical Ability Course (PAC)

This physical ability course (PAC) consists of seven (7) separate events. The PAC is a sequence of events requiring perspective candidates and firefighters annually to progress along a predetermined path from event to event in a continuous manner. This test was developed to allow the department to identify trainable candidates and to ensure current firefighters are physically able to perform essential job tasks at fire scenes.

Firefighter’s ability to work under strenuous conditions while wearing an SCBA and performing essential job tasks during training and fire scene operations. Course is designed to build confidence and will be timed.

You are required to demonstrate proficiency in wearing and use of an SCBA under physically stressful conditions as well as complete all course objectives in compliance with current training practices.

Throughout all events, you must wear full turn-out-gear including SCBA.

All props were designed to obtain the necessary information regarding your physical ability. The tools and equipment were chosen to provide the highest level of consistency, safety and validity in measuring your physical abilities. A schematic drawing of the PAT is included in this material; however, the course layout may vary in order to conform to the fire department’s test area. The events and distances between events are always the same.

The events are placed in a sequence that best simulates fire scene events allowing an 85’ foot walk between events. To ensure the highest level of safety and to prevent exhaustion, no running is allowed between events. This walk allows you approximately 20 seconds to recover and regroup before each event.

**Event 1 Training Tower Stair Climb (off-air)**

**Equipment**
This event uses a set of stairs. A single handrail on the wall side is available for you to grasp while climbing and descending stairs.

**Purpose of Evaluation**
This event is designed to simulate the critical tasks of climbing stairs in full protective clothing while carrying a high-rise pack (hose bundle) and climbing stairs in full protective clothing and SCBA (off air). This event challenges your aerobic capacity, lower body muscular endurance and ability to balance. This event affects your aerobic energy system as well as the following muscle groups: quadriceps, hamstrings, glutes, calves, and lower back stabilizers.

**Event**
For this event, you must climb the fire department training tower staircase wearing turnout gear and SCBA (off-air) with high-rise pack. You must walk up and down the stairs at a set stepping rate of 60 steps per minute for 3 minutes. This concludes the event. Walk 85 feet within the established walkway to the next event.
Event 2 Fire Hose Drag (off-air)

Equipment
This event uses an uncharged fire hose with nozzle. The fire hose is marked at 8’ feet past the coupling at the nozzle to indicate the maximum amount of hose you are permitted to drape across your shoulder or chest. The fire hose is also marked at 50 feet past the coupling at the nozzle to indicate the amount of fire hose that you must pull into a marked boundary box before completing the test.

Purpose of Evaluation
This event is designed to simulate the critical tasks of dragging an uncharged hose line from the fire apparatus to the fire occupancy and pulling an uncharged hose line around obstacles while remaining stationary. This event challenges your aerobic capacity, lower body muscular strength and endurance, upper back muscular strength and endurance, grip strength and endurance, and anaerobic endurance. This event affects our aerobic and anaerobic energy systems as well as the following muscle groups: quadriceps, hamstrings, glutes, calves, lower back stabilizers, biceps, deltoids, upper back, and muscles of the forearm and hand (grip).

Event
For this event, you must grasp a hose line nozzle attached to 200 feet of 1 ¾” inch hose. Place the hose line over your shoulder or across your chest, not exceeding the 8-foot mark. You are permitted to run during the hose drag. Drag the hose 75 feet to a pre-positioned drum, make a 90 degree turn around the drum, and continue an additional 25 feet. Stop within the marked 5 foot x 7 foot box, drop to at least one knee and pull the hose line until the hose line’s 50-foot mark crosses the finish line. During the hose pull, you must keep at least one knee in contact with the ground and knee(s) must remain within the marked boundary lines. This concludes the event. Walk 85 feet within the established walkway to the next event.

Event 3 Equipment Carry (off-air)

Equipment
This event uses two saws and a tool cabinet replicating a storage cabinet on a fire truck.

Purpose of Evaluation
This event is designed to simulate the critical tasks of removing power tools from a fire apparatus, carrying them to the emergency scene and returning the equipment to the fire apparatus. This event challenges your aerobic capacity, upper body muscular strength and endurance, lower body muscular endurance, grip endurance, and balance. This event affects your aerobic energy system as well as the following muscle groups: biceps, deltoids, upper back, trapezius, muscles of the forearm and hand (grip), glutes, quadriceps, and hamstrings.

Event
For this event, you must remove the two saws from the tool cabinet, one at a time, and place them on the ground. Pick up both saws, one in each hand, and carry them while walking 75 feet around the drum, then back to the starting point. You are permitted to place the saw(s) on the ground and adjust your grip. Upon return to the tool cabinet, place the saws on the ground, pick up each saw one at a time, and replace the saw in the designated space in the cabinet. This concludes the event. Walk 85 feet within the established walkway to the next event.
Event 4 Ladder Raise and Extension (off-air)

Equipment
This event uses a 16-foot fire department roof ladder and a 28-foot fire department extension ladder. For your safety, two firefighters will heal the 28-foot ladder and stabilize ladder as it is being raised and lowered and assist as needed.

Purpose of Evaluation
This event is designed to simulate the critical tasks of placing a ground ladder at a fire structure and extending the ladder to the roof or window. This event challenges your aerobic capacity, upper body muscular strength, lower body muscular strength, balance, grip strength, and anaerobic endurance. This event affects your aerobic and anaerobic energy systems as well as the following muscle groups: biceps, deltoids, upper back, trapezius, muscles of the forearm and hand (grip), glutes, quadriceps, and hamstrings.

Event
For this event, you must pick up 16-foot roof ladder, carry ladder to the structure, place the butt end of ladder against structure, rotate ladder so that both spurs contact the ground and the structure, and then lay ladder flat on ground. Grasp a rung near the tip, bring that end of the ladder to chest height, and push upward on the rungs. Walk toward the structure, lifting the rungs hand over hand until the ladder is vertical against the structure and then pull the butt away from structure to approximately 75 degrees. Next you will extend the 28-foot extension ladder which is pre-positioned against structure, using hand over hand method and then tying off with Clove Hitch and Safety Knot. Climb ladder to a pre-determined height, perform a leg lock, climb down ladder, and then lower ladder. This concludes the event. Walk 85 feet within the established walkway to the next event.

Event 5 Ventilation (on-air)

Equipment
This event uses a sledgehammer and a tractor tire.

Purpose of Evaluation
This event is designed to simulate the critical tasks of using force to open a locked door or to breach a wall. This event challenges your aerobic capacity, upper body muscular strength and endurance, lower body muscular strength and endurance, balance, grip strength and endurance, and anaerobic endurance. This event affects your aerobic and anaerobic energy systems as well as the following muscle groups: quadriceps, glutes, triceps, upper back, trapezius, and muscles of the forearm and hand (grip).

Event
For this event, you must use an 8-pound sledgehammer to strike the tire moving it 18” inches. After the tire has been moved the pre-determined distance, place the sledgehammer on the ground. This concludes the event. Walk 85 feet within the established walkway to the next event.

Event 6 Confined Space (on-air)

Equipment
This event uses a 15-foot culvert that is 24-inches in diameter.
Purpose of Evaluation
This event is designed to simulate the critical task of moving through an enclosed space while using your SCBA air supply. This event challenges your aerobic capacity, upper body muscular strength and endurance, agility, balance, anaerobic endurance, and kinesthetic awareness. This event affects your aerobic and anaerobic energy systems as well as the following muscle groups: muscles of the chest, shoulder, triceps, quadriceps, abdominals, and lower back.

Event
For this event, you must crawl through a culvert that is 15-foot in length and 24-inches in diameter. Prior to entering culvert you will doff your SCBA but your mask will remain on with regulator connected still on air as you proceed through culvert. Upon exit from the culvert, don you’re SCBA, the event is concluded. Walk 85 feet within the established walkway to the next event.

If for any reason, you choose to end the event, call out or rap sharply on the culvert and you will be assisted out.

Event 7 Rescue (on-air)

Equipment
This event utilizes a weighted mannequin equipped with a harness with shoulder handles.

Purpose of Evaluation
This event is designed to simulate the critical task of removing a victim or injured partner from a fire scene. This event challenges your aerobic capacity, upper and lower body muscular strength and endurance, grip strength and endurance, and anaerobic endurance. This event affects your aerobic and anaerobic energy systems as well as the following muscle groups: quadriceps, hamstrings, glutes, abdominals, torso rotators, lower back stabilizers, trapezius, deltoids, latissimus dorsi, biceps, and muscles of the forearm and hand (grip).

Event
For this event, you must grasp a 180-pound mannequin by the handle(s) on the shoulder(s) of the harness (either one or both handles are permitted), drag it 35 feet to a pre-positioned drum, make a 180 degree turn around the drum, and continue an additional 35 feet to the finish line. You are not permitted to grasp or rest on the drum. It is permissible for the mannequin to touch the drum. You are permitted to drop and release the mannequin and adjust your grip. The entire mannequin must be dragged until it crosses the marked finish line. This concludes the PAC.