ACP 1000-2.3-202x

Rescue and Fall Protection Standard: Fall Protection Training Requirements

January 2022

AMERICAN CLEAN POWER ASSOCIATION Standards Committee
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Published by:
American Clean Power Association
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Washington D.C. 20005
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## Rescue and Fall Protection Standard: Fall Protection Training Requirements

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FOREWORD

The Foreword section is included with this document for information purposes only and are not part of the American Clean Power Association (ACP) ACP 1000-2.3-202x Rescue and Fall Protection Standard: Fall Protection Training Requirements.

Foreword

This standard, national in scope, was developed by an Accredited Standards Committee functioning under the procedures of the American National Standards Institute (ANSI), with the American Clean power Association (ACP) as Secretariat.

It is intended that every employer whose operations fall within the scope and purpose of the standard will adopt the guidelines and requirements detailed in this standard.

The need for this standard activity grew out of the American wind energy industry’s desire to help define minimum training requirements for fall protection and rescue within the wind industry. The focus is to provide the tools with which employers may develop training programs that incorporate those elements. This standard can also be used to help evaluate third party training to ensure it meets minimum requirements. This standard applies to occupational activities. It does not apply to sports activities such as mountaineering.

Neither the Standards Committee, nor the Secretariat, states that this standard is perfect or in its ultimate form. It is recognized that new developments are to be expected, and that revisions of the standard will be necessary as the state-of-the-art progresses and further experience is gained. It is felt, however, that uniform guidelines for fall protection and rescue in the wind industry is very much needed and that the standard in its present form provides for the minimum criteria necessary to develop and implement a comprehensive training program for fall protection and rescue within the American wind energy industry.

Basic fall safety principles have been incorporated into these standards, including hazard survey, hazard elimination and control, and education and training. The primary intent is to ensure a proactive approach to fall protection and rescue training within the American wind energy industry.

The Rescue and Self-Evacuation Subcommittee solicits public input that may suggest the need for revisions to this standard. Such input should be sent to the Secretariat, American Clean Power Association, 1501 M St. NW Suite 900, Washington DC 20005 or standards@cleanpower.org.

This standard was developed by the Rescue and Self-Evacuation Subcommittee and approved by the Environmental, Health, and Safety Standards Committee for submittal to ANSI. Committee approval of the standard does not necessarily imply that all committee members voted for its approval.
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1 General Information

1.1 Purpose

This standard addresses definitions and nomenclature used for the ACP 1000-2 202X Rescue and Fall Protection Training Standard in the American wind energy industry.

This standard identifies the minimum training guidelines for persons climbing wind turbines and associated structures within the American wind energy industry. These guidelines have been developed through cooperative discussions with American Clean Power Association (ACP) membership representing a cross section of the industry.

This standard is the recommended minimum guidelines for a training program which includes shared best practices from many member companies in the American wind energy industry, and are only meant to be a guideline when evaluating, creating or enhancing a training program. Employers are encouraged to make additions to the guidelines where company policy or regulations require a more protective level of training.

1.2 Scope

1.2.1 This standard identifies the minimum training guidelines for persons climbing wind turbines and associated structures within the American wind energy industry.

1.3 Exceptions

1.3.1 The scope of these standards do not include window cleaner belts or sports-related activities.

1.3.2 Body belts, window cleaner belts, chest-waist harnesses and chest harnesses, even when referred to as body supports, are not addressed by the provisions of this standard.

1.3.3 Systems that incorporate horizontal lifelines and personal protective systems for activities such as climbing, man riding, work positioning, rescue and evacuation may suitably incorporate components or subsystems specified herein. When incorporated into such systems, however, those systems, subsystems and components are not within the scope of these standards when used for recreational purposes.

1.4 Interpretations

1.4.1 Requests for interpretations of this standard shall be made in writing to the Secretariat of this standard.

2 Definitions

Definitions used in this standard are found in ACP 1000-2.1-202x Definitions and Nomenclatures Standard in the American wind energy industry.

3 List of Acronyms

Acronyms used in this standard are found in ACP 1000-2.1-202x Definitions and Nomenclatures Standard in the American wind energy industry.
4 Adherence to Regulations

4.1 This standard requires adherence to State and Federal regulations governing fall hazards in the workplace.

4.2 Where this standard appears to conflict with State or Federal regulations, such State or Federal regulations shall prevail.

4.3 Employers are not prohibited from adding protective requirements beyond what State and Federal regulations require, so long as the additions are at least as protective as the regulation(s).

E 4.3 Occupational Safety and Health Administration regulations are found in 29 CFR 1910 Subparts D and I, and 29 CFR 1926 Subpart M. Additional regulations which may apply are found in 29 CFR 1910.269. ANSI Z359, current revision, should be referenced when considering backup systems. Some State plans may have additional requirements for control of fall hazards.

Section 5(a)1 of the OSH act also requires employers to identify hazards, both real and predicted, in the workplace and put controls in place to mitigate those hazards. Where the regulations are silent, consensus standards and company policies shall be used to mitigate the identified and predicted hazards in the workplace.

4.4 Equipment used in fall protection and rescue has weight limits which have been identified for testing and certifying operation of the equipment in preventing and arresting falls from height while complying with regulations.

4.4.1 Fall protection and rescue equipment shall meet the requirements of ANSI Z359, current revision.

4.4.1.1 A person using this equipment shall not weigh less than 130 lbs. or more than 310 lbs. when equipped to climb with all the required personal protective equipment (PPE), clothing, and required pieces of equipment.

E 4.4.1.1 An employer wishing to have a climber outside of the certified performance weight range of any piece of equipment, certified to ANSI Z359, would have to have such equipment tested and certified to provide at least the level of performance the equipment was designed for, and be able to adhere to established OSHA and industry standards while using the equipment.

4.5 Employers should implement a risk-based assessment for activities which require persons to climb turbines and put risk mitigation procedures in place prior to the activity commencing.

E 4.5 A risk-based assessment is meant to identify factors which could affect the safety of the climbers. Factors such as physical, mental, skill level, experience of the climber and equipment limitations must be considered when assessing the risk of a turbine climbing activity.

Service lifts and climb assist systems should be treated as if they will not be available and therefore, the risk assessment should be made with this hazard as a possibility. Without a lift or assist device, the risk assessment should be formulated with a self-powered climb up and down the tower as a requirement.
5 Category of Climber

5.1 Climbers are described by the frequency they climb a turbine as part of their normally assigned job duties.

5.1.1 A one-time climber is a person who is anticipated to only climb a turbine one time in their assigned job role.

5.1.2 A new climber is a person who has been trained to climb but has not made actual climbs within a turbine as part of their normally assigned job duties.

5.1.3 An infrequent climber is a person who may occasionally climb a turbine as part of their assigned job duties but is not expected to be assigned duties which require frequent climbing.

5.1.4 A routine climber is a person who can reasonably be expected to have assigned duties which require climbing turbines frequently.

E 5.1.4 There is no recommended number of climbs which would move a climber from new climber or infrequent climber status to routine climber status. Employers are encouraged to establish a procedure which sets criteria that helps to identify when a climber has achieved the level of skill, experience and knowledge to become a routine climber.

5.1.5 A rescue team member is a climber who is recognized by their employer has having advanced skills and a demonstrated ability to recognize hazards in a wind turbine environment where an emergency has occurred, and has the authority to act to mitigate hazards which are identified within the wind turbine environment during emergency operations.

6 Training Requirements by Category of Climber

6.1 One-time climbers shall receive training prior to climbing to any height, on any surface or system, that requires fall protection which includes the following:

6.1.1 One-time climbers shall be trained on the hazards which climbing exposes them to.

6.1.1.1 One-time climbers shall be trained to recognize that climbing is a strenuous activity and can place abnormal stress on a person’s body and cardiovascular system.

6.1.1.2 One-time climbers shall be trained to recognize the signs and symptoms of stress on the human body’s cardiovascular system.

E 6.1.1.2 One-time climbers shall be trained to recognize the effects of hanging in their harness after a fall and should be trained to take suspension mitigation actions to avoid the effects of suspension trauma.

6.1.1.3 One-time climbers shall be trained to recognize that excessive body weight can expose the climber to higher forces when arresting a fall and create a condition where unacceptable injuries could occur to the climber’s body systems.

6.1.1.4 One-time climbers shall be trained to recognize that other medical conditions can create hazardous conditions when combined with the strenuous activity of climbing.

E 6.1.1.4 Training should include the excessive hazards created by medical conditions such as blood sugar disorders, respiratory conditions, seizure history, compromised limb functions, joint/muscle concerns, previous injuries and mental conditions.
Prescribed medications which warn of equipment operation while taking the medication should be discussed and the potential risks of climbing while taking the medication identified. Employers are encouraged to have a policy which requires climbers to identify changes in health, where medications are being used which could affect their mental or physical state.

6.1.1.5 One-time climbers shall be trained to recognize when a rescue of another is required.

6.1.1.6 One-time climbers shall be trained to recognize that they do not possess the skills and experience required to participate in a rescue operation.

Employers are encouraged to not depend on a one-time climber as part of the rescue team and plan. One-time climbers are not expected to have a level of training, skill or experience to participate in a rescue from height. Employers should consider this factor when planning and assigning personnel to the activity where a one-time climber is part of the activity.

6.1.1.7 One-time climbers shall be trained on how to climb a fixed ladder while regulating their pace to avoid overexertion.

6.1.1.7.1 One-time climbers shall be trained to maintain three points of contact while climbing fixed ladders.

6.1.1.7.2 One-time climbers shall be trained to recognize rest steps or platforms located on ladders, and how to utilize them to take rests during the climb.

6.1.1.7.2.1 One-time climbers shall be trained to utilize fall protection equipment properly if a rest is needed and a rest step or platform is not available.

6.1.1.8 One-time climbers shall be trained on how a full body harness fall arrest system transfers the force of a fall arrest into the pelvic areas of the body and the maximum forces the body is likely to experience.

6.1.1.9 One-time climbers shall be trained on each piece of personal fall protection equipment they will have in their possession during the climb to the level described in the following:

E 6.1.1.9 Personal Fall Protection Equipment requirements are determined by the type of hazard and after mitigation or elimination of the fall hazard has been considered. Each employer is encouraged to perform hazard identification and select PFPE based upon the risk and mitigation.

Typical types of PFPE include full body harness, twin-arm fall arrest lanyards and limited fall arrest devices. Other PPE may also include items such as work position lanyards, helmets, lights, gloves, boots, eyewear, and other items required by the employer.

6.1.1.9.1 The one-time climber shall know the proper name of each piece of equipment that will be used during the climb.

6.1.1.9.2 The one-time climber shall know the proper connection method of each piece of equipment.

6.1.1.9.3 The one-time climber shall recognize when the full body harness requires adjustment.

6.1.1.9.4 The one-time climber shall know how to operate snap hooks, carabiners, buckles and other devices which they will have attached to their harness.

6.1.1.9.5 One-time climbers shall be trained to recognize how loose objects present a hazard of dropped objects and be able to apply tethering methods.

6.1.1.9.6 One-time climbers shall be able to identify the person they report problems to and how to communicate the problems.
6.1.1.9.7 One-time climbers shall be able to recognize when they can call a stop to the activity.

6.1.1.9.8 One-time climbers shall be instructed on how to call a stop to activities.

6.1.1.9.9 One-time climbers shall understand the procedure to be followed during the climbing of the wind turbine.

Employers are encouraged to have a procedure which describes the climbing activity and what the one-time climber can do without permission. The procedure should also clearly define what the one-time climber is not allowed to do without permission or supervision.

6.2 New climber training requirements shall meet all the training requirements of the one-time climber with the addition of the following:

6.2.1 New climbers shall be able to identify the regulations applicable to climbing wind turbines.

6.2.2 New climbers shall be able to demonstrate donning (putting on) a full body harness and properly adjusting the fit of the harness.

6.2.3 New climbers shall be able to make proper connections to the ladder system engineered fall protection system.

6.2.4 New climbers shall be able to demonstrate proper use of personal fall protection devices assigned to them as part of their personal fall protection system.

6.2.5 New climbers shall be able to demonstrate proper ladder use including maintaining three points of contact while on the ladder.

6.2.6 New climbers shall be able to demonstrate 100% tie-off when required to be tied off.

6.2.7 New climbers shall be able to demonstrate inspection of all parts of their personal fall protection system.

6.2.8 New climbers shall be able to demonstrate the proper use of fall arrest equipment.

6.2.8.1 New climbers shall be able to demonstrate proper use of fall arrest lanyards when climbing a ladder.

6.2.8.2 New climbers shall be able to demonstrate proper use of limited fall arrest devices used on engineered ladder systems.

There are several different engineered ladder systems used in the American wind energy industry. New climbers should be able to demonstrate proper use of every engineered fall protection system they will be required to use during the assignment of their work duties.

6.2.9 New climbers shall be able to identify improvised anchors displaying evidence of overwhelming strength required for use as a fall arrest anchor.

6.2.10 New climbers shall be able to demonstrate identification of specified anchor points which are identified in work instructions or manufacturer documentation.

6.2.11 New climbers shall be able to describe the hierarchy of fall protection.

6.2.12 New climbers shall be able to identify hazards associated with climbing wind turbines.

6.2.13 New climbers shall be able to contribute to a risk assessment related to climbing wind turbines.

6.2.14 New climbers shall be able to describe active and passive fall protection systems.

6.2.15 New climbers shall be able to describe swing falls and the hazards associated with them.

6.2.15.1 New climbers shall be able to describe methods used to reduce the risks associated with swing falls.
6.2.16 New climbers shall be able to calculate required clearance distances when using fall arrest systems.

6.2.17 New climbers shall be able to demonstrate inspection of a ladder system and determine if it is safe to climb.

6.2.18 New climbers shall be able to inspect rescue equipment and determine if it is safe to use.

6.2.19 New climbers shall be able to demonstrate using a rescue system to raise and lower a casualty.

6.2.20 New climbers shall be able to demonstrate an evacuation using the rescue system.

6.2.21 New climbers shall be able to demonstrate the use of tethering systems to secure loose items.

E 6.2.21 Tethering of loose items can include securing radios, phones, small tools, hydration or any other small items which may need to be carried on the climber while climbing a ladder system.

The new climber should be able to describe the limitations of each tethering system in relation to weight, harness capabilities and risks associated with attaching items to the fall protection harness. Tethering systems can take many forms, including lanyards, bags and pouches designed to transport items in a secure manner.

6.2.22 New climbers shall be able to describe the procedure to follow when an emergency is identified.

6.2.23 New climbers shall be able to describe the employer’s fall protection program and identify the competent person named in the program.

6.2.24 New climbers shall be able to describe safety check items when performing a safety check on another climber prior to climbing.

6.2.25 New climbers shall be able to demonstrate doffing (removing) their fall protection equipment and storing it properly.

6.2.26 New climbers shall be able to describe how to maintain each piece of their fall protection system.

6.3 Infrequent climbers shall be trained in all the requirements of the new climber.

E 6.3 The initial training for the new climber and the infrequent climber should meet the same standard. A person being trained for a position which requires climbing as part of their job duties will need to meet the same training requirements. Employers are encouraged to put procedures in place which help identify further requirements that an infrequent climber may have to satisfy before climbing after a period has elapsed since the initial training or last climb was made.

It is not unreasonable to expect that an infrequent climber would have to demonstrate they still retain the knowledge, skills and awareness required to conduct a climb safely and competently after a period has elapsed since they last used the skills required of a climber.

6.4 Routine climbers shall be trained to the same standard as new climbers.

E 6.4 Routine climbers were all trained as new climbers at some point in their job assignment with their employer. Routine climbers may also participate in regular update training or training which refreshes their skills and allows an employer to validate their continued level of competence in climbing.
Routine climbers are employees who are assigned job duties which require them to climb frequently with only short periods of non-climbing job-related assignments. Employers are encouraged to establish criteria which identifies when a routine climber would change status to infrequent climber.

6.5 Rescue team members shall be trained to the same standard as new climbers with the addition of the following:

6.5.1 Rescue team members shall be a routine climber.

6.5.2 Rescue team members shall have experience climbing the types of turbines they would be expected to rescue in.

6.5.3 Rescue team members shall be able to demonstrate the skills required to perform the types of rescues they are assigned to perform.

6.5.4 Rescue team members shall be able to demonstrate proper use of the rescue equipment they are assigned to use.

6.5.5 Rescue team members shall be able to identify hazards which arise during a rescue operation and establish controls which mitigate the risk to an acceptable level.

E 6.5.2 There are many different turbine makes and models within the American wind energy industry. While most makes and models share some commonality in design, there are differences which can create complications and pose different hazards and risks when conducting a rescue operation. A rescue team member should have enough experience in the make and model they will be assigned to perform rescue in, so they are aware of the hazards presented in any situation where a rescue would be required.