

# Wildland Fire Chain Saws, S-212

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## *Glossary of Terms*

### **Glossary Sections**

The following pre-course work consists of a Glossary of Terms designed to familiarize the new sawyer with chain saw terminology. The glossary is divided into the following sections:

1. Chain Saw Parts.
2. Fuel Containers.
3. Tools.
4. Safety.
5. Personal Protective Equipment (PPE).
6. Tree Characteristics.
7. Sawyer Terms.
8. Suppression.
9. Binds.
10. Cutting Terms.
11. Types of Cuts.
12. Miscellaneous.
13. Agencies, Websites, and Publications.

### **1. Chain Saw Parts:**

- 1.1. ***Black/gray check:*** A process of checking the condition and function of all black or gray fasteners, switches, and handles on a chain saw. The process should be conducted daily before operating a chain saw and, once completed, the operator will have finished a full safety feature check. Black is for Stihl chain saws, and gray is for Husqvarna chain saws.
- 1.2. ***Chain brake:*** A safety device that stops the saw chain.
- 1.3. ***Chain saw:*** A saw powered by an engine or motor in which the cutting elements are on a circular chain.

- 1.4. **Depth gauge (or raker gauge):** A tool that is used to measure the distance for the depth gauge or raker to be sharpened on a specific cutting tooth of a saw chain.
- 1.5. **Dogs (or bumper spikes):** Metal spikes mounted on a chain saw near the guide bar, designed to stabilize and support the chain saw during felling and bucking. Medium-sized saws will usually have an inside dog, whereas larger saws will have an inside and an outside set of dogs. Chain saw dogs stabilize the chain saw, increasing the sawyer's efficiency in felling and bucking operations.
- 1.6. **Full wrap:** A front handlebar that encompasses 3 out of 4 sides of the chain saw.
- 1.7. **Guide bar:** The long, thin projection of the chain saw upon which the saw chain travels.
- 1.8. **Half wrap:** A front handlebar that encompasses 2 of the 4 sides of the chain saw.

## 2. Fuel Containers:

- 2.1. **Aluminum fuel bottle:** Aluminum bottles used to carry fuel and bar oil. Sigg and MSR are the two approved bottles.
- 2.2. **Dolmar—fuel/oil container:** A container that holds saw fuel and chain oil in two separate compartments.
- 2.3. **Grounding:** Contact between a container and the ground point, usually by wire, to prevent generation of static electrical sparks. Fuel containers and chain saws must always be filled on the ground, not in a vehicle, to establish an adequate ground. Fueling of chain saws must also be done on the ground (not on a vehicle's tailgate) to ensure a positive ground is established.
- 2.4. **Safety container:** As defined by NFPA 30, an approved container of not more than a 5-gallon (18.9-L) capacity having a spring-closing lid and spout cover and designed so that it safely relieves internal pressure when subjected to fire exposure.

## 3. Tools:

- 3.1. **Axe (felling):** A part of the faller's safety equipment that serves many pounding and chopping functions. Can also be used to plumb the lean of a tree.
- 3.2. **Cant hook:** A lumberman's lever that has a pivoting hooked arm and a blunt or toothed metal cap at one end.

- 3.3. **Peavey:** A lumberman's lever for turning logs that has a pivoting, hooked arm and metal spike at one end.
- 3.4. **Plumb bob:** A tool used to establish the outward lean or slant of a tree in relation to its base. Generally a weight attached to a string.
- 3.5. **Wedge (felling):** A plastic or magnesium tool used by a faller to redistribute a tree's weight to a desired direction (lift) and to prevent a tree from sitting back. Also used to prevent the guide bar from being pinched while bucking.

#### 4. Safety:

- 4.1. **Blood bubble:** The danger zone where the nose of the sawyer's bar can reach in any direction.
- 4.2. **Escape route:** A predetermined path of exit used by fallers when felling or bucking. The essential components of an escape route are selection of the desired direction and distance, before felling or bucking, and a well cleared path through which to escape.
- 4.3. **JHA:** Job Hazard Analysis. Describes the potential hazards of the work site, along with all agency policies, controls, and work practices selected to minimize those hazards.
- 4.4. **Safe zone:** An area at least 20 feet away from the stump of an intended tree to be felled. The safe zone should be located 45 degrees behind the direction of fall. Natural features such as large rocks and solid trees may be used for additional protection to the faller.
- 4.5. **Safety zone:** An area cleared of flammable materials used for escape in the event the line is outflanked or in case a spot fire causes fuels outside the control to render the line unsafe.

#### 5. Personal Protective Equipment (PPE):

- 5.1. **Bug eyes:** A form of eye protection.
- 5.2. **Chaps:** Personal protective equipment that covers the legs from the waist to 2 inches below the boot tops. All wildland fire chain saw operators must wear approved chain saw chaps.
- 5.3. **First-aid kit:** As referenced in this course, an OSHA approved kit including blood borne pathogen protective equipment (as a minimum, surgical gloves, face masks, eye protection, and CPR clear mouth barriers) in addition to standard first-aid supplies.

- 5.4. **PPE:** Personal Protective Equipment for eyes, head, and extremities, and protective clothing, respiration devices, and protective shields and barriers. In addition to PPE required for fireline duties, sawyers are also required to use approved chaps and eye and hearing protection.
- 5.5. **Safety glasses:** A type of glass or plastic lens that will not shatter when broken or compromised.

## 6. Tree Characteristics:

- 6.1. **Base of tree:** That portion of a rooted tree not more than 3 feet off the ground.
- 6.2. **Bole:** A tree stem once it has grown to substantial thickness capable of yielding saw timber or large poles.
- 6.3. **Butt:** The bottom end of a felled tree.
- 6.4. **Cant:** A log with one or more squared sides.
- 6.5. **Cat face:** A scar or deformed section at the base of a tree caused by rot or fire.
- 6.6. **Danger tree:** See hazard tree in this section.
- 6.7. **d.b.h.:** The diameter of a tree at breast height (4.5 feet above ground level).
- 6.8. **Devil's Fork:** A coniferous tree with multiple tops. These trees make head lean size-up difficult.
- 6.9. **Face:** The side of the tree aligned with the predominate lean or the intended lay, or both. The side of the tree opposite from the back cut.
- 6.10. **Fork top (or twin top):** A coniferous tree with two tops.
- 6.11. **Hazard tree:** A standing tree that presents a hazard to people or values due to conditions such as, but not limited to, deterioration or physical damage to the root system, trunk, stem, or limbs, and/or the direction and lean of the tree.
- 6.12. **Head lean:** One of the two natural leaning forces found in most trees. Head lean is the most prominent outward slant or lean of a tree in reference to its base or to its intended lay.
- 6.13. **Heartwood:** The inner layers of wood that, in the growing tree, have ceased to contain living cells.

- 6.14. **Lean:** Refers to the directional tilt of a tree away from its vertical position. Many times two lean forces may be in play in the same tree. They are referred to as head lean and side lean.
- 6.15. **Leaner:** A tree that naturally leans at a sharp angle.
- 6.16. **Log:** A segment sawed or split from a felled tree.
- 6.17. **Root wad:** The mass of roots and dirt that projects above ground level after a tree has been pushed or blown over.
- 6.18. **Sapling:** A small-diameter tree under 4 inches d.b.h.
- 6.19. **Sapwood:** The outer layers of wood that, in the growing tree, contain living cells and reserve material.
- 6.20. **School-marm:** A tree that has naturally divided into two or more sections.
- 6.21. **Side lean:** Side lean is the lean determined from the intended felling direction.
- 6.22. **Snag:** Any standing dead tree or remaining standing portion thereof.
- 6.23. **Sound:** A descriptor used in tree felling, especially snags, to refer to the lack of rot in the standing tree. Also see sounding in the Miscellaneous section.
- 6.24. **Spike top:** A live tree that has a dead, barkless top.
- 6.25. **Spring pole:** A limb or sapling that is bent under a fallen tree. A spring pole is usually under great amounts of pressure (tension) and is considered potentially dangerous until correctly relieved.
- 6.26. **Staub:** A short length of cut branch wood extending from the bole or the ground. Staubs create tripping and injury hazards.
- 6.27. **Widow-maker:** A loose limb or top or a piece of bark lodged in a tree, which may fall on anyone working beneath it.
- 6.28. **Windfall (or wind throw):** A tree that has been uprooted or broken off by the wind.

## 7. Sawyer Terms

- 7.1. **Bucker:** See cutter in this section.
- 7.2. **Chain saw operator:** See cutter in this section.

- 7.3. **Cutter (or faller, chain saw operator, sawyer, buckler):** One who fells, bucks, or limbs trees. A cutter is also the cutting link of the saw chain.
- 7.4. **Faller:** A person employed in felling trees.
- 7.5. **Faller A:** An agency-specific qualification of an individual being trained or evaluated in introductory level, non-complex chain saw operations. Work of a Faller A should be under the supervision of a qualified Faller B or Faller C. See your agency guidance.
- 7.6. **Faller B:** An agency-specific qualification of an individual who has demonstrated sufficient judgment, skill, and knowledge to be trained or certified in moderately complex chain saw operations. Certified Faller B individuals may work independently on project or fireline assignments up to their level of skill. They demonstrate the judgment to decline assignments that exceed their skill level. See your agency guidance.
- 7.7. **Faller C:** An agency-specific qualification of an individual who has demonstrated judgment and proficiency in correctly handling complex sawing and felling in wildland fire operations. See your agency guidance.
- 7.8. **Faller C Certifier:** The highest level of certification for chain saw operators in the agency wildland and prescribed fire qualifications system. The Faller C Certifier conducts chain saw classroom and field training, evaluates and documents the performance of A, B, and C level chain saw operators, and recommends to their employing agency their appropriate level of certification. Determination of qualification for this designation is left to employing agency discretion.
- 7.9. **Sawyer:** See cutter in this section.
- 7.10. **Swamper (or puller):** An assistant to the chain saw operator who carries fuel and tools and moves cut material such as brush or other objects.

## 8. Suppression:

- 8.1. **Banking:** A method of disposing of cut material against the opposite (cold) side of the fireline.
- 8.2. **Brushing:** Removing the brush and shrubs either during fireline construction or while clearing out a work area.
- 8.3. **Chaining:** Removing cut fuels by handing material from one person to the next person in a line.

- 8.4. **Direct attack:** Any treatment applied directly to burning fuel such as wetting, smothering, or chemically quenching the fire or by physically separating the burning from the unburned fuel using a chain saw or other method.
- 8.5. **Hands-on training:** Supervised training that demonstrates the application of knowledge and skill in a practical field exercise of proficiency.
- 8.6. **Indirect attack:** A method of suppression in which the control line is located some considerable distance away from the fire's active edge. Generally done in the case of a fast-spreading or high-intensity fire and to use natural or constructed fire breaks or fuel breaks and favorable breaks in topography.
- 8.7. **Leap frog:** A system of organizing workers in fire suppression in which each crew member is assigned a specific task such as clearing or digging fireline on a specific section of control line, and when that task is completed, passes other workers in moving to a new assignment.
- 8.8. **MIST:** Minimum Impact Suppression Tactics. Employed in areas where the visual or environmental impacts of fire suppression activities must be minimized, as in wilderness areas and national parks. Should be used whenever possible.
- 8.9. **OJT:** On-the-job training. One of the best training methods because it is planned, organized, and conducted at the employee's work place.
- 8.10. **Progressive method of line construction:** A system of organizing workers to build fireline in which they advance without changing relative positions in line.
- 8.11. **RA:** Risk Assessment. Describes the potential hazards of the work site, along with all agency policies, controls, and work practices and work practices selected to minimize those hazards. The Risk Assessment may require different levels of decision-maker's approval before the project is started due to level of risk.
- 8.12. **Slashing:** The cutting and piling of small-diameter young trees or brush.
- 8.13. **Slope:** The increase or decrease in altitude over a horizontal distance expressed as a percentage.
- 8.14. **Strip:** Area allotted to each sawyer or faller. Typically used in interior logging and leap-frogging fireline saw teams.

## 9. Binds:

- 9.1. **Bind:** Series of pressures in the material to be cut. The two major components of bind are compression and tension. It is their directional pressures that determine the technique and procedure used while operating a chain saw.
- 9.2. **Bottom bind:** One of the five basic tree positions commonly encountered while bucking. A tree in a bottom-bind situation is tensioned on top and compressed on the bottom.
- 9.3. **Compression:** The act, process of, or result of compressing. Bind is a result of compression. Also during felling, compression happens when tree sits back on the saw blade due to wind or improper lean sizeup.
- 9.4. **End bind:** One of the five basic tree positions commonly encountered while bucking. An end-bind situation occurs on steep terrain where the force of gravity closes the bucking cuts.
- 9.5. **No-bind:** One of the five basic tree positions commonly encountered while bucking. A tree in a no-bind situation is usually found on a flat lay.
- 9.6. **Side bind:** One of the five basic tree positions commonly encountered while bucking. A tree in a side-bind situation is compressed on one side and tensioned on the other.
- 9.7. **Tension:** The act or action of being stretched. Opposite force from bind. Tension causes throw-back, splitting, and barber chairing.
- 9.8. **Top bind:** One of the five basic tree positions commonly encountered while bucking. A log in a top-bind situation is compressed on top and tensioned on the bottom.

## 10. Cutting Terms:

- 10.1. **Attack corner:** Bottom corner of the nose of the guide bar used when bore cutting.
- 10.2. **Barber chair:** Vertical split of a tree during the felling procedure. Commonly a result of improper undercutting or back-cutting, or both. Characterized by a portion of the fallen tree being left on the stump.
- 10.3. **Bed:** Prepared area upon which a tree is felled.

- 10.4. **Corners:** The extreme outside position of the holding wood or hinge inside the bark on either side of the tree. In some locations across the country, this may also be called “ears.”
- 10.5. **Cutting:** The process of felling, bucking, or limbing trees.
- 10.6. **Cutting area:** An area in which trees have been, are being, or are about to be cut.
- 10.7. **Fell:** To cut down trees.
- 10.8. **Gunning (or sighting):** Technique of aligning the front handlebar and rear handle or the gunning sights (marks), or both, with the desired felling direction. Because the front handlebar and rear handle and/or the gunning sights are at a 90 degree angle to the bar, exact position of the undercut in relation to the desired felling location can easily be established. Not all saw front handlebars and rear handles are designed to be used for gunning. Check your saw.
- 10.9. **Hinge wood (or holding wood or hinge):** The uncut wood between the undercut and the back cut. Its purpose is to prevent the tree from prematurely slipping from the stump until it has been committed to the undercut. The hinge wood maintains the tree’s alignment with the direction of fall. The hinge wood must never be completely sawn off.
- 10.10. **Kerf:** The slot in the wood made by the action of the saw chain cutters.
- 10.11. **Keyhole:** Openings cut into continuous fuels used to dispose of cut material.
- 10.12. **Kickback:** A strong thrust of the saw back towards the sawyer resulting from improper use of the top corner of the guide bar’s nose.
- 10.13. **Limbing:** Removing the branches from a felled or standing tree.
- 10.14. **Offside:** The opposite side of the tree from where the sawyer stands while bucking or felling.
- 10.15. **Pivot points:** Pivot points can be stumps, rocks, or any protrusion on the ground that affects a log’s balance or natural tendency to roll. An unseen pivot point may cause the ends of the log to swing around the pivot point.
- 10.16. **Plumb:** To gauge or assess the various vertical leans of a tree as part of the sizeup completed before felling.
- 10.17. **Pull-in:** Pull-in occurs when the chain on the bottom of the bar is caught or pinched, and suddenly stops. The chain pulls the saw forward.

- 10.18. **Push-back:** Push-back occurs when the chain on the top of the bar is suddenly stopped by contacting another object or by being pinched. The chain drives the saw straight back toward the sawyer.

## 11. Types of Cuts:

- 11.1. **Back cut:** The last of the three cuts required to fell a tree. Located on the opposite side of the tree from the undercut and minimally 2 inches above the horizontal cut of the undercut. The 2 inches is referred to as stump shot and prevents the tree from kicking back over the stump toward the faller.
- 11.2. **Bird's mouth felling technique:** A felling technique that uses a combination of sloping cuts to create an opening greater than 90 degrees. This technique allows further movement of the tree trunk before the holding wood is snapped due to a closed face. In turn, directional control is maintained longer.
- 11.3. **Boring:** Method of using the bottom half of the guide bar nose to saw into the tree while felling or bucking.
- 11.4. **Buck:** To saw trees and limbs into shorter lengths.
- 11.5. **Clear cut:** An area in which all of the trees have been or will be felled, bucked, and skidded to a location. When all the trees in a given area are felled.
- 11.6. **Conventional felling technique:** One of the techniques commonly used to fell a tree. The undercut is at least 45 degrees, made up of one horizontal (gunning) cut and one sloping (matching) cut that meet each other without overlapping.
- 11.7. **Corner-nipping:** Special technique of partially cutting the extreme outside holding wood corners to prevent root pull and slabbing. See side-notching back cut in this section.
- 11.8. **Debark:** To remove bark from trees or logs.
- 11.9. **Dutchman (or bypass):** Results from the horizontal cut or the sloping cut, or both, of a undercut not meeting or extending beyond each other. Very hazardous. Can change the actual felling direction and cause loss of control of the tree.
- 11.10. **Face cut:** See undercut.
- 11.11. **Gunning cut (horizontal cut):** First of the two cuts required to undercut a tree. The depth of the gunning cut is generally 1/3 the diameter of the tree, and level.
- 11.12. **Horizontal cut:** See gunning cut in this section.

- 11.13. **Humboldt felling technique:** One of the techniques commonly used to fell a tree. The 45 degree sloping cut (face) section is removed from the stump of the tree.
- 11.14. **Matching cut (sloping cut):** The second of the two cuts required to undercut a tree. The matching cut must be angled sufficiently to allow a wide-mouthed undercut (45 degree) opening.
- 11.15. **Open-face notch felling technique:** One of the techniques commonly used to fell a tree. The undercut is cut to at least 70 degrees (ideally 90 degrees), with the top cut being angled downward 70 degrees and the bottom cut angled upward 20 degrees. The back cut is horizontal and at the same height as the corner of the undercut.
- 11.16. **Pie shape (or wedge cut):** A section sawn from a tree during the bucking sequence to allow for the directional pressures of various bind situations. Splits, slabs, and excessive wood-pulling are minimized when a pie-shaped cut is sawn.
- 11.17. **Side-boring back cut:** Side-boring is a technique used to establish the amount of holding wood required to fell a tree. In the side-boring back cut, the guide bar nose is plunged into the tree behind the hinge wood above the undercut to establish the back cut.
- 11.18. **Side-notching back cut:** Intentional alteration of the standard back-cutting procedure to prevent loss of control or barber chairing, or both. This advanced skill method reduces the amount of holding wood remaining to be cut by cutting each side before the final across-the-back severing.
- 11.19. **Sloping cut:** See matching cut in this section.
- 11.20. **Third facing cut:** Special technique for making an “extra” facing cut to promote a proper undercut. Root protrusions, cat faces, and rot are some of the common conditions that require a third facing cut.
- 11.21. **Undercut:** A minimum 45 degree section of wood sawn and removed from a tree base. Its removal allows the tree to fall to the predetermined lay. The undercut is comprised of two separate cuts, which have a constant relationship; the gunning cut (horizontal cut) must be of significant depth to allow adequate hinge wood; the matching cut (sloping cut) must be angled enough to allow a wide opening, and the two cuts must meet each other without overlapping (Dutchman).

## 12. Miscellaneous:

- 12.1. **Blowdown:** An area of previously standing timber blown over by strong winds or storms.
- 12.2. **Crossing the lead:** Intentional or unintentional felling of a tree across the established falling direction. Although crossing the lead may be caused by wind, it is usually a result of improper felling technique.
- 12.3. **Fiber pull:** The fiber that gets pulled up from the lower portion of the stump.
- 12.4. **Hangup:** A situation in which a tree has lodged in another tree and is prevented from falling to the ground.
- 12.5. **Jackstrawed:** Area where multiple trees have been blown or fallen down in crisscross fashion.
- 12.6. **Lay:** Refers to either the position in which a felled tree is lying or the intended falling place of a standing tree.
- 12.7. **Pusher or driver:** Use of a tree to drive or push over another tree that has not completely fallen to the ground but has been undercut and back cut. This technique should only be used by experienced fallers. Machines should be used to mitigate this hazard.
- 12.8. **Root-pull:** The pulling out of a portion of the tree's root system. Commonly a result of not cutting up the corner of the holding wood closes enough on a large or heavily leaning tree (common on soft or saturated ground).
- 12.9. **Sit-back:** Refers to a tree that settles back on the stump closing the kerf of the back cut. Generally a result of improper determination of the tree's forward lean or of wind, or both, or failure to place a wedge in the back cut.
- 12.10. **Slabbing:** Often caused by improper technique or sequence of bucking cuts, or both, which results in a lateral split of a log.
- 12.11. **Sounding:** Using the head of the felling axe to strike the tree to determine its soundness.
- 12.12. **Stump shot:** The height difference between the horizontal (gunning) cut of the undercut and the back cut. The difference in height establishes an anti-kickback step that will prevent a tree from jumping back over the stump toward the faller. It is the undercut side of the holding wood.

- 12.13. **Swamp out:** To clean out brush and other material around the base of trees and where trees are to be bucked before felling or bucking as protection against saw kickback and to provide safe footing and escape routes.
- 12.14. **Throw-back:** Ground debris, limbs, or tops thrown back toward the faller as the tree falls to the lay.

### 13. Agencies, Websites, and Publications:

- 13.1. **ANSI:** [American National Standards Institute.](#)
- 13.2. **BIA:** [Bureau of Indian Affairs.](#)
- 13.3. **BLM:** [Bureau of Land Management \(Fire and Aviation\).](#)
- 13.4. **CFR:** [Code of Federal Regulations.](#)
- 13.5. **DOI:** (United States) [Department of the Interior.](#)
- 13.6. **DOT:** (United States) [Department of Transportation.](#)
- 13.7. **EPA:** (United States) [Environmental Protection Agency.](#)
- 13.8. **Forest Service approved:** An item that meets Forest Service specifications, drawings, or both, or is procured under Forest Service authority.
- 13.9. **FSH:** [Forest Service Handbook.](#)
- 13.10. **FSM:** [Forest Service Manual.](#)
- 13.11. **FWS:** [Fish and Wildlife Service \(Fire Management\).](#)
- 13.12. **Interagency Standards for Fire and Fire Aviation Operations (Red Book):** Interagency manual containing directives specific to wildland fire operations, including chain saw use.
- 13.13. **LCES:** Lookout(s), Communication(s), Escape Route(s), and Safety Zone(s). Elements of a safety system routinely used by firefighters to assess their current situation with respect to wildland firefighting hazards. LCES has a much broader application than just fire and should be considered as a valuable, useful tool for all field project work and activities. Examples include chain saw operations, work in confined spaces, hazardous materials, and blasting. (View [original LCES document.](#))

- 13.14. **MSDS**: Material Safety Data Sheet. A compilation of information required under the Occupational Safety and Health Administration Hazard Communication Standard that outlines the identity of hazardous chemicals and fire hazards, exposure limits, and storage and handling precautions.
- 13.15. **NFPA**: [National Fire Protection Association](#).
- 13.16. **NIOSH**: [National Institute for Occupational Safety and Health](#).
- 13.17. **NPS**: [National Park Service \(Fire and Aviation Management\)](#).
- 13.18. **NWCG**: [National Wildfire Coordinating Group](#). NWCG is an operational group designed to coordinate programs of the participating wildfire management agencies. NWCG sets standards for training, certification, and equipment used in wildland and prescribed fire operations for member agencies.
- 13.19. **OSHA**: [Occupational Safety and Health Administration](#).
- 13.20. **States (NASF)**: [National Association of State Foresters](#).
- 13.21. **USFA**: [United States Fire Administration](#).
- 13.22. **USFS**: [United States Forest Service \(Fire & Aviation Management\)](#).
- 13.23. **Wildland Fire and Aviation Program Management and Operations Guide (BIA Blue Book)**: This guide is a program reference that documents policy for management and operations of the Wildland Fire and Aviation Management Program for the Bureau of Indian Affairs.