



Building Restoration Institute, Inc.®

A Veteran Owned Company (USAF; USMC)

Protecting the Built Environment™

IICRC and OSHA Compliance Instructors; Training Since 1985

B1 General Contractor; Infection Control Practitioner; Retired REA

Your Education and Training School, which Can Lead to Industry Certification:



The Building Restoration Institute, Inc. (BRI) instructs open (available to anyone that is qualified) and closed (private) courses where they are in person classes or a webinar. BRI's current courses include:

1. Building Fire Damage and Smoke Odor
2. Contents Assessment, Handling, Packout, Cleaning and Storage
3. Coronavirus COVID-19 Cleaning, Sanitizing and Verification
4. Crime Scene Cleanup
5. Maintaining Security at a Jobsite
6. Matterport and other Panographic Documentation
7. Mold Remediation
8. Odor Control
9. OSHA 10-Hour General Industry Compliance
10. Sewage Cleanup
11. Structural Water Damage
12. Wildfire Impaction
13. Xactimate, Computer-based Advanced Training
- 14. Call BRI about customizing a course for you that is not on our list!**

Information in each course requires an understanding of industry terms and their meaning, which is what this glossary is about. We Look forward to you calling emailing us about your training needs.

Building Restoration Institute, Inc.®

Patrick J. Moffett



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**BE MY GUEST,
BUT PLEASE...**

ONLY YOU CAN PREVENT FOREST FIRES!

U.S. DEPARTMENT OF AGRICULTURE — FOREST SERVICE A PUBLIC SERVICE OF TRANSIT ADVERTISING STATE FORESTRY DEPARTMENT

Office: (714) 379-1096; Cell: (714) 928-4008; Fax: (714) 203-1560 PatMoffett@att.net

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6 Minutes for Safety - A daily safety briefing for wildland fire that focuses on high risk events found within a firefighter's scope of work that are performed on an infrequent basis.

911 - Emergency phone number for fire, paramedics, and police.



A-wagon - This is another all purpose, regional, term. Often A-wagon is applied to vehicles designed to fight grass or brush fires. Although some departments may use this term to describe hazardous materials apparatus. In these cases, they can pump foam or other specialized agents for the control of particular types of fires.

Education Note: The name A-wagon comes from the fact that these vehicles, in the past, had an entirely separate "auxiliary" motor that ran the pump. This allowed these vehicles to pump and roll at the same time. Modern fire apparatus pumps get their power from the vehicle's engine. The transfer case forces you to choose between rolling down the road or supplying the pump with power. The word "auxiliary" refers to "a separate, support piece of equipment."

AAR - After action review.

Abort - To jettison a load of water or retardant from an aircraft or terminate a preplanned aircraft maneuver.

Abort area - A designated area where unused quantities of water or fire retardant may be jettisoned, usually to permit an air tanker to land with less than a full load.

Above ground level (AGL) - Term frequently used in aviation operations, usually in connection with a stated altitude.

ABRO - Aircraft base radio operator.

Absolute humidity - Total amount of water vapor in the air.

Absorption - Act of soaking up and retaining a gas in liquid or in a solid; also, retention of radiant energy.

ACAC - Area command aviation coordinator.

Accelerant - Material (usually a flammable liquid) used to initiate or increase the spread of a fire.

Acceptable fire risk - The potential fire loss a community is willing to accept rather than provide resources to reduce such losses.

Accessibility burn - The burning of understory prior to the sale of forest products to improve the efficiency of timber marking and harvesting. Synonym: Pre-marking burn.



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ACDR - Area commander.

ACLC - Assistant area commander, logistics.

ACPC - Assistant area commander, plans.

Action plan (AP) - Any tactical plan developed by any element of ICS in support of the incident action plan. (See: Incident action plan)

Active crown fire - A fire in which a solid flame develops in the crowns of trees, but the surface and crown phases advance as a linked unit dependent on each other.

Active resources - Resources checked in and assigned work tasks on an incident. Synonym: Assigned Resources (See: Allocated resources; Available resources)

Activity fuels - Fuels resulting from, or altered by, forestry practices such as timber harvest or thinning, as opposed to naturally created fuels. (See: Logging debris; Natural fuels)

Actual time en route (ATE) - Term used in flight planning/following to document actual time spent flying between points.

Actual time of arrival (ATA) - Term used in flight planning/following to document time of arrival at a point.

Actual time of departure (ATD) - Term used in flight planning/following to document time of departure from a point.

AD - Administratively determined.

Adapter - A device for connecting hoses of the same size with non-matching hose threads or connecting a threaded coupling to a quick-connect coupling. (See: Coupling)

ADF - Automatic direction finder.

Adiabatic process - Thermodynamic change of state in which no heat is added or subtracted from a system; compression always results in warming, expansion in cooling.

Adjective rating - A public information description of the relative severity of the current fire danger situation.

Administrative Payment Team (APT) - A team that supports incident agencies by processing payments for resources. Resources may include emergency equipment, casualties, local vendors for supplies, etc.

Administratively determined (AD) - A person hired and compensated under the Pay Plan for Emergency Workers. Synonym: Casual. (See: Emergency firefighter)

Admission - Oral or written statement tending to link its maker to involvement in a particular crime.

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ADO - Assistant disbursing officer.

Advanced life support (ALS) - Advanced life support skills performed by an EMS practitioner or service, such as intravenous fluids, and drug administration.

Advancing a line - Moving a hose lay toward a specified area from the point where the hose-carrying apparatus has stopped.

Advancing fire (Forward fire; Run) - That portion of the fire with rapid fire spread with higher intensity which is normally burning with the wind and/or up slope. Synonym: Head fire.

Advancing front combustion stage - The period of combustion when a fire is spreading, usually accompanied by flaming combustion that releases heat to sustain the convection column.

Advection - The transfer of atmospheric properties by the horizontal movement of air, usually about the transfer of warmer or cooler air but may also refer to moisture.

Adze hoe - A fire-trenching or digging tool having a sharp, tempered blade, which is useful for heavy grubbing, trenching, and light cutting.

Aerial canopy - Fuel type consisting of trees having few low branches, making it less susceptible to ignition by low-intensity fires.

Aerial detection - A system for, or the act of discovering, locating, and reporting fires from aircraft.

Aerial firefighting (Air attack) - Use of aircraft in support of ground resources to combat wildfires, often most effective in initial attack in light fuels.

Aerial fuels – (1) Standing and supported live and dead combustibles not in direct contact with the ground and consisting mainly of foliage, twigs, branches, stems, cones, bark, and vines. (2) All live and dead vegetation in the forest canopy or above surface fuels, including tree branches, twigs and cones, snags, moss, and high brush. (USFS) (See: Draped fuels)

Aerial ignition - Ignition of fuels by dropping incendiary devices or materials from aircraft.

Aerial ignition device (AID) - Inclusive term applied to equipment designed to ignite wildland fuels from an aircraft. (See: Delayed aerial ignition devices; Helitorch; Ping-Pong ball system; Plastic sphere dispenser)

Aerial observer - A person specifically assigned to discover, locate, and report wildland fires from an aircraft and to observe and describe conditions at the fire scene.

Aerial photo interpreter - A person skilled in identification and measurements of natural and cultural features on aerial photographs.



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Aerial reconnaissance - Use of aircraft for detecting and observing fire behavior, values-at-risk, suppression activity, and other critical factors to facilitate command decisions on strategy and tactics needed for fire suppression.

Aerial torch - An ignition device suspended under a helicopter, capable of dispensing ignited fuel to the ground for assistance in burning out or backfiring.

Aerial truck (Ladder truck; Aerial ladder) - A hydraulically powered ladder or articulating platform, mounted on a vehicle that also carries several different length extension ladders, and possibly extrication gear, ventilation equipment, and lighting. Some trucks can reach as high as 200 feet.

Affidavit - A statement of declaration in writing and affirmed before an official with authority to administer an oath; a statement of declaration alleging fact to support the issuance of a search or arrest warrant.

After Action Review (AAR) - A professional discussion of an event, focused on performance standards, that enables Agency Administrators and firefighters to discover for themselves what happened, why it happened, and how to sustain strengths and improve on weaknesses. Education Note: An After-Action Review is a tool incident command personnel and units can use to get maximum benefit from every incident. It provides a daily review of the day's actions: 1) Identify and discuss effective and non-effective performance. Candid insights into specific firefighter, leader, and unit strengths and weaknesses from various perspectives; 2) Feedback and insight critical to actions that were not standard operating procedures, or those that presented safety problems; 3) Lessons learned and how to apply them in the future.

Agency – (1) Any federal, state, or county government organization participating with jurisdictional responsibilities. (USFS) (2) A division of government with a specific function, or a non-governmental organization (e.g., private contractor, business, etc.) that offers a kind of assistance. Education Note: In ICS, agencies are defined as jurisdictional (having statutory responsibility for incident mitigation) or assisting and/or cooperating (providing resources and/or assistance). (See: Assisting agency; Cooperating agency; Supporting agency)

Agency Administrator – The managing officer of an agency, division thereof, or jurisdiction having statutory responsibility for incident mitigation and management. Education Note: Examples: NPS Park Superintendent, BIA Agency Superintendent, USFS Forest Supervisor, BLM District Manager, FWS Refuge Manager, State Forest Officer, Fire Chief, or Police Chief. (See: Line officer)

Agency Certification - The process whereby the employing agency or contractor documents that the individual is fully qualified to perform duties and responsibilities for a specified position.

Agency Dispatch - The agency or jurisdictional facility from which resources are allocated to incidents.



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Agency dispatcher - The person working within an agency organization who processes resources to and from incidents. (See: Dispatcher)

Agency Representative (AREP) - An ICS person who serves as the point of contact for an assisting or cooperating agency which has been delegated authority to make decisions on matters affecting that agency's participation at the incident and reports to the liaison officer. (See: Assisting agency; Cooperating agency)

Agency/Area Coordination Center - A facility which serves as a central point for one or more agencies to use in processing information and resource requests. It may also serve as a dispatch center for one of the agencies.

AGL - Above ground level.

AID - Aerial ignition device.

Air ambulance - A rotary wing aircraft configured, staffed, and equipped to respond, care for, and transport a patient(s) and approved/licensed by a state to do so. An air ambulance is sometimes referred to as a medevac.

Air attack – (1) The deployment of fixed-wing or rotary aircraft on a wildland fire, to drop retardant or extinguishing agents, shuttle and deploy crews and supplies, or perform aerial reconnaissance of the overall fire situation. (2) Using airplanes or helicopters to help control a ground cover fire. Aircraft can also be used logistically to transport crews, supplies, and equipment. (NWCG)

Air attack base - Permanent facility at which aircraft are stationed for use in air attack operations. (See: Reload base)

Air cargo - All items for transport and delivery by aircraft.

Air contaminant - An airborne dust, fume, gas, mist, odor, smoke, vapor, soot, pollen, carbon, acid or particulate matter or any combination thereof. (See: Air pollution)

Air drop - Delivery of supplies or retardant from the air. Supplies can be dropped by parachute. Education Note: Retardant is dropped in a single “salvo” or one or more “trails,” the size of which is determined by the wind and the volume, speed and altitude of the airtanker (usually no less than 200 feet above the drop zone).

Air guard frequency - A common VHF-FM frequency used by natural resource agency aircraft for emergency radio transmissions. An air guard frequency is also known as a national air safety guard frequency.

Air mass - An extensive body of air having the same properties of temperature and moisture in a horizontal plane.

Air operations – A group tasked with coordinating aerial-based observation, supply, rescue, and suppression at a wildfire.



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Air Operations Branch Director (AOBD) - An ICS person who is responsible for management of an incident's air operations and reports to the Operations Section Chief.

Air pack - Portable air (not oxygen) tanks with regulators which allow firefighters to breathe while in toxic smoke conditions. Usually rated for 30 minutes of service. Education Note: An air pack is donned primarily on fires involving structures or hazardous materials. Synonym: Self-contained breathing apparatus (SCBA). (See: PPE; Respirator)

Air pollution - A general term referring to the undesirable addition of substances (gases, liquids, or solid particles) to the atmosphere that are foreign to the natural atmosphere or are present in quantities exceeding natural concentrations. (See: Air contaminant)

Air pollution alert - A statement issued by an Air Quality Regulatory Agency due to high measured concentrations of pollutants. The alert remains in effect until monitoring shows a decrease in pollutant levels. Education Note: Should conditions worsen, air pollution warnings and emergencies may be issued. At each stage (alert, warning, and emergency) additional emission restrictions are put into effect to not intensify the situation. Essentially, at the emergency level all industrial activities and auto usage stop.

Air quality - The composition of air with respect to quantities of pollution therein; used most frequently in connection with “standards” of maximum acceptable pollutant concentrations. Used instead of “air pollution” when referring to programs.

Air quality model - Mathematical or quantitative representation or simulation of air quality processes, such as emission models, receptor models, or air quality dispersion models.

Air Stagnation Advisory (ASA) - A statement issued by a National Weather Service forecast office when atmospheric conditions are stable enough such that the potential exists for air pollutants to accumulate in each area. Education Note: The ASA is initially issued when conditions are expected to last for at least 36 hours.

Air Support Group Supervisor (ASGS) - The ICS supervisor is responsible for overseeing logistical support and management of helibase and helispot operations and temporary fixed-wing base(s) and reports to the Air Operations Branch Director. This position also maintains liaison with air tanker and fixed-wing bases supporting incident operations.

Air Tactical Group Supervisor (ATGS) - An ICS person who is responsible for directing and coordinating airborne aircraft operations and management of an incident’s airspace and reports to the Air Operations Branch Director.

Air tanker (Airtanker) - (1) A fixed-wing aircraft equipped to drop fire retardants or suppressants. (USFS) (2) Any fixed-wing aircraft used to drop retardant or water on a wildland fire. (NWCG) (3) Fixed-wing aircraft certified by FAA as being capable of transport and delivery of fire-retardant solutions. (4) Fixed-wing aircraft



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certified by FAA as being capable of transport and delivery of 600 to 3,0000 gallons of water or other liquid or powder fire retardants. Education Note: Airtanker was formerly referred to as “borate bombers” before borate-based retardants became less desirable. Often accompanied by a spotter plane.

Airtanker/Fixed-wing Coordinator (ATCO) - An ICS person who is responsible for coordinating air tanker and fixed-wing operations over an incident and reports to the Air Tactical Group Supervisor.

Aircraft accident - An unplanned event that does substantial damage or causes serious injuries when associated with the operation of applicable aircraft. Education Note: Accident events occurred between the time engine(s) is (are) started or rotors turning for the purpose of commencing flight, until the aircraft comes to rest with engines and propellers or rotors stopped, the brakes set or wheel chocks in place, and all persons have disembarked.

Aircraft Base Radio Operator (ABRO) - An ICS person who is responsible for maintaining base communications with assigned helicopters, helibases, helispots, Air Operations Personnel, and Project Aviation Manager, and reports to the Helibase Manager.

Aircraft data card - Card or documentation required to be on board the aircraft which approves use and indicates specific types of use.

Aircraft footprint (Wheel loading) - That area on the surface of the earth, runway, or ramp that is covered by the tread of the aircraft tire while the aircraft is motionless.

Aircraft ground mishap - An aircraft mishap in which there is no intent to fly. However, the power plants and/or rotors are in operation and damage is incurred requiring replacement or repair of rotors, propellers, wheels, tires, wing tips, flaps, etc., or injury is incurred requiring first-aid or medical attention.

Aircraft incident - An unplanned event that results in damage which is less than serious aircraft incident criteria, or injuries not requiring medical attention. (See: Serious aircraft incident)

Aircraft network (AirNet) - Applies to radio frequencies primarily used for air operations.

Aircraft Timekeeper (ATIM) - An ICS person who is responsible for keeping time and other information concerning helicopters assigned to a helibase and reports to the Helibase Manager.

AirNet - Aircraft network.

Alidade - A sighting device used by lookouts to determine the horizontal bearing and sometimes the vertical angle of a fire from a lookout. Synonym: Osborne firefinder (See: Firefinder map)

All hazard incident - An incident, natural or human-caused, that requires an organized response by a public, private, and/or governmental entity to protect life, public health and safety, values to be protected, and to minimize any disruption of governmental, social, and economic services. Education Note: One or more kinds of

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incident (fire, flood, mass casualty, search, rescue, evacuation, etc.) may occur simultaneously as part of an all hazard incident response. (See: Incident; Values to be protected)

All Hazards Meteorological Response System (AMRS) - A mobile weather data collection and forecasting system consisting of two-way satellite communications and a laptop computer. An AMRS is used by incident meteorologists on an incident. (See: Air transportable modular unit; Incident meteorologist; Micro-remote environmental monitoring system)

All-terrain vehicle (ATV) - Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other terrain. Synonym: Off-road vehicle.

Alligatoring - Fire char patterns formed on paint or burned wood remains. Alligatoring is usually in the shape of blisters. (See: Depth of char indicators)

Allocated resources - Resources dispatched to an incident that have not yet checked in. (See: Active resources; Assigned resources; Available resources)

Allowable payload - The amount of weight that is available for passengers and/or cargo. On the load calculation form it is the operating weight subtracted from the selected weight. (See: Operating weight)

ALS - Advanced life support.

Altimeter setting - The barometric pressure reading used to adjust a pressure altimeter for variations in existing atmospheric pressure or to the standard altimeter setting (29.92) inches.

Ambient air - Air of the surrounding environment.

Ambulance - A ground transport vehicle configured, equipped, and staffed to respond, care for and transport a patient(s) and approved by a state to do. (See: Air ambulance)

AMR - Appropriate management response.

AMRS - All hazards meteorological response system.

Anchor point – (1) An advantageous location, usually a barrier to fire spread, from which to start building a fire line. An anchor point is used to reduce the chance of firefighters being flanked by fire. (USFS) (2) An advantageous location, usually a barrier to fire spread, from which to start constructing a fireline. A term associated with attack methods. Refers to an advantageous location, usually one with a barrier to fire spread, from which to start constructing a fire line. Used to minimize the chance of being “flanked” by the fire while constructing the fire line. Most anchor points originate at or near the area of origin (rear of fire). (NWCG)
Education Note: The anchor point is used to minimize the chance of being flanked by the fire while the line is being constructed.



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Anemometer - An instrument designed to measure wind speed.

Angle of char indicators (Vertical char) - Standing fuels that are burned at an angle that indicates the direction of fire spread.

Annual certification - Annual review by an employing agency of an individual's position qualifications and documentation certifying that the individual is fully qualified to perform duties and responsibilities for a specified position. Education Note: Annual certification is based on established performance standards and agency specific requirements.

Annual Operating Plan (AOP) (for fire weather) - A procedural guide which describes fire meteorological services provided within the Geographic Area of responsibility, including the National Interagency Fire Center. Education Note: The guide is based on the National Interagency Agreement and applicable Geographic Area Memorandum of Agreement.

Annual plant - A plant that lives for one growing season, starting from a seed each year.

Anticyclone - An area of high atmospheric pressure with closed clockwise circulation. (See: Surface high)

AOBD - Air operations branch director.

AOP - Annual operating plan (for fire weather).

Apparatus – (1) A motor-driven vehicle, or group of vehicles, designed and constructed for the purpose of fighting fires. May be of different types such as engines, water tenders, ladder trucks, etc. (2) Any vehicle that serves a specific function other than just transportation of people. Engines, Trucks, and MICU's are examples of apparatus. Education Note: A chief's vehicle is generally NOT considered apparatus although some departments may refer to it as such.

Appropriate Management Response (AMR) - Any specific action suitable to meet Fire Management Unit (FMU) objectives. Typically, the AMR ranges across a spectrum of tactical options (from monitoring to intensive management actions). Education Note: The AMR is developed by using Fire Management Unit strategies and objectives identified in the Fire Management Plan. (See: Fire management objective; Fire management plan)

Approved - That which is inspected and listed by recognized fire-testing agencies. Education Note: The term is used in National Fire Protection Association standards, which means approval by the authority having jurisdiction, such as the fire chief, insurance inspection department, or other agency that enforces standards or regulations.

APT - Administrative payment team.



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Aramid - The generic name for a high-strength, flame-resistant, synthetic fabric used in the shirts and jeans of firefighters. Nomex®, a brand name for aramid fabric, is the term commonly used by firefighters. (See: Nomex®)

Area Command - An organization established to: 1) oversee the management of multiple incidents that are each being handled by an incident management team (IMT) organization; or 2) to oversee the management of a very large incident that has multiple IMTs assigned to it. Education Note: Area Command has the responsibility to set overall strategy and priorities, allocate critical resources based on priorities, ensure that incidents are effectively managed, and that objectives are met, and strategies followed.

Area Command Aviation Coordinator (ACAC) - An ICS person responsible for ensuring effective use of air resources and supplies among those incidents under Area Command management, who reports to the Area Commander. (See: Area Command)

Area Commander (ACDR) - An ICS person who is responsible for the overall direction of incident management teams assigned to the same incident or incidents in proximity managed under Area Command. Position responsibilities include ensuring that conflicts are resolved, compatible incident objectives are established, and strategies are selected for the use of critical resources among assigned incident management teams. (See: Area Command)

Area ignition (Simultaneous ignition) - Ignition of several individual fires throughout an area, either simultaneously or in rapid succession, and so spaced that they add to and influence the main body of the fire to produce a hot, fast-spreading fire condition.

Area of influence (Zone of influence) - Delineated area surrounding a base which can be reached first by the ground or air attack units assigned to the base.

Area source - A source category of air pollution that generally extends over a large area. Prescribed burning, field burning, home heating, and open burning are examples of area sources.

AREP - Agency representative.

Armed - A term used to indicate that the air tanker dropping mechanism is set to allow a programmed release of part or all the load of fire retardant.

Arrest - The taking or keeping of a person in custody by legal authority, especially in response to a criminal charge.

Arson - At common law, the malicious and willful burning of another's dwelling, outhouse, or parcel; by most modern statutes, the intentional and wrongful burning of someone else's, or one's own, property. To prove arson, it frequently requires proof of malicious or wrongful intent.



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Arson fire - A fire that is intentional and wrongfully set to burn one's own or someone else's property.

Arson Task Force (ATF) - Group of individuals convened to analyze, investigate, and solve arson problems in a region.

Arsonist - One who commits arson; willfully sets a fire.

ASA - Air stagnation advisory.

ASGS - Air support group supervisor.

Ash indicators - White ash deposited on the origin side of objects.

Aspect – (1) Direction toward which a slope faces. (USFS) (2) A topography term for direction towards which a slope faces. (NWCG) (3) The cardinal direction toward which a slope face. (See: Exposure)

Aspirate (foam; foaming) - To draw in gases (or other substances); nozzle aspirating systems draw air into the nozzle to mix with the foam solution.

Assessment - (1) A fire weather fire danger product based on a thorough evaluation of all pertinent sources of meteorological, fire danger and resource information. (2) The evaluation and interpretation of measurements, intelligence, and other information to provide a basis for decision-making.

Assigned resources - Resources checked in and assigned work tasks on an incident. Synonym: Active Resources. (See: Allocated resources; Available resources)

Assignments - Tasks given to resources to perform within a given operational period, based upon tactical objectives in the incident action plan.

Assistant – A term used as a title for subordinates of the command staff positions. In some cases, assistants are also assigned to unit leader positions in the planning, logistics, and finance/administration sections. Education Note: Qualifications, technical capability, and responsibility of assistants are normally less than those of the person holding the primary position.

Assistant Area Commander, Logistics (ACLCL) - An ICS person who responsible for providing facilities, services, and materials at the Area Command level, and for ensuring effective use of critical resources and supplies among those incidents under Area Command management. The ACLCL reports to the Area Commander. (See: Area Command)

Assistant Area Commander, Plans (ACPC) - The ICS person who responsible for collecting information from those incidents under Area Command management to assess, evaluate potential conflicts in establishing incident objectives, strategies, and prioritizing use of critical resources. The ICS reports to the Area Commander. (See: Area Command)

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Assistant Disbursing Officer (ADO) - Person with authority to pay wildland fire suppression crews, transient labor, residents, and vendors with US Treasury checks.

Assisting Agency - An agency directly contributing tactical or service resources to another agency. (See: Agency; Agency Representative; Cooperating Agency; Supporting Agency)

Assumption - Acceptance of information as true without proof or demonstration. (See: False assumption)

ATA - Actual time of arrival.

ATCO - Air tanker/fixed-wing coordinator.

ATD - Actual time of departure.

ATE - Actual time en route.

ATGS - Air tactical group supervisor.

ATIM - Aircraft timekeeper.

Atmometer - An instrument that provides an approximate measure of evapotranspiration by measuring the water loss from an artificial evaporating surface.

Atmospheric inversion - (1) Departure from the usual increase or decrease with altitude of the value of an atmospheric property. Education Note #1: In fire management, nearly always refers to an increase in temperature with increasing height. (2) The layer through which this departure occurs (also called inversion layer). Education Note #2: The lowest altitude at which the departure is found is called the base of the inversion. (See: Atmospheric stability; Inversion; Stable layer of air)

Atmospheric pressure - The force exerted by the weight of the atmosphere, per unit area. (See: Barometric pressure)

Atmospheric stability - The degree to which vertical motion in the atmosphere is enhanced or suppressed. Vertical motions and pollution dispersion are enhanced in an unstable atmosphere. Education Note: Thunderstorms and active fire conditions are common in unstable atmospheric conditions. Stability suppresses vertical motion and limits pollution dispersion. (See: Atmospheric inversion; Inversion; Stable layer of air)

Attack a fire - Limit the spread of fire by any appropriate means.

Attack line - A line of hose, preconnected to the pump of a fire apparatus and ready for immediate use in attacking a fire. Contrasted to supply lines connecting a water supply with a pump or to feeder lines extended from a pump to various points around the perimeter of a fire.

Attack time - The starting date, hour, and minute of the first suppression work on a fire.

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Attack unit - Single vehicle or aircraft and its associated personnel and material provided for the purpose of responding to and abating a fire or other emergency.

Attack unit response - The response of one attack unit to a fire or other emergency with no regard for the number of return trips to that same fire or emergency.

Attainment area - An area considered to have air quality as good as, or better than, the National Ambient Air Quality Standards (NAAQS) as defined in the Clean Air Act. Education Note: An area may be in attainment for one or more pollutants but be in nonattainment for one or more other pollutants.

ATV - All terrain vehicle.

Automatic direction finder (ADF) - An aircraft radio navigational receiver operating in the low frequency bands.

Automatic weather station (AWS) - A non-GOES telemetered weather station that provides hourly observations to a local database. (See: Manual weather station)

Automatically regulated - A proportioning method or device that readily adjusts to changes in water flow and or pressure to maintain a desired mix ratio.

Autorotation - A helicopter flight condition in which the lifting rotor is driven entirely by action of air when the helicopter is in motion.

Auxiliary pump - A secondary pump on an engine in addition to the main pump. Education Note: The auxiliary pump usually produces a small capacity of water.

Available fuel - (1) That portion of the total fuel that would burn under various environmental conditions. (2) Fuel available for use in a motor vehicle, aircraft, or other motorized equipment.

Available resources - Resources assigned to an incident and available for assignment. (See: Active resources; Allocated resources; Assigned resources)

Average annual precipitation - The expected amount of annual rainfall. Average annual precipitation is an important component to determining the Keech-Bryam Drought Index (KBDI).

Average relative humidity - Part of the National Fire Danger Rating System (NFDRS). The mathematical average of the maximum and minimum relative humidity measured at a fire weather station from one basic observation time to the next.

Average temperature - The mathematical average of the maximum and minimum dry-bulb temperatures measured at a fire weather station from one basic observation time to the next.



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Avoidance - A smoke emission control strategy that considers meteorological conditions when scheduling prescribed fires to avoid incursions into smoke sensitive areas.

Awareness - The continual process of collecting, analyzing, and disseminating intelligence, information, and knowledge to allow organizations and individuals to anticipate requirements and to react effectively and safely.

AWS - Automatic weather station.

Azimuth - Horizontal angle or bearing of a point measured clockwise from true (astronomic) north.

Azimuth circle - A circle graduated in 360 degrees in a clockwise direction from true (astronomic) north.



Back azimuth - Angle or bearing 180 degrees opposite of azimuth.

Backburn - Precautionary fire set downwind of main fire for controlled fuel clearing by “backing” it into the main fire, like burnout, below, which occurs adjacent to control line. Education Note: A Backburn is used in some localities to specify fire set to spread against the wind in prescribed burning.

Backdraft – (1) Instantaneous explosion or rapid burning of superheated gases that occurs when oxygen is introduced into an oxygen-depleted confined space. It may occur because of inadequate or improper ventilation procedures. (2) Term applied to the explosion caused by the sudden inward rush of oxygen when all superheated gases, (heated above the ignition temperature) in a room or structure, ignite at the same time. Education Note: When gasses are pressurized, in a relatively closed room, an explosion could be the result. While the likelihood of such an occurrence is low, a backdraft is often fatal to anyone caught in it.

Backfire - A fire set along the inner edge of a fireline to consume the fuel in the path of a wildfire or change the direction of force of the fire’s convection column. (See: Burn out)

Backfire torch - A flame generating device (e.g., a fount containing diesel oil or kerosene and a wick, or a backpack pump serving a flame-jet). Synonym: Burning Torch. (See: Drip torch; Flame thrower)

Backfiring - A tactic associated with indirect attack, intentionally setting fire to fuels inside the control line to slow, knock down, or contain a rapidly spreading fire. Education Note: Backfiring provides a wide defense perimeter and may be further employed to change the force of the convection column. Backfiring makes possible a strategy of locating control lines at places where the fire can be fought on the firefighter’s terms. Except for rare circumstance meeting specified criteria, backfiring is executed on a command decision made through line channels of authority.

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Background level - (1) In air pollution control, the concentration of air pollutants in a definite area during a fixed period prior to the starting up, or the stoppage, of a source of emission under control. (2) In toxic substances monitoring, the average presence in the environment, originally referred to as naturally occurring phenomena.

Backing fire (Heel fire) - (1) A fire spreading, or ignited to spread, into (against) the wind or downslope. A fire spreading on level ground in the absence of wind is a backing fire. (2) That portion of the fire with slower rates of fire spread and lower intensity normally moving into the wind and/or down slope.

Backing wind - Wind that changes direction in a counterclockwise motion.

Backpack pump - A portable sprayer with hand-pump, fed from a liquid filled container fitted with straps, used mainly in fire and pest control. (See: Bladder bag)

BACM - Best available control measures.

Baffle - A partitioned wall placed in vehicular or aircraft water tanks to reduce shifting of the water load when starting, stopping, or turning.

Ball valve - A valve in which fluid flow is controlled by a ball with a hole drilled through it. In one position, fluid flows through the hole. Education Note: When the valve is turned 90 degrees (1/4 turn) the hole is perpendicular to the flow and the ball stops the flow. Intermediate valve positions can be used to adjust the flow.

Bambi Bucket® - A collapsible bucket slung below a helicopter. A Bambi Bucket is used to dip water from a variety of sources for fire suppression. Education Note: The name Bambi bucket was in use many years before the trademark owner claimed it in 1983.

Banking snags - The act of throwing mineral soil about the base of an unlighted snag to prevent its being ignited by a surface fire.

Barometer - An instrument for measuring the pressure of the atmosphere. The two principal types are the mercurial and the aneroid.

Barometric pressure - Atmospheric pressure corrected for elevation. (See: Atmospheric pressure)

Barrier - Any obstruction to the spread of fire. Typically, an area or strip devoid of combustible fuel.

Base - (1) The location of initial attack forces. (2) Staging and/or command center location for fire operations. (3) Starting location of a fire. (4) A base camp used for eating, sleeping, etc., near staging or command center. (5) The location at which primary logistics functions for an incident are coordinated and administered.

Education Note: There is only one base per incident. (Incident name or other designator will be added to the term "base.") The incident command post may be collocated with the base. (See: Camp)



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Base Area - Part of the National Fire Danger Rating System (NFDRS). An area representative of the major fire problems on a protection unit. Base fuel model and slope class are chosen from the base area.

Base Fuel Model - Part of the National Fire Danger Rating System (NFDRS). A representation of the vegetative cover and fuel in a base area. Used in the calculation of fire danger rating.

Base Manager (BCMG) - An ICS person who is responsible for ensuring that appropriate sanitation, security, and facilities management services are provided at the Incident Base and reports to the Facilities Unit Leader. (See: Camp manager; Facilities unit)

Base observation time - Part of the National Fire Danger Rating System (NFDRS). The time established to take the fire danger observations. It should be at the time of day when the fire danger is normally the highest. Education Note: The usually agreed upon time is 1:00 pm standard time. This allows time to transmit observations and prepare forecasts.

Base Station - A fixed central radio dispatching station controlling movements of one or more mobile units.

Baseline - In prescribed burning, the initial line of fire, usually set as a backing fire along a barrier or control line, which serves to contain subsequent burning operations.

Basic life support (BLS) - Basic life support skills performed by an EMS practitioner or service, e.g. splinting, bandaging, oxygen administration, use of the AED.

Battalion Chief - A supervisor over a specific number of stations or a section. For example, the chiefs over, EMS, training or communications could very well hold the rank of battalion chief.

Batch mix - Manually adding and mixing a concentrated chemical, such as liquid foam, or powdered or liquid retardant with water, or gelling agents with fuel, into solution in a tank or container.

BCMG - Base camp manager.

Bearing - The horizontal direction to or from any point, usually measured clockwise from true north, or some other reference point through 360 degrees.

Beaufort wind scale - A system of estimating and reporting wind speeds. In its present form for international meteorological use it equates (a) Beaufort force (or Beaufort number), (b) wind speed, (c) descriptive term, and (d) visible effects upon land objects or sea surf.

Behave - A system of interactive computer programs for modeling fuel and fire behavior, comprised of two systems: BURN and FUEL.

Behavior - An observable activity or action demonstrated by an individual in a context. (See: Competency)



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Belt weather kit - Belt-mounted case with pockets fitted for anemometer, compass, sling psychrometer, slide rule, water bottle, pencils, and book of weather report forms. The belt weather kit is used to take weather observations to provide on-site conditions to the fire weather forecaster or fire behavior analyst. Observations include air temperature, wind speed and direction, and relative humidity.

Berm - (1) Soil heaped on the downhill side of a traversing fireline below a fire, to trap rolling firebrands. (2) A ridge of soil and debris along the outside edge of a fireline, resulting from line construction. (See: Throw out)

Best available control measures (BACM) - An emission limitation action based on the maximum degree of emission reduction (considering energy, environmental, and economic impacts) achievable through application of production processes and available methods, systems, and techniques. (See: Reasonably available control measures)

Black fire - This term has only recently been officially recognized. Black fire describes a situation where heavy, dense, black smoke is being emitted by a fire. This smoke will be of high velocity, turbulent, high volume and extremely dense. It will also be extremely hot. For all practical purposes this is a dense, superheated, cloud of fuel that is too rich to ignite. This smoke may be doing as much damage as fire. It can also be a sign of eminent flashover.

Blackline - (1) A condition where no combustible fuels remain between the fireline and the main fire. (2) The preburning of fuels adjacent to a control line before igniting a prescribed burn. (3) When putting in control lines, the process of burning out any pockets of unburned fuels. (NWCG) Education Note #1: Blacklining is usually done in heavy fuels adjacent to a control line during periods of low fire danger to reduce heat on holding crews and lessen chances for spotting across control line. Education Note #2: In fire suppression, a blackline denotes a condition where there is no unburned material between the fireline and the fire edge.

Bladder bag - A collapsible backpack portable sprayer made of neoprene or high-strength nylon fabric fitted with a pump. (See: Backpack pump)

BLEVE - Boiling liquid expanding vapor explosion.

Blind area - An area in which neither the ground nor its vegetation can be seen from a given observation point.

Block plan - A detailed prescription for treating a specified burning block with fire. (See: Burning block)

Blow down - An area of previously standing timber which has been blown over by strong winds or storms.

Blowup - (1) A dangerous rapid increase in fire spread. (NWCG) (2) The sudden increase in fireline intensity or rate of spread of a fire sufficient to preclude direct control or to upset existing suppression plans. (3) A sudden increase in fire intensity sufficient to preclude immediate control or to upset existing suppression plans, which are often accompanied by violent convection and may have other characteristics of a fire storm. (USFS)



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Education Note: A blowup is often accompanied by violent convection and may have other characteristics of a firestorm. (See: Extreme fire behavior; Fire storm; Flare-up)

BLS - Basic life support.

Board of Review - A board or committee selected to review results of fire suppression action on a given unit or the specific action taken on a given fire. The board reviews the results to identify reasons for both good and poor action and to recommend or prescribe ways and means of doing an effective and efficient job. Reviews the results of a safety/accident investigation.

Boiling liquid expanding vapor explosion (BLEVE) - (1) The failure of a closed container because of overpressurization caused by an external heat source. (2) A major failure of a closed liquid container into two or more pieces when the temperature of the liquid is well above its boiling point at normal atmospheric pressure.

Boise Interagency Fire Center (BIFC) - The former name of the National Interagency Fire Center.

Bole - The trunk of a tree.

Bone yard - (1) An area scraped to mineral soil for safe handling of smoldering materials; a verb meaning systematic mop-up of smoldering materials by scraping off embers, placing materials into the bone yard area. (2) A mop up term. To "bone yard" a fire means to systematically work the entire area, scraping embers off remaining fuel, feeling for heat with the hands, and piling unburned materials in areas cleared to mineral soil.

Education Note: The bone yard is an area cleared to mineral soil for piling unburned fuels.

Booster hose (Booster pump; Booster reel) - (1) A small solid hose on a reel connected to a small pump fitted to a water tank on a vehicle. (2) To pump in a relay series for pumping uphill beyond the lift of the previous pump. Education Note: A booster hose is the most common type of hose attached and stored on wildland engine booster reels. The hose is made of neoprene and does not appreciably collapse when stored empty.

Booster line - A hose that is usually one inch in diameter and rubber jacketed. But in some departments, this can be the name given to any pre-connected line for the use of tank water. They are used on small fires using the water carried in an apparatus' booster tank and are usually stored on reels.

Booster pump - An intermediary pump for supplying additional lift in pumping water uphill past the capacity of the first pump.

Booster reel - A reel for the booster hose mounted on a fire engine, often supplied by the auxiliary pump.

Education Note: A booster reel usually carries a 1-inch (25 mm) or 3/4-inch (19 mm) hose and frequently contains an electric rewind mechanism. (See: Hose reel)

Boundary conditions - The temperature and relative humidity of the boundary layer.



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Boundary layer - (1) The air in immediate contact with a fuel particle. (2) That part of the lower atmosphere that is directly influenced by the presence of the earth's surface and responds to surface forces with a time scale of about an hour or less.

Boundary value - The equilibrium moisture content (EMC) commensurate with the boundary conditions and precipitation events of the preceding 24 hours.

Bowles bag - A neoprene tank designed for attachment to the landing skid frame of a helicopter. It has a capacity of 80 to 100 gallons (303 to 378 liters) of water or retardant.

Box canyon - A steep-sided, dead end canyon.

Branch - The organizational level having functional or geographical responsibility for major parts of incident operations. The branch level is organizationally between section and division/group in the operations section, and between section and unit in the logistics section. Branches are identified by roman numerals or by functional name (e.g. service, support).

Break a line - To insert a gate valve or some other device into a hose line.

Break coupling - To detach two pieces of hose by backing the swivel thread off the nipple thread.

Break left or break right - A term meaning “turn” left or right. “Break left or right” applies to aircraft in flight, usually on the drop run, and when given as a command to the pilot, implies expectation of prompt compliance.

Breakover - A fire edge that crosses a control line or natural barrier intended to confine the fire. Synonym: Slopover.

British thermal unit (Btu) - Amount of heat required to raise 1 pound of water 1-degree Fahrenheit (from 59.50 to 60.50 F), measured at standard atmospheric pressure.

Broadcast burning - Prescribed burning activity where fire is applied generally to most or all an area within well-defined boundaries for reduction of fuel hazard, as a resource management treatment, or both.

Brown and burn - Application of herbicide to desiccate living vegetation prior to burning.

Brownspot control - Prescribed fire to control fungal infection (brown spot disease) of longleaf pine (*Pinus palustris*) in the “grass” (small seedling) stage.

Brush – (1) Shrubs and stands of short, scrubby trees that do not reach merchantable size, generally 3' to 20' in height. (NWCG) (2) A collective term referring to stands of vegetation dominated by shrubby, woody plants, or low growing trees, usually of a type undesirable for livestock or timber management.



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Brush blade (Brush rake; Root rake) - (1) A rake attachment for cutting or ripping brush and roots out of a fireline. (2) A blade attachment with long teeth which is especially suited to ripping and piling brush with minimum inclusion of soil.

Brush fire - A fire burning in vegetation that is predominantly shrubs, brush, and scrub growth. (USFS)

Brush hook – (1) A cutting tool used to clear brush, longer than a machete, usually with a heavy, solid, curved blade bolted to the end of an arm's-length handle. (2) A heavy cutting tool designed primarily to cut brush at the base of the stem. A brush hook is used in much the same way as an axe and having a wide blade that is generally curved to protect the blade from being dulled by rocks.

Brush management - Manipulation of stands of brush by manual, mechanical, chemical, or biological means or by prescribed burning for the purpose of achieving land management objectives.

Brush patrol unit - Any light, mobile vehicular unit with limited pumping and water capacity for off-road operations.

Brush truck (Type 6 engine) (Grass wagon) - (1) Small fire truck outfitted for wildland fire. (2) Any light, mobile vehicle having limited pumping and water capacity, designed for initial attack knockdown of a small wildland fire. (NWCG) (3) Vehicles designed for fighting wildland or grass fires. Some of these are four-wheel drive. In fact, there are some vehicles constructed on Hum-V's. (But this is too expensive for most fire departments.) Most often this is a tank and a pump mounted on a four-wheel drive pick-up. The "A-Wagon" is often the grass fire apparatus but it is quite common to see them referred to as these other names. It may also be called a "Patrol truck."

Btu - British thermal unit.

Bubble - The building block of foam; bubble characteristics of water content and durability influence foam performance.

Bucket drops - The dropping of fire retardants or suppressants from specially designed buckets slung below a helicopter. (USFS)

Bucking - Sawing through the bole of a tree after it has been felled.

Buffer zone – An area of reduced vegetation that separates wildlands from vulnerable residential or business developments. This barrier is similar to a greenbelt in that it is usually used for another purpose such as agriculture, recreation areas, parks, or golf courses. (USFS)

BUI - Buildup index.



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Build-up - (1) The cumulative effects of long-term drying on current fire danger. (2) The increase in strength of a fire management organization. (3) The accelerated spreading of a fire with time. (4) Towering cumulus clouds which may lead to thunderstorms later in the day.

Buildup index (BUI) - A relative measure of the cumulative effect of daily drying factors and precipitation on fuels with a ten-day timelag.

Bulk density - Weight per unit volume. For fuels, this is usually expressed as pounds per cubic foot, where for soils, it is grams per cubic centimeter. (See: Compactness)

Bump back - Firefighters returning to their previous location.

Bump system (Bump up method; Leapfrog method) - In the fireline construction, each firefighter works on a small piece of fireline with his or her tool, perhaps slowly walking as the line progresses, until a completed portion of line is encountered. Then the call to “bump up!” is heard, and everyone ahead of the caller skips ahead one or more positions, leaving the unfinished fireline for those coming up behind.

Bump up - To move to another location. Bump up can refer to anything from moving to another location on a fireline, to an entire crew moving to another fire.

Bump-up method – A progressive method of fireline construction on a wildfire without changing relative positions in the line. Work is begun with a suitable space between workers; whenever one worker overtakes another, all of those ahead move one space forward and resume work on the uncompleted part of the line. The last worker does not move ahead until work is completed in his/her space. Forward progress of the crew is coordinated by a crew boss. (USFS) Synonym: Move-up method.

Bunker gear - A slang term for the protective clothing a firefighter wear. It generally consists of boots, trousers, coat, gloves, hood, and helmet. It is technically referred to as “Personal Protective Equipment” or “PPE” and includes the SCBA. Bunker gear is also known as “turnout.”

Burn - (1) An area burned over by wildland fire. (2) A reference to a working fire. (3) An injury to flesh caused by a cauterizing agent, heat from a fire, or a heated object - a) First Degree Burn: A burn which causes only pain, redness, and swelling; b) Second Degree Burn: A burn in which the skin is blistered; c) Third Degree Burn: A flesh burn in which charring occurs. (4) To be on fire. (5) To consume fuel during rapid combustion. (6) A fire in progress or under investigation.

Burn block - A discrete area within a larger prescribed or fire use project.

Burn boss - A person responsible for supervising a prescribed fire from ignition through mop-up.

Burn out - Setting fire inside a control line to consume fuel between the edge of the fire and the control line. (USFS) (See: Backfire)

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Burn out time - The duration of flaming and smoldering combustion phases at a specified point within a burn or for the whole burn, expressed in convenient units of time.

Burn patterns - (1) The characteristic configuration of char left by a fire. In wildland fires burn patterns are influenced by topography, wind direction, length of exposure, and type of fuel. Definitions are scale-dependent: 1) They can be used to trace a fire's origin; 2) They are influenced by severity and intensity within a stand; 3) They describe the landscape mosaic. (2) Apparent and obvious design of burned material and the burning path from the area of origin.

Burn severity - A qualitative assessment of the heat pulse directed toward the ground during a fire. Burn severity relates to soil heating, large fuel and duff consumption, consumption of the litter and organic layer beneath trees and isolated shrubs, and mortality of buried plant parts.

Burning - Decomposition of material by the application of heat and oxidation. Also applied to propellants and other pyrotechnic mixtures, though the proper term there is “reacting.” Also, burning is sometimes an element of the crime of arson.

Burning ban - A declared ban on open air burning within a specified area, usually due to sustained high fire danger. (USFS)

Burning conditions - The state of the combined factors of the environment that affect fire behavior in a specified fuel type. (USFS)

Burning index - (1) Relative measure of fire-control difficulty; doubling the index means twice the effort may be needed to control the fire (e.g., wind shift, heavier fuel load, etc.). (2) An estimate of the potential difficulty of fire containment as it relates to the flame length at the head of the fire. (3) An estimate of the potential difficulty of fire containment as it relates to the flame length at the most rapidly spreading portion of a fire’s perimeter. (USFS) (4) A relative number related to the contribution that fire behavior makes to the amount or effort needed to contain a fire in a specified fuel type. Education Note: Doubling the burning index indicates that twice the effort will be required to contain a fire in that fuel type as was previously required, providing all other parameters are held constant.

Burning index meter - A device used to determine the burning index for different combinations of burning index factors.

Burning out – (1) Setting fire inside a control line to consume fuel located between the edge of the fire and the control line. (2) When attack on the wildland fire is direct, or parallel with the control line, intentionally setting fire to unburned islands of fuel inside the control line to strengthen the line. (NWCG)

Burning period - That part of each 24-hour period when fires spread most rapidly; typically, from 10:00 AM to sundown. (USFS)



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Burning priority rating - System of rating slash to indicate the treatment objective, whether or not burning is required to meet that objective, the fuel treatment necessary to achieve successful burning, and the time of year burning should occur.

Burning rate - Rate at which a propellant and other combustibles burn.

Burning rotation - The planned number of years between prescribed fires on a specified area.

Burning torch - A flame generating device (e.g., a fount containing diesel oil or kerosene and a wick, or a backpack pump serving a flame-jet). Synonym: Backfire torch. (See: Drip torch; Flame thrower)

Burnover - An event in which a fire moves through a location or overtakes personnel or equipment where there is no opportunity to utilize escape routes and safety zones, often resulting in personal injury or equipment damage.

Bushfire - A wildfire that occurs in the forests, scrubs, woodlands, or grasslands of Australia or New Zealand.

Buying team - A team that supports incident procurement through the local administrative staff and is authorized to procure a wide range of services, supplies, and land and equipment rentals. Education Note: In addition, the buying team leader has the responsibility of coordinating property accountability with the supply unit leader.

Buys Ballot's Law - If a person stands with his back to the general wind, the high atmospheric pressure is found to his right in the Northern Hemisphere. The high pressure on the right moves clockwise and outward from the cell. The low pressure on the left moves counterclockwise and towards the center of the cell. Education Note: This Law does not work in the presence of locally produced convective winds. Buys Ballot's Law was discovered by Buys Ballot, a meteorologist in 1857.



Cache - A pre-determined complement of tools, equipment and/or supplies stored in a designated location, available for incident use.

CAFS - Compressed air foam systems.

Calculation of probabilities - Evaluation of all factors pertinent to probable future behavior of a going fire and of the potential ability of available forces to perform fire suppression operations on a specified time schedule.



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Calibrated airspeed - Indicated airspeed of an aircraft, corrected for position and instrument error. Equal to true airspeed in standard atmosphere at sea level.

Camp - All geographical site(s), within the general incident area, separate from the incident base, equipped, and staffed to provide sleeping, food, water, and sanitary services to incident personnel. (See: Base)

Camp Manager/Base Camp Manager (BCMG) - An ICS person who is responsible for ensuring that services, supplies, and non-technical coordination are provided within a camp and reports to the Facilities Unit Leader. There may be one or more camps per incident, each with a Camp Manager. (See: Base Manager; Facilities unit)

Campfire – A term used to classify the cause of a wildland fire, a fire that was started for cooking or warming that spreads sufficiently from its source to require action by a fire control agency. (USFS)

Candle - A standing tree with a broken top which often continues to burn after the main firefront has passed. Candles usually send up a fountain of sparks and embers which may travel some distance and be of concern if near the unburnt side of a control line.

Candling – (1) Burning aerial canopy of one single tree from ground up. (NWCG) (2) The burning of the foliage of a single tree or a small group of trees, from the bottom up. (3) A single tree or a very small clump of trees which is burning from the bottom up. (USFS) Synonym: Torching.

Canopy - The stratum containing the crowns of the tallest vegetation present (living or dead), usually above 20 feet.

Carbon dioxide (CO₂) - A colorless, odorless, nonpoisonous gas, which results from fuel combustion and is normally a part of the ambient air.

Carbon monoxide (CO) - A colorless, odorless, poisonous gas produced by incomplete fuel combustion.

Carcinogen - Any substance that can cause or contribute to the production of cancer.

Cardinal altitudes - Odd or “Even” thousand-foot (305 m) altitudes or flight levels. E.g., 5,000, 6,000, 7,000; FL 250, FL 260, and FL 270.

Cardinal directions - North, south, east, west; used for giving directions and information from the ground or air in describing the fire (e.g., the west flank or east flank, not right flank, or left flank).

Cargo chute - A parachute designed and rigged for dropping equipment and supplies from an aircraft.

Cargo compartment - An internal area of an aircraft specifically designed to carry baggage or cargo.

Cargo drop - Dropping of equipment or supplies, with or without a parachute, from an aircraft in flight.

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Cargo hook - Mechanically and electrically operated hook attached to the bottom of a helicopter to which a sling load is attached.

Cargo net (Cargo sling) - Net attached to the cargo hook of a helicopter, used to carry cargo.

Cargo rack - Externally mounted rack for transporting supplies or cargo aboard a helicopter.

Carousel hook - A remote hook attached to the end of a longline. It has four or more individual hooks which can be independently released, allowing the pilot to fly cargo loads to different locations without landing.

Carried wet - Booster hose carried full of water during mild weather to speed discharge of water on fire without filling or priming from tank.

Carrier fuels - The fuels that support the flaming front of the moving fire.

Casual - A person hired and compensated under the Pay Plan for Emergency Workers. Synonym: Administratively determined. (See: Emergency firefighter)

Cat line – A fire line constructed by a bulldozer. (NWCG)

Cat pile – A berm left by a bulldozer that might contain smoldering fuels. (NWCG)

Category day - A numerical index related to the ability of the atmosphere to disperse smoke. Different agencies use different scales [e.g., in South Carolina, the current scale is based on ventilation factor and ranges from 1 (poor) to 5 (excellent)].

Catface - Defect on the surface of a tree resulting from a wound where healing has not re-established the normal cross-section.

Ceiling - (1) Height above the earth's surface of the lowest layer of clouds or obscuring phenomena aloft that is not classified as a thin layer or partial obscuration that together with all lower clouds or obscuring phenomena covers more than half the sky as detected from the point of observation. (2) Maximum height of a temporary flight restriction (TFR).

Celsius - A temperature scale with 0° as the freezing point of water and 100° as the boiling point of water at sea level.

Center firing - Method of broadcast burning in which fire is ignited in the center of the area to create a strong draft; additional fires are then ignited progressively nearer the outer control lines (sometimes in one step) as indraft increases so as to draw the flames and smoke toward the center.

Centrifugal pump - Pump which expels water by centrifugal force through the ports of a circular impeller rotating at high speed. With this type of pump, the discharge line may be shut off while the pump is running without damaging the pump or hose.

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Certifying official - The agency official at the home unit who is responsible for authorizing and granting position certification per agency policy. The agency official is responsible for completing the agency certification block located on the inside front cover of a Position Task Book. (See: Agency certification; Home unit; Position task book)

CFP - Cooperative fire protection.

Chain – (1) A fire behavior term used to figure fire perimeter size and rate of spread. One chain equals 66 feet. (NWCG) (2) Unit of measure in land survey, equal to 66 feet (20 meters) (80 chains equal 1 mile). (USFS)
Education Note: Chain is commonly used to report fire perimeters and other fireline distances, this unit is popular in fire management because of its convenience in calculating acreage (e.g., 10 square chains equal one acre).

Chain lightning - Lightning in a long zigzag or apparently broken line.

Chain of command - A series of management positions in order of authority.

Char - (1) Carbonaceous material formed by incomplete combustion of an organic material, most commonly wood, remains of burned materials. (2) In fire simulation, a darkened area within the fire perimeter; usually indicates fire has already passed through; usually created by an opaque material blocking out a selected portion of basic scene illumination.

Char height - The vertical distance above ground scorched or blackened on a tree bole.

Charged line - Hose filled with water under pressure and ready to use. Synonym: Live Line. (See: Live reel)

Chase truck - Vehicle that carries crew gear, supplies, and operational equipment for initial/extended attack.

Check line - A temporary fireline constructed at right angles to the control line and used to hold a backfire in check as a means of regulating the heat or intensity of the backfire.

Check valve - A valve that permits flow of liquid through a hose or pipe in one direction but prevents a return flow. Education Note: Check valve uses include the prevention of backflow on uphill hose lays, loss of prime with centrifugal pumps and chemical contamination in fire chemical mixing systems.

Check-in - The process whereby resources first report to an incident. Check-in locations include incident command post (ICP), base or camps, staging areas, helibases, or direct to a tactical assignment. (See: Reporting locations)

Chevron burn - Burning technique in which lines of fire are started simultaneously from the apex of a ridge point, and progress downhill, maintaining position along the contour; used in hilly areas to ignite ridge points or ridge ends.



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Chief - The ICS title for individuals responsible for command of functional sections: Operations, Planning, Logistics, and Finance/Administration.

Chief of party - The chief of party is responsible to the sending unit dispatcher until destination is reached. Chief of party is responsible for all traveling personnel assigned on the manifest list.

Circumstantial evidence - Testimony or information not based on actual personal knowledge or observation, but dependent on inference of other facts or experience. Education Note: For example, testimony that defendant's cigarette lighter was found in ashes of a fire.

Cirrus - A form of high cloud, composed of ice crystals, which seldom obscures the sun.

CISD - Critical incident stress debriefing.

Claims specialist (CLMS) - The person responsible for handling all claims, other than injury, against the incident.

Class A Foam - Foam intended for use on Class A or woody fuels; made from hydrocarbon-based surfactant, therefore lacking the strong filming properties of Class B foam but possessing excellent wetting properties.

Class B Foam - Foam designed for use on Class B or flammable liquid fires; made from fluorocarbon-based surfactants, therefore capable of strong filming action, but incapable of efficient wetting of Class A fuels.

Class I Areas (air quality) - Geographic areas designed by the Clean Air Act subject to the most stringent restrictions on allowable increment of air quality deterioration. Education Note: Class I areas include Forest Service wildernesses and nation memorial parks over 5,000 acres, National Parks exceeding 6,000 acres, international parks, as well as other designated lands.

Class II Areas (air quality) - All areas of the country not designated Class I, including everything from non-Class I areas to urban areas. Education Note: A greater amount of air pollution can be added to these areas than Class I.

Class of fire - As to kind of fire for purpose of using a proper extinguisher: 1) Class A - Fires involving ordinary combustible materials (such as wood, cloth, paper, rubber, and many plastics) requiring the heat absorbing (cooling) effects of water, water solutions, or the coating effects of certain dry chemicals, which retard combustion. 2) Class B - Fires involving flammable or combustible liquids, flammable gases, greases, and similar materials where extinguishment is most readily secured by excluding air (oxygen), inhibiting the release of combustible vapors, or interrupting the combustion chain reaction. 3) Class C - Fires involving live electrical equipment where safety to the operator requires the use of electrically nonconductive extinguishing agents. 4) Class D - Fires involving certain combustible metals (such as magnesium, titanium, zirconium, sodium, potassium, etc.) requiring a heat absorbing extinguishing medium not reactive with burning metals. (See: Size class of fire)

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Clean Air Act - A federal law enacted to ensure that air quality standards are attained and maintained. Initially passed by Congress in 1963, it has been amended several times.

Clear text - The use of plain English in radio communications transmissions. No “ten codes” or agency specific codes are used when using “clear text.”

Climate - The prevalent or characteristic meteorological conditions of any place or region, and their extremes.

Climate class - One of four classifications in NFDRS, for the general climate of an area.

Climatological breakpoint - Points on the cumulative distribution of one fire weather/fire danger index without regard to associated fire occurrence/business.

CLMS - Claims specialist.

Clock method - Means of establishing a flight path to a target on a fire by referring to clock directions from the aircraft’s present location, with the nose of the aircraft pointing at 12:00.

Closed area - An area in which specified activities or entry are temporarily restricted due to reduced risk of human-caused fires or to mitigate the risk to human health or safety by potential or ongoing wildland fires.

Closure - (1) Legal restriction, but not necessarily elimination, of specified activities such as smoking, camping, or entry that might cause fires in each area. (USFS) (2) An administrative action limiting or prohibiting access to a specific geographic or jurisdictional area for the purposes of reducing wildfire or the risk it poses to life, property, and/or resources. Education Note: One example of use: “Pursuant to 36 C.F.R. 261.50 (a) and (b), it is hereby ordered that the prohibitions hereinafter set forth apply to the general forest area of the Ozark-St. Francis National Forests until further notice.” (See: Restrictions)

Cloud - A visible cluster of minute water/ice particles in the atmosphere.

Cloudy - Adjective class representing the degree to which the sky is obscured by clouds. In weather forecast terminology, expected cloud cover of about 0.7 or more warrants use of this term. In the National Fire Danger Rating System, 0.6 or more cloud cover is termed “cloudy.”

CMSY - Commissary manager.

CO - Carbon monoxide.

CO₂ - Carbon dioxide.

Cold front – (1) The leading edge of a relatively cold air mass that displaces warmer air. The heavier cold air may cause some of the warm air to be lifted. If the lifted air contains enough moisture, the result may be cloudiness, precipitation, and thunderstorms. If both air masses are dry, no clouds may form. Following the passage of a cold front in the Northern Hemisphere, westerly or northwesterly winds of 15 to 30 or more miles

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per hour often continue for 12 to 24 hours. (USFS) (2) The leading edge of a relatively cold air mass which displaces warmer air, causing it to rise. If the lifted air contains enough moisture, cloudiness, precipitation and even thunderstorms may result. Education Note: As fronts move through a region, in the Northern Hemisphere, the winds at a given location will experience a marked shift in direction. Ahead of an approaching cold front, winds will usually shift gradually from southeast to south, and on to southwest. As a cold front pass, winds shift rapidly to west, then northwest. Typical cold front windspeeds range between 15mph and 30-mph, but the mph can be much higher.

Cold line - Fireline that has been controlled. The fire has been mopped up for a safe distance inside the line and can be considered safe to leave unattended.

Cold trailing - A method of controlling a partly dead fire edge by carefully inspecting and feeling with the hand for heat to detect any fire and lining any live edge. (USFS)

Collective control - Controls the pitch angle of the main (helicopter) rotor blades. Used as primary altitude control.

Colonizer - Species of vegetation that establish on a burned (or otherwise denuded) site from seed.

Combination nozzle - A nozzle is designed to provide either a solid stream or a fixed spray pattern suitable for applying water, wet water, or foam solution. Also called: Adjustable Fog Nozzle.

Combination nozzle tip - Two attached straight stream nozzle tips of different orifice size used to increase or restrict water flow.

Combustion - The rapid oxidation of fuel in which heat and usually flame is produced. Combustion can be divided into four phases: preignition, flaming, smoldering, and glowing.

Combustion efficiency - (1) The relative amount of time a fire burns in the flaming phase of combustion, as compared to smoldering combustion. (2) A ratio of the amount of fuel that is consumed in flaming combustion compared to the amount of fuel consumed during the smoldering phase, in which more of the fuel material is emitted as smoke particles because it is not turned into carbon dioxide and water.

Combustion period - Total time required for a specified fuel component to be completely consumed.

Combustion rate - Rate of heat release per unit of burning area per unit of time. (See: Reaction Intensity)

COML - Communications unit leader.

Command - The act of directing, and/or controlling resources by virtue of explicit legal, agency, or delegated authority. (USFS; NWCG)



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Command, about - Command exists for every incident. However, we do not establish a formal incident command unless the incident warrants it. If there are more than three companies at a scene, command is usually established so that everyone knows who is in charge. The first officer on the scene usually has the option of taking command or assigning it to someone else. Beyond that only chief officers have the authorization to transfer command. Education Note #1: These rules or guidelines can vary slightly between departments, but national standards are being established for Command. This is becoming particularly important as the need for multiple agencies at events grows. Education Note #2: The large command vehicles are usually used only on the very largest of events; more than three alarms. For most single-family home or apartment fires, command will be from a battalion chief's vehicle.

Command climate - The working environment within the influence of a leader or chain of command. Education Note: The command climate is based on the subordinates' understanding of how they are expected to perform, how they are treated, and how they must conform to the leader's style.

Command presence - How leaders present themselves to others. The personal attributes and traits that determine whether leaders are worthy of trust and respect from their subordinates.

Command staff - The command staff consists of the information officer, safety officer and liaison officer. They report directly to the incident commander and may have assistants. (USFS)

Command technician - Firefighters who are trained in communications and organizational skills. This is a person who must be able to take in information and organize it, as well as present it to command in a way that makes sense.

Commercial forest land - Land that is producing, or can produce, crops of industrial wood and is not withdrawn from timber use by statute or administrative regulation.

Commissary - Supply of items such as candy, tobacco products, toilet items, and work clothes that are made available for sale to all incident personnel.

Commissary Manager (CMSY) - Person responsible to the time unit leader for operating the commissary at an incident base or camp.

Communications Unit - An organizational unit in the Logistics Section responsible for providing and maintaining communication services at an incident. May also be a facility (e.g., a trailer or mobile van) used to provide the major part of an incident communications center.

Communications Unit Leader (COML) - An ICS person who responsible for supervising the Communications Unit. Reports to the Service Branch Director or Logistics Section Chief. (See: Communications Unit)



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Community Wildfire Protection Plan (CWPP) - A plan developed in the collaborative framework established by the Wildland Fire Leadership Council and agreed to by state, tribal, and local government, local fire department, other stakeholders and federal land management agencies managing land in the vicinity of the planning area. A Community Wildfire Protection Plan (CWPP) identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on Federal and non-Federal land that will protect one or more at-risk communities and essential infrastructure and recommends measures to reduce structural ignitability throughout the at-risk community. A CWPP may address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection – or all the above.

COMP - Compensation/Claims unit leader.

Compact - A formal working agreement among agencies to obtain mutual aid.

Compactness - Spacing between fuel particles. (See: Bulk density)

Company - Any piece of (fire) equipment having a full complement of personnel. (USFS; NWCG)

Compare and contrast - An investigative technique that involves comparing same sized indicators within a category at separate locations, looking for either differences or similarities in appearance.

Compass rose - A circle, graduated in degrees, printed on some charts, or marked on the ground at an airport or heliport. Education Note: A compass rose is used as a reference to either true or magnetic direction.

Compensation/Claims Unit - Functional unit within the Finance/Administration Section responsible for the overall management and direction of all Compensation-for-Injury and Claims Specialists assigned to the incident.

Compensation/Claims Unit Leader (COMP) - An ICS person who responsible for supervising the Compensation/Claims Unit. Reports to the Finance/Administration Section Chief. (See: Compensation/Claims Unit)

Compensation-for-Injury Manager – The person responsible to the Compensation/Claims Unit Leader for administrative matters arising from serious injuries and fatalities occurring on the incident.

Competency - A broad description that groups core behaviors necessary to perform a specific function. (See: Behavior)

Competent ignition source - A source of heat that can kindle a wildfire. It may be in the form of a mechanical or electrical spark, glowing ember, open flame, chemical reaction, or friction.

Complex - Two or more individual incidents located in the same general area which are assigned to a single incident commander or unified command. (USFS)



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Compressed Air Foam Systems (CAFS) - A generic term describing foam systems consisting of an air compressor (or air source), a water pump, and foam solution.

Computed gross weight - From performance charts, calculating the permissible helicopter payload at which a helicopter is capable of hovering in ground effect or hovering out of ground effect, based on pressure altitude and air temperature.

COMT - Incident communications technician.

Concentrate - A substance that has been concentrated; specifically, a liquid that has been made denser, as by the removal of some of its water.

Conceptual model - A model that is a diagram or description of a set of relationships between factors that describe how a system works, such as an ecological model. (See: Model)

Condensation - The process by which a gas becomes a liquid.

Condition class - Depiction of the degree of departure from historical fire regimes, possibly resulting in alternations of key ecosystem components. These classes categorize and describe vegetation composition and structure conditions that currently exist inside the Fire Regime Groups. Based on the coarse-scale national data, they serve as generalized wildfire rankings. Education Note: The risk of loss of key ecosystem components from wildfires increases from Condition Class 1 (lowest risk) to Condition Class 3 (highest risk). Synonym: Fire Regime Current Condition Class.

Condition of vegetation – A stage of growth or degree of flammability of vegetation that forms part of a fuel complex. Herbaceous stage is at times used when referring to herbaceous vegetation alone. Education Note: In grass areas minimum qualitative distinctions for stages of annual growth are usually green, curing, and dry or cured.

Conduction – (1) Heat transfer through a material from a region of higher temperature to a region of lower temperature. (2) The transfer of heat from one place to another without movement of the medium. (NWCG)

Confine a fire - The least aggressive wildfire suppression strategy which can be expected to keep the fire within established boundaries of constructed firelines under prevailing conditions.

Confinement - The strategy employed in appropriate management responses where a fire perimeter is managed by a combination of direct and indirect actions and use of natural topographic features, fuel, and weather factors.

Conflagration - A raging, destructive fire. Conflagration is often used to describe a fire under extreme fire weather, having a moving front as distinguished from a raging fire with a moving front from a fire storm. The term is also used when a wildland fire burns into a wildland/urban interface, destroying structures.



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Conflagration threat – The likelihood that a wildfire capable of causing considerable property damage will occur.

Consistency foam - Uniformity and size of foam bubbles.

Constant danger - Resultant of all fire danger factors that are relatively unchanging in a specific area (e.g., resource values at risk, topography, fuel type, exposure to prevailing wind).

Consumption - The amount of a specified fuel type or strata that is removed through the fire process, often expressed as a percentage of the preburn weight.

Contain a fire – (1) A fuel break around the fire has been completed. This break may include natural barriers or manually and/or mechanically constructed line. (USFS) (2) A moderately aggressive wildfire suppression strategy which can be expected to keep the fire within established boundaries of constructed firelines under prevailing conditions. (3) When firefighters or other resources stop the forward progress of a fire but have not put in all control lines.

Contained - The status of a wildfire suppression action signifying that a control line has been completed around the fire, and any associated spot fires, which can reasonably be expected to stop the fire's spread. (See: Containment)

Containment - (1) The status of a wildfire suppression action signifying that a control line has been completed around the fire, and any associated spot fires, which can reasonably be expected to stop the fire's spread. (2) The act of controlling hazardous spilled or leaking materials. (See: Contained)

Continental climate - Climate that is characteristic of the interior of a land mass of continental size, marked by large annual diurnal and day-to-day ranges of temperature, low relative humidity, and irregular precipitation.

Contingency actions - A back-up plan of action when actions described in the primary plan are no longer appropriate. Education Note: Contingency actions are required to be taken when the result exceeds its intent. Actions are taken to return the project to its intended design.

Contingency plan - The portion of a prescribed fire plan, incident action plan, or wildland fire use implementation plan that identifies possible but unlikely events and the contingency resources needed to mitigate those events.

Contingency resources - Planned and identified fire suppression personnel and equipment that mitigate possible but unlikely events that exceed or are expected to exceed holding resource capabilities.

Contour map - A map having lines of equal elevation that represent the land surface (Topographic).



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Control a fire – (1) The complete extinguishment of a fire, including spot fires. Fireline has been strengthened so that flare-ups from within the perimeter of the fire will not break through this line. (USFS) (2) When firefighters and/or other resources completely surround and leave no open line on the fire perimeter. (NWCG)

Control force - Personnel and equipment used to control a fire.

Control line – (1) All built or natural fire barriers and treated fire edge used to control a fire. (USFS; NWCG) (2) An inclusive term for all constructed or natural barriers and treated fire edges used to control a fire.

Control time - The time a fire is declared controlled.

Controlled - The completion of control line around a fire, any spot fires therefrom, and any interior islands to be saved; burned out any unburned area adjacent to the fire side of the control lines; and cool down all hot spots that are immediate threats to the control line, until the lines can reasonably be expected to hold under the foreseeable conditions.

Controlled airspace - Airspace of defined dimensions within which air traffic control service is provided to IFR and VFR flights in accordance with the airspace classification.

Controlled burn - (See: Prescribed Burn)

Controlling nozzle - Shut-off nozzle that permits the nozzle operator to open or close the nozzle or adjust the pattern of the stream.

Convection - (1) The transfer of heat by the movement of a gas or liquid; convection, conduction, and radiation are the principal means of energy transfer. (2) As specialized in meteorology, atmospheric motions that are predominantly vertical in the absence of wind (which distinguishes this process from advection), resulting in vertical transport and mixing of atmospheric properties. (3) The transfer of heat by physical movement of a heated medium from one place to another. The convective column of a wildland fire can provide the medium. (NWCG)

Convection column - The rising column of gases, smoke, fly ash, particulates, and other debris produced by a fire. The column has a strong vertical component indicating that buoyant forces override the ambient surface wind. (See: Smoke plume)

Convective activity - General term for manifestations of convection in the atmosphere, alluding particularly to the development of convective clouds and resulting weather phenomena, such as showers, thunderstorms, squalls, hail, tornadoes, etc.

Convective-lift fire phase - The phase of a fire when most of the emissions are entrained into a definite convection column.



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Convergence - Horizontal air currents merging or approaching a single point, such as at the center of a low-pressure area producing a net inflow of air. When this occurs in the lower atmosphere, the excess air is removed by rising air currents. Education Note: Expansion of the rising air above a convergence zone results in cooling, which in turn often gives condensation (clouds) and sometimes precipitation.

Convergence zone - (1) The area of increased flame height and fire intensity produced when two or more fire fronts burn together. (2) In fire weather, that area where two winds come together from opposite directions and are forced upwards often creating clouds and precipitation.

Conversion burning - Burning an area where brush has excluded forest reproduction to prepare the area for tree planting.

Co-op fire - Refers to federal, state, and local cooperative fire programs.

Cooperating agency - An agency supplying assistance including but not limited to direct tactical or support functions or resources to the incident control effort (e.g. Red Cross, law enforcement agency, telephone company, etc.). (USFS) (See: Agency; Agency representative; Assisting agency; Supporting agency)

Cooperative Fire Protection (CFP) Unit (CFPU) - A staff unit within the branch of State and Private Forestry or Aviation and Fire Management in the National Forest System, USDA Forest Service, that coordinates cooperative fire activities.

Cooperator - Local agency or person who has agreed in advance to perform specified fire control services and has been properly instructed to give such service.

Coordinated Resource Management - A process that directly involves everyone concerned with resource management in each planning area.

Coordinates - The intersection of lines of reference, usually expressed in degrees/minutes/ seconds of latitude and longitude, used to determine or report position or location.

Coordination - The process of systematically analyzing a situation, developing relevant information, and informing appropriate command authority of viable alternatives for selection of the most effective combination of available resources to meet specific objectives. Education Note: The coordination process (which can be either intra- or interagency) does not involve dispatch actions. However, personnel responsible for coordination may perform command or dispatch functions within limits established by specific agency delegations, procedures, legal authority, etc.

Coordination center - Any facility that is used for the coordination of agency or jurisdictional resources in support of one or more incidents.



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Coriolis force (Coriolis effect) - An apparent force due to the rotation of the earth that causes a deflection of air to the right in the Northern Hemisphere and to the left in the Southern Hemisphere. This force maximizes at the poles and is essentially zero at the equator. Education Note: The amount of deflection the air makes is causally related to both the speed at which the air is moving and its latitude. Therefore, slowly blowing winds will be deflected only a small amount, while stronger winds will be deflected more. Likewise, winds blowing closer to the poles will be deflected more than winds at the same speed closer to the equator. The Coriolis force/effect was first described by Gaspard-Gustave Coriolis, a French scientist, in 1835. As seen from a fixed point in space, such a parcel would be moving in a straight line. This apparent force on the motion of a fluid (in this case, air) is called the Coriolis effect. As a result of the Coriolis effect, air tends to rotate counterclockwise around large-scale low-pressure systems and clockwise around large-scale high-pressure systems.

Corrosion - Result of chemical reaction between a metal and its environment (i.e., air, water, and impurities in same).

COST - Cost unit leader.

Cost sharing agreements - Agreements that document the financial responsibility for incident resource costs, possibly identifying requirements of other party payments.

Cost Unit – A functional unit within the Finance/Administration Section responsible for collecting all cost data, performing cost effectiveness analyses, and providing cost estimates and cost saving advice.

Cost Unit Leader (COST) - An ICS person who responsible for supervising the Cost Unit. Reports to the Finance/Administration Section Chief. (See: Cost Unit)

Council tool - Long-handled combination rake and cutting tool, the blade of which is constructed of a single row of three or four sharpened teeth. A council tool is also known as a fire rake, or a council rake. (See: Rich tool)

Counter fire (Draft fire) - (1) Fire set between main fire and backfire to hasten spread of backfire. Also called draft fire. (2) Emergency firing to stop, delay, or split a fire front, or to steer a fire.

Coupling - Device that connects the ends of adjacent hoses or other components of hose. (See: Adapter)

Course (aviation) - The intended direction of a horizontal flight.

Cover - The area on the ground covered by the combined aerial parts of plants expressed as a percent of the total area.

Cover type - The designation of a vegetation complex described by dominant species, age, and form.

Coverage level - Recommended amount of aerially applied retardant keyed to the NFDRS fuel models and/or fire behavior models. Education Note: “Coverage Level 2” represents 2 gallons of retardant per hundred square

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feet. Coverage levels range from 1 to 6 for most fuel models. A coverage level of greater than 6 is for heavy fuels. The levels can be adjusted for fire behavior.

Coyote tactics - (1) A progressive line construction duty involving self-sufficient crews that build fire line until the end of the operational period, remain at or near the point while off duty, and begin building fire line again the next operational period where they left off. (USFS) (2) A progressive line construction duty involving primarily hotshot and jumpers build fireline until the end of the operational and then bed down wherever they end up sleeping just as they started the shift, no sleeping bag. Education Note: “Coyoteing” is not to be confused with “spiking” where sleeping bags a hot bucket are the prizes of the day. Coyoteing is an extremely useful tool although extremely uncomfortable. For the privilege of coyoteing personnel are usually compensated while they sleep.

Crazing - Fine cracking of glass, usually from heat of fire.

Creeping fire - (1) A fire spreading slowly over the ground, generally with a low flame. (2) Fire burning with a low flame and spreading slowly. (USFS)

Crew - An organized group of firefighters under the leadership of a crew boss or other designated official.

Crew boss (CRWB) - A person in supervisory charge of usually 16 to 21 firefighters and responsible for their performance, safety, and welfare. (USFS)

Crew shuttle - Transportation of fireline personnel to and/or from assigned fireline locations.

Crew transport - Any vehicle capable of transporting a specified number of personnel in a specified manner.

Criteria pollutants - Pollutants deemed most harmful to public health and welfare and that can be monitored effectively. They include carbon monoxide (CO), lead (Pb), nitrogen oxides (Nox), sulfur dioxide (SO₂), ozone (O³), particulate matter (PM) of aerodynamic diameter less than or equal to 10 micrometers (PM₁₀) and particulate matter of aerodynamic diameter less than or equal to 2.5 micrometers (PM_{2.5}).

Critical burnout time - Total time a fuel can burn and continue to feed energy to the base of a forward-traveling convection column.

Critical Incident Stress Debriefing (CISD) - The process in which teams of professional and peer counselors provide emotional and psychological support to incident personnel who are or have been involved in a critical (highly stressful) incident.

Cross shot - Intersecting lines of sight from two points to the same object, frequently used to determine location of a fire from lookouts. Also called cross bearing.

Crown consumption - Combustion of the twigs and needles or leaves of a tree during a fire.



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Crown cover - The ground area covered by the crown of a tree as delimited by the vertical projection of its outermost perimeter.

Crown fire - (1) A fire that spreads across the tops of trees or shrubs independently of a surface fire. (2) Any fire that advances from top to top of trees or shrubs independent of a surface fire. Education Note: Crown fires are sometimes classed as running (independent or active) or dependent (passive) to distinguish the degree of independence from the surface fire. (NWCG)

Crown out - A fire that rises from ground into the tree crowns and advances from treetop to treetop. To intermittently ignite tree crowns as a surface fire advances. (See: Torching)

Crown ratio - The ratio of live crown to tree height.

Crown scorch - Browning of needles or leaves in the crown of a tree or shrub caused by heating to lethal temperature during a fire. Crown scorch may not be apparent for several weeks after the fire.

Crown scorch height - The height above the surface of the ground to which a tree canopy is scorched.

Crowning potential - A probability that a crown fire may start, calculated from inputs of foliage moisture content and height of the lowest part of the tree crowns above the surface.

CRWB - Crew boss.

CWPP - Community Wildfire Protection Plan.

Cumulonimbus - The ultimate growth of a cumulus cloud into an anvil-shaped cloud with considerable vertical development, usually with fibrous ice crystal tops, and usually accompanied by lightning, thunder, hail, and strong winds.

Cumulus - A principal low cloud type in the form of individual cauliflower-like cells of sharp non-fibrous outline and less vertical development than cumulonimbus.

Cup trench (Gutter trench) - A fireline trench on the downhill side of fire burning on steep slopes that is supposed to be built deep enough to catch rolling firebrands that could otherwise start fire below the fireline. Education Note: A high berm on the outermost downhill side of the trench helps the cup trench catch material.

Cupping indicators - A concave or cup-shaped depression on grass stem ends, small stumps, and terminal ends of brush and tree limbs.

Curb weight - Weight of a truck empty (without payload and driver) but ready to drive, including a full fuel tank, cooling system, crankcase, tools, spare wheel, and all other equipment specified as standard.

Cured - In the 1978 version of NFDRS, the herbaceous stage when herbaceous fuel moisture falls to 30% or less.

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Curing – (1) Drying and browning of herbaceous vegetation or slash. (USFS) (2) Drying and browning of herbaceous vegetation due to mortality or senescence, and the loss of live fuel moisture content of woody fuel following mechanically caused mortality (e.g., woody debris slash.)

Curling indicators - Green leaves on succulent, uncured vegetation which bends and curls inwards towards the heat source.



DA - Departure from average greenness.

DAID - Delayed aerial ignition devices.

Daily activity level - Part of the National Fire Danger Rating System (NFDRS). In fire danger rating, a subjective estimate of the degree of activity of a potential human-caused fire source relative to that which is normally experienced. Five activity levels are defined: none, low, normal, high, and extreme.

Damage differential - The difference in change or damage that occurs to similar objects after they are exposed to fire of differing intensity and/or duration. The underlying principle behind the interpretation of burn pattern.

Damage differential indicators - The amount of fire related destruction to combustible objects determined by comparing opposing sides of an object.

DDP - Designated dispatch point.

DE - Dry episode.

Dead fuels - Fuels with no living tissue in which moisture content is governed almost entirely by absorption or evaporation of atmospheric moisture (relative humidity and precipitation), dry-bulb temperature, and solar radiation. (USFS)

Dead man zone - Unburnt areas around edges of brush fire.

Dead out - The period where a fire is completely out, with no smoldering or burning areas. Dead out is different from contained.

Debris burning fire - (1) A fire spreading from any fire originally ignited to clear land or burn rubbish, garbage, crop stubble, or meadows (excluding incendiary fires). (2) A fire spreading from any fire originally set for the purpose of clearing land or for rubbish, garbage, range, stubble, or meadow burning. (USFS) (3) A fire

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used to dispose of scattered, piled, or windrowed dead woody fuel, generally in the absence of a merchantable overstory. Its purpose is to reduce unsightly fuel concentrations or consume unwanted natural fuels to facilitate subsequent resource management or land use actions on the area.

DECK - Deck coordinator.

Deck - The helibase operational area that includes the touchdown pad, safety circle, hover lanes, and external cargo transport area.

Deck Coordinator (DECK) - Person responsible to the helibase manager for coordinating the movement of personnel and cargo at the helibase landing area.

Deck Gun (Deluge nozzle) - A large water nozzle attached to an engine. Deck guns deliver larger amounts of water than hand-held hose. (See: Master Stream; Multiversals)

Deepening (atmospheric pressure) - A decrease in the central pressure of a low. This is usually accompanied by intensification of the cyclonic circulation (counterclockwise wind flow around the low).

Deep-seated fire - (1) A fire burning far below the surface in duff, mulch, peat, or other combustibles as contrasted with a surface fire. (2) A fire that has gained headway and built up heat in a structure to require greater cooling for extinguishment.

Defensible space – An area either natural or manmade where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between an advancing wildland fire and the loss to life, property, or resources. In practice, “defensible space” is defined as an area a minimum of 30 feet around a structure that is cleared of flammable brush or vegetation. (USFS)

Defensive operations - A fire ground strategy based on firefighter safety and the protection of exposures. The goal is to simply confine the fire to the building/area of origin. No aggressive interior firefighting operations take place in the defensive mode. All fire streams are operated onto the fire from the outside. This strategy is employed when a fire has advanced to the point where attack operations are too dangerous, and/or the fire is beyond the capabilities of on scene resources.

Deflagration - (1) Chemical decomposition by burning material in which the reaction is less than sonic velocity, for example, low explosives. (2) A burning with great heat and intense light.

Degradation - In a discussion of fire-retardant slurries, degradation is the deterioration of viscosity. (See: Thermal degradation)

Delayed Aerial Ignition Devices (DAID) - Polystyrene balls, 1.25 inches in diameter, containing potassium permanganate. The balls are fed into a dispenser, generally mounted in a helicopter, where they are injected with a water-glycol solution and then dropped through a chute leading out the helicopter. The chemicals react

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thermally and ignite in 25-30 seconds. Education Note: The space between ignition points on the ground is primarily a function of helicopter speed, gear ratio of the dispenser, and the number of chutes used (up to four). (See: Aerial Ignition Device; Helitorch; Ping-Pong Ball System; Plastic Sphere Dispenser)

Delegation of Authority - A statement provided to the incident commander by the agency executive delegating authority and assigning responsibility. The delegation of authority can include objectives, priorities, expectations, constraints and other considerations or guidelines as needed. Many agencies require written delegation of authority to be given to incident commanders prior to their assuming command on larger incidents.

Demob - Demobilization. A crew that is being removed from working a fire. The systematic release of personnel and resources from an incident. Demob should start during the incident's mobilization phase. (NWCG)

Demobilization - Release of resources from an incident in strict accordance with a detailed plan approved by the incident commander.

Demobilization Unit - A functional unit within the planning section responsible for assuring orderly, safe and efficient demobilization of incident resources.

Demobilization Unit Leader (DMOB) - An ICS person who responsible for supervising the Demobilization Unit. Reports to the Planning Section Chief. (See: Demobilization Unit)

Dense layer - A layer of clouds whose ratio of dense sky cover to total sky cover is more than one-half.

Dense sky cover - Sky cover that prevents detection of higher clouds or the sky above it.

Density (foam) - The ratio of the original volume of the nonaerated foam solution to the resultant volume of foam. Density is the inverse of expansion.

Density altitude - Pressure altitude corrected for temperature deviations from standard atmosphere. Used as an index to aircraft performance characteristics such as take-off distance and rate of climb. Density altitude bears the same relation to pressure altitude as true altitude does to indicate altitude.

Departure from Average Greenness (DA) - An NDVI-derived image of vegetation greenness compared to its average greenness for the current week of the year.

Deployment – (See: Fire shelter deployment)

Deployment zone - Zones that become last ditch areas where fire shelters must be deployed to ensure firefighter survival due to the available space and/or fire behavior conditions at the deployment zone location.



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Education Note: Deployment zones are used when fire conditions are such that escape routes and safety zones have been compromised. (See: Safety zone)

Depth of Burn (DOB) - The reduction in forest floor thickness due to consumption by fire.

Depth of char indicators - Sometimes referred to as “alligatoring,” where combustible material appears to have a fissured or scaly appearance like an alligator’s hide, which are most associated with finished lumber products, such as boards and fence posts.

Deputy - A qualified individual who could be delegated the authority to manage a functional operation or perform a specific task. In some cases, a Deputy could act as relief for a superior. Deputies can be assigned to the incident commander, general staff, and branch directors.

Desiccant – A chemical that, when applied to a living plant, causes, or accelerates drying of its aerial parts; used to facilitate burning of living vegetation by substantially lowering fuel moisture content within a few hours.

Designated area - Those areas identified as principal population centers or other areas requiring protection under state or federal air quality laws or regulations.

Designated Dispatch Point (DDP) - The address where the unit must be physically located, and dispatched from, during the mandatory availability period.

Detection – (1) The act or system of discovering and locating fires. (USFS) (2) The act or system of discovering and locating fires. Synonym: Fire detection. (See: Discovery)

Detonation - An extremely rapid decomposition of a material in which the reaction is more than a sonic velocity, for example, high explosives.

Dew point - Temperature to which a specified parcel of air must cool, at constant pressure and water-vapor content, which allows saturation to occur. Education Note: The dew point is always lower than the wet-bulb temperature, which is always lower than the dry-bulb temperature, except when the air is saturated, and all three values are equal. Fog may form when temperature drops to equal the dew point.

Diagram - A scale drawing showing information about a fire scene.

Die-out pattern indicators - Fingers or islands of less intensely burned areas or areas where the fire has self-extinguished.

Digital elevation model - A set of points which defines the terrain as numbers for computer applications. This data may be used to draw contours, make ortho photos, slope maps, and drive fire models.



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Dilution - A control strategy used in managing smoke from prescribed fires in which smoke concentration is reduced by diluting it through a greater volume of air, either by scheduling during good dispersion conditions or burning at a slower rate. (See: Dispersion)

Direct attack – (1) Any treatment applied directly to burning fuel such as wetting, smothering, or chemically quenching the fire or by physically separating the burning from unburned fuel. (USFS) (2) Attacking the fire on its burning edge or close to it. A direct attack is usually made on a wildland fire that is moving slowly and is not too hot for firefighters to operate close to the fire's edge with equipment. (NWCG) Synonym: Direct line.

Direct line - Any treatment applied directly to burning fuel such as wetting, smothering, or chemically quenching the fire or by physically separating the burning from unburned fuel. Synonym: Direct attack.

Direct protection area - That area for which a fire protection organization has the primary responsibility for attacking an uncontrolled fire and for directing the suppression action. Such responsibility may develop through law, contract, or personal interest of the firefighting agent (e.g., a lumber operator). Several agencies or entities may have some basic responsibilities (e.g., private owner) without being known as the fire organization having direct protection responsibility. Synonym: Protection area.

Directional vectors - The physical characteristics of the indicators that show the direction of fire spread, i.e., advancing, backing, or lateral.

Director - The ICS title for an individual responsible for supervision of a branch.

Discovery - Determination that a fire exists. Location and reporting of a fire are not required as is with detection. (See: Detection)

Discovery time - The elapsed time from start of fire (known or estimated) until the time of the first discovery that results directly in fire suppression action.

Discrete frequency - A separate radio frequency most used in air traffic control which reduces frequency congestion by controlling the number of aircraft or other resources operating on a frequency.

DISE - Distributed incident simulation exercise.

Dispatch - The implementation of a command decision to move a resource or resources from one place to another. (USFS)

Dispatch center - A facility from which resources are assigned to an incident.

Dispatcher – (1) A person employed who receives reports of discovery and status of fires, confirms their locations, takes action promptly to provide people and equipment likely to be needed for control in first attack, and sends them to the proper place. (USFS) (2) A person who receives reports of discovery and status of fires,



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confirms their locations, which acts promptly to provide people and equipment likely to be needed for control efforts. (See: Agency Dispatcher)

Dispersion - The decrease in concentration of airborne pollutants as they spread throughout an increasing volume of atmosphere. (See: Dilution)

Display class - In WIMS, a one-digit number representing the number of decision points used to evaluate the magnitude of the Staffing Index.

Display class breakpoints - In WIMS, the climatological breakpoints separating the highest staffing levels. Commonly these are the index values corresponding to the 90th and 97th or 80th and 95th percentiles for the staffing index.

Display Processor (DPRO) - The ICS person responsible for displaying incident status information obtained from Field Observers, technical specialists, resource status reports, aerial photographs, and infrared data. Reports to the Situation Unit Leader. (See: Situation Unit)

Distance learning (DL) - A concept of providing access to quality wildland fire education and training using appropriate instructional technology, delivered anywhere, anytime to prepare a fire management work force to safely achieve fire management objectives. (See: eLearning)

Distance measuring equipment (DME) - Aircraft navigational equipment that provides the slant range distance in miles (kilometers) from the aircraft to the VOR station to which the DME is tuned, usually at or near an airport.

Distributed incident simulation exercise (DISE) - An on-line mission rehearsal event providing an individual or team with an experiential learning environment utilizing the National Interagency Incident Management System to “game” a computer-generated incident from multiple training locations. (See: Simulation)

District (District Chief) - This is subdivision within a fire department. A district is usually comprised of several battalions. Some fire departments use the term “district” to describe a group of resources made up of companies. This is more commonly referred to as a battalion in the US. In Canada, the word district is usually used in place of the word battalion.

Disturbance - A weather system usually associated with clouds, rain and/or wind.

Diurnal - Daily, especially pertaining to cyclic actions which are completed within 24 hours, and which recur every 24 hours, such as temperature, relative humidity, and wind.

Divergence - The expansion or spreading out of a horizontal wind field. Generally associated with high pressure and light winds.



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Division - The ICS organization level between the branch and the task force/strike team. Divisions are used to divide an incident into geographical areas of operation. Divisions are established when the number of resources exceeds the span-of-control of the operations chief. (See: Group)

Division - A branch of the fire department such as the “Training Division” or the “Inspection Division.” It can also be a designated part of the Incident Command System (ICS). Division is used to designate a geographic location of operations. An example might be “Third floor division” or “Delta Division” (Which might indicate a side of a structure.)

Division/Group Supervisor (DIVS) - An ICS person who responsible for supervising equipment and personnel assigned to a division or group. Reports to a Branch Director or Operations Section Chief. (See: Division; Group)

DIVS - Division/Group supervisor.

DL - Distance learning; Fuel dryness level.

DME - Distance measuring equipment.

DMOB - Demobilization unit leader.

DOB - Depth of burn.

DOCL - Documentation unit leader.

Documentation unit - Functional unit within the planning section responsible for collecting, recording and safeguarding all documents relevant to the incident.

Documentation Unit Leader (DOCL) - An ICS person who responsible for supervising the Documentation Unit. Reports to the Planning Section Chief. (See: Documentation Unit)

Dormant season burning - Prescribed burning early in the dry season before the leaves and undergrowth are completely dry or before the leaves are shed, as an insurance against more severe fire damage later on.

Double arsonist - An offender who sets two fires at one site; at the same time; in a single event.

Double doughnut - Two lengths of hose rolled side by side or a single length rolled into two small coils for convenient handling. (See: Doughnut roll)

Double female coupling - A hose-coupling device having two female swivel couplings to permit joining two male hose nipples of the same size and thread type when lines are laid with couplings in opposite or reverse directions.

Double jacket hose - Fire hose having two cotton or other fiber jackets outside the rubber lining or tubing.

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Double male coupling - A hose-coupling device having two male thread nipples for connecting hose and for connecting two female couplings of the same diameter.

Doughnut roll - A 50 or 100-foot length of hose or a 50-foot length of hose rolled up for easy handling. There are various ways of forming the doughnut. A convenient one has both couplings close together with the male thread protected by the female coupling. (See: Double doughnut)

Downloading - A calculated reduction in actual payload to provide a margin of safety.

DOZB - Dozer boss.

Dozer – (1) Any tracked vehicle with a front mounted blade used for exposing mineral soil. (USFS) (2) A heavy piece of equipment used to construct a fire line by clearing vegetation. (NWCG) (See: Tractor)

Dozer boss (DOZB) - The individual responsible for supervising the operations of a dozer.

Dozer company - A resource that includes a dozer, its transportation unit, and a standard complement of personnel for its operation.

Dozer line (Catline) - Fireline constructed by the front blade of a bulldozer (dozier) or any tracked vehicle with a front mounted blade used for exposing mineral soil. (See: Plow line)

Dozer tender - Any ground vehicle with personnel capable of maintenance, minor repairs, and limited fueling of dozers.

DPRO - Display processor.

Draft - Drawing water from static sources such as a lake, pond, cistern, river, etc. into a pump which is above the level of the water supply. This is done by removing the air from the pump and allowing atmospheric pressure [14.7 psi (101 kPa) at sea level] to push water through a noncollapsible suction hose into the pump.

Drafting - (1) Using a suction pump to lift water from below the pump, through a semi-rigid suction hose, to fill a portable reservoir that has other suction pumps (to relay) or siphon hoses running downhill to their nozzles. (2) Pulling water from a source other than a hydrant or another fire apparatus. Cisterns, lakes, ponds, and swimming pools are often used in drafting operations. Many departments in rural areas and without fire hydrants use drafting.

Drain time - The time (minutes) it takes for foam solution to drop out from the foam mass; for a specified percent of the total solution contained in the foam to revert to liquid and drain out of the bubble structure.

Draped fuels - Needles, leaves, and twigs that have fallen from above and have lodged on lower branches or brush. Draped fuels are part of aerial fuels. (See: Aerial fuels)



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DRD - Drag rescue device. A strap, or webbing, that is integrated with the firefighter's turnout coat which allows for easier dragging. A, relatively, small strap protrudes, from under a flap, near the collar on the back of the fire coat. A rescuer can grab this strap and have a means to drag a fellow firefighter to safety. This is required on all new coats in NFPA 1971, 2007 edition.

Drift - Effect of wind on smoke, retardant drops, paracargo, smokejumper streamers, etc.

Drift smoke – (1) Smoke that has drifted from its point of origin and is no longer dominated by convective motion. (2) Smoke that has drifted from its point of origin and lost its original billowing form. Education Note: Drift smoke may give false impression about a fire in the general area is in a different area where smoke drifted. Drift smoke can also fill in canyons under stable air masses, where it becomes difficult to identify spot fires.

Drip torch - (1) A hand-carried fire-starting device filled with flammable liquid that is poured across a flaming wick, dropping flaming liquid onto the fuels to be burned. (2) A hand-held device for igniting fires by dripping flaming liquid fuel on the materials to be burned; consists of a fuel fount, burner arm, and igniter. Fuel used is generally a mixture of diesel and gasoline. (See: Backfire torch; Burning torch; Flame thrower)

Drive axle - An axle that supports a portion of the vehicle weight and transmits a driving force to the wheels.

Drive wheels - Wheels powered by all the vehicle's drive axles. Dual tires are considered as single wheels. The number of wheels is commonly referenced by the terms "4x2," "4x4," etc. where the first figure indicates the total number of wheels on the ground and the second figure, the number of drive wheels.

Drizzle - Precipitation composed exclusively of water drops smaller than 0.02 inches (0.5 mm) in diameter.

Drop - A term associated with air attack, which refers to dropped cargo, firefighters, or retardant. (NWCG)

Drop configuration - The type of retardant drop selected to cover a ground target. Terms that can specify the type of drop configuration include Salvo Drop and Trail Drop. (See: Salvo drop; Trail drop)

Drop pass - Indicates that the air tanker has the target in sight and will make a retardant drop on this run over the target.

Drop pattern - The distribution of an aerielly delivered retardant drop on the target area in terms of its length, width, and momentum (velocity x mass) as it approaches the ground. The latter determines the relative coverage level of the fire retardant on fuels within the pattern. Synonym: Pattern.

Drop zone (DZ) - Target area for airtankers, helitankers, cargo dropping. (See: Target)

Drought - A period of relatively long duration with substantially below-normal precipitation, usually occurring over a large area.



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Drought index - A number representing the net effect of evaporation, transpiration, and precipitation in producing cumulative moisture depletion in deep duff or upper soil layers. (See: Keetch-Byram Drought Index)

Drum lifter - Device used to transport a 55-gallon drum (208 L) via sling on a helicopter.

Dry adiabatic lapse rate - The rate of decrease of temperature with height of a parcel of dry air lifted adiabatically through an atmosphere in hydrostatic equilibrium. Numerically, it is equal to 9.7670°C degrees per km or about 5.40°F degrees per thousand feet.

Dry air mass - A portion of the atmosphere that has a relatively low dew point temperature and where the formation of clouds, fog, or precipitation is unlikely.

Dry bulb - A name given to an ordinary thermometer used to determine the temperature of the air (to distinguish it from the wet bulb).

Dry bulb temperature - The temperature of the air measured in the shade 4-8 feet above the ground.

Dry episode (DE) - A contiguous series of days having a pre-established number of fire ignitions with a fuel dryness level that historically resulted in a significant fire event for an area. (See: Fuel dryness level; Significant fire event)

Dry foam - A low expansion foam type with stable bubble structure and slow drain time which is used primarily for resource and property protection.

Dry hydrant (Suction pipe) - (1) Permanent devices with fire engine threads attached to expedite drafting operations in locations where there are water sources suitable for use in fire suppression (e.g., piers, wharves, bridges over streams, highways adjacent to ponds). (2) Permanently installed supply private fire pumps which depend upon suction sources.

Dry lightning storm – (1) A lightning storm where little or no rain reaches the ground. (NWCG) (2) Thunderstorm in which negligible precipitation reaches the ground. Dry lightning storms are also known as “dry storm.”

Dry run - A trial pass over the target area by a lead plane and/or an airtanker to pinpoint target areas and warn ground personnel of the impending retardant or extinguishing agent drop.

Dry storage - Refers to dry chemical retardants stored at air attack bases and available for mixing with water. (See: Wet storage)

Dry-bulb temperature - Temperature of the air.

Dry-bulb thermometer - In a psychrometer, the thermometer not covered with muslin which is used to determine air temperature.



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Duff - (1) Layer of decaying forest litter consisting of organics such as needles, leaves, plant, and tree materials covering the mineral soil. (USFS) (2) Matted, partly decomposed leaves, twigs, and bark beneath trees and brush. (2) The layer of decomposing organic materials lying below the litter layer of freshly fallen twigs, needles, and leaves and immediately above the mineral soil. (NWCG) Education Note: Duff can smolder for days after a fire. Extinguishing smoldering duff is key to successful mop-up operations. (See: Humus; Litter)

Durability (foam) - The effective life span of foam bubbles.

Duty week - Regular number of hours worked per week by a full-time firefighter, excluding overtime.

DZ - Drop zone.



Economic fire protection theory - A concept postulating that the object of fire protection is to minimize total cost (i.e., sum of the costs of fire prevention, fire presuppression, fire detection, fire suppression, and net costs of fire damage/benefits).

Ecosystem - An interacting natural system including all the component organisms together with the abiotic environment and processes affecting them.

Ecosystem sustainability - A concept that promotes the use of natural resources to benefit humans while conserving and wisely managing natural ecosystems for the future.

Eddy - A circular-like flow of a fluid (such as air or water) drawing its energy from a flow of much larger scale and brought about by pressure irregularities as in the downwind (lee) side of a solid obstacle. Education Note: For example, wind conditions may be erratic and may eddy on the downwind side of large rock outcroppings, buildings, etc.

Edge - (1) The place where plant communities meet or where successional stages or vegetative conditions within plant communities come together. (2) The boundary between two distinct fuel types.

Edge firing - Method of burning in which fires are set along the edges of an area and allowed to spread inward.

Eductor - A device used to introduce and mix fire chemical into a water stream. An eductor is a fitting with three ports, an inlet for water flow, an outlet for water flow, and an inlet for fire chemical concentrate.



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Education Note: The flow of water through the eductor produces a region of lower pressure at the fire chemical inlet, drawing the chemical into the water stream.

EFF - Emergency firefighter.

Effective windspeed - The midflame windspeed adjusted for the effect of slope on fire spread.

EFp - Emission factor.

EFSA - Escaped fire situation analysis.

Ejector - A siphon device used to fill an engine's tank when the water source is below or beyond the engine's drafting capability.

Elapsed time - The total time taken to complete any step(s) in fire suppression. NOTE: Generally divided chronologically into discovery time, report time, getaway time, travel time, attack time, control time, mop-up time, and patrol time.

eLearning - Conceptually represents the optimum integration of modern educational methods and professional staff development training with state-of-the-art technology. The primary goal is enhancing on-the-job performance, motivation, and learning performance. (See: Distance Learning)

Elevation loss - In hydraulics, the pressure loss caused by raising water through hose or pipe to a higher elevation (roughly equal to one psi for every two-foot increase in elevation above the pump) (11.3 kPa per meter).

ELT - Emergency locator transmitter.

Ember wash - Glowing embers that smolder in ash after a wildfire. Education Note: Embers radiate a substantial amount of heat long after the fire has quelled or has been extinguished, and if not put out, they can rekindle a fire that is thought to be completely extinguished, and can pose additional fire hazards.

EMC - Equilibrium moisture content.

Emergency - Any incident which requires the response of a fire protection organization's attack units and/or support units.

Emergency Firefighter (EFF) - A person employed as an emergency worker on a forest or wildland fire which threatens damage to property under public management. Emergency firefighters are hired for the duration of the emergency only. (See: Administratively determined; Casual)

Emergency locator transmitter (ELT) - A radio transmitter attached to the aircraft structure which operates from its own power source on 121.5 MHz and 243 MHz. Education Note: The transmitter transmits a distinctive



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downward swept audio tone for homing purposes and is designed to function without human action after an accident.

Emergency Management Coordinator/Director - The individual within each political subdivision that has coordination responsibility for jurisdictional emergency management.

Emergency Medical Technician - Basic (EMTB) - A professional-level provider of emergency medical care who has received training equal to or greater than the current DOT emergency medical technician training standards, maintaining state or equivalent certification in this classification.

Emergency Medical Technician - Intermediate (EMTI) - A professional-level provider of emergency medical care that has been trained to the basic 1999 EMT level, state certified, and has received additional training to start IVs, use more advanced airways, and administer certain medications.

Emergency Medical Technician - Paramedic (EMTP) - A professional-level provider of emergency medical care trained above the level of EMT-intermediate to administer drugs, intubate, and other advanced life support procedures in a field environment, maintaining state certification in this classification.

Emergency Operations Center (EOC) - A pre-designated facility established by an agency or jurisdiction to coordinate the overall agency or jurisdictional response and support to an emergency.

Emergency Operations Plan - The plan that each jurisdiction has and maintains for responding to appropriate hazards.

Emergency Response Provider - Any federal, state, or local emergency public safety, law enforcement, emergency responder, emergency medical (including hospital emergency facilities), and related personnel, agencies, and authorities. It is any organization responding to an emergency, or providing mutual aid support to such an organization, whether in the field, at the scene of an incident, or operations center.

Emergency stabilization - Planned actions to stabilize and prevent unacceptable degradation to natural and cultural resource, to minimize threats to life or property resulting from the effects of a fire, or to repair/replace/construct physical improvements necessary to prevent degradation of land or resources.

Emergency worker - (See: Administratively determined; Casual)

Emission - A release of combustion gases and aerosols into the atmosphere.

Emission factor (EFp) - The mass of particulate matter produced per unit mass of fuel consumed (pounds per ton, grams per kilogram).

Emission rate - The amount, or mass of smoke produced per unit of time. Education Note: For example: Emission Rate = Available Fuel x Burning Rate x Emission Factor.



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Emission reduction - A strategy for controlling smoke from prescribed fires that minimizes the amount of smoke output per unit area treated.

Emission standard - A general type of standard that limits the mass of a pollutant that may be emitted by a source. The most straightforward emissions standard is a simple limitation on mass of pollutant per unit time (e.g., pounds of pollutant per hour).

Empty weight - Weight of an aircraft/engine including the structure, powerplant, all fixed equipment, all fixed ballast, unusable fuel, undrainable oil, and total quantity of hydraulic fluid.

EMTB - Emergency medical technician – basic.

EMTI - Emergency medical technician – intermediate.

EMTP - Emergency medical technician – paramedic.

Energy release component (ERC) - The computed total heat release per unit area (British thermal units per square foot) within the flaming front at the head of a moving fire. (USFS)

Engine - (1) Any ground vehicle providing specified levels of pumping, water, and hose capacity but with less than the specified level of personnel. (2) An apparatus designed for fire attack. It is the most common vehicle in fire departments. This apparatus carries, hose and usually about 500+ gallons of water. It also has a fire pump. Education Note: Modern fire pumps can pump over 1500 GPM (Gallons Per Minute). These vehicles can also supply foam and usually carries 3-4 personnel. Some departments, especially in Canada, refer to these apparatus as “pumpers.”

Engine Company – (1) Any fire vehicle providing specified pump, water, hose, and a minimum of three firefighters. (NWCG) (2) A resource that includes an engine of a specific type. The type specifies tank capacity, pump rating, hose capacity and firefighters.

Engine crew – (1) Firefighters assigned to an engine. The Fireline Handbook defines the minimum crew makeup by engine type. (USFS) (2) Several personnel trained and supervised to respond to incidents using an engine. Typically, much smaller than a hand crew.

Engineer - The person who drives the fire engine or ladder truck. They can be known by several names: “driver,” “fire equipment operator” (FEO), “chauffeur” and others. The engineer is also responsible for all the equipment that is on the apparatus and making sure that it is clean and in good working condition. Education Note: Engineers also run the pumps, ladders, etc. when they are at a fire. If they are the driver of a truck, they are responsible for running the aerial device (ladder etc.) and other tools such as generators or extrication tools.

Entrapment - A situation where personnel are unexpectedly caught in a fire behavior-related, life-threatening position where planned escape routes or safety zones are absent, inadequate, or compromised. Education Note:

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An entrapment may or may not include deployment of a fire shelter for its intended purpose. These situations may or may not result in injury. They include “near misses.” (USFS)

Entrapment avoidance - A process used to improve the safety of personnel on the fireline, which emphasizes tools and tactics available to prevent being trapped in a burnover situation. This process includes appropriate decision making through risk management, application of LCES, use of pre-established trigger points, and recognition of suitable escape routes and safety zones.

Envelopment - Direct attack with multiple anchor points, that allows for multiple points of attack. Generally used as an engine tactic in the wildland urban interface.

Environment - The complex surroundings of an item or area of interest, such as air, water, natural resources, and their physical conditions (temperature, humidity).

Environmental Assessment (EA) – EAs were authorized by the National Environmental Policy Act (NEPA) of 1969. They are concise, analytical documents prepared with public participation that determine if an Environmental Impact Statement (EIS) is needed for a project or action. If an EA determines an EIS is not needed, the EA becomes the document allowing agency compliance with NEPA requirements. (USFS)

Environmental Impact Statement (EIS) – EISs were authorized by the National Environmental Policy Act (NEPA) of 1969. Prepared with public participation, they assist decision makers by providing information, analysis, and an array of action alternatives, allowing managers to see the probable effects of decisions on the environment. Generally, EISs are written for large-scale actions or geographical areas. (USFS)

Environmental lapse rate - The actual rate of decrease of temperature with elevation.

Environmental specialist - Person responsible to the planning section chief for collecting and analyzing environmental information about the incident area, determining environmental restrictions and requirements, and providing the information as an input to the incident action and to incident personnel as needed.

EOC - Emergency operations center.

Episode (pollution) - A condition of poor contaminant dispersion which may result in concentrations considered potentially harmful to health or welfare. Episodes may also occur during periods of fairly good dispersion if the source of air contaminants is extremely large.

Equilibrium moisture content (EMC) - Moisture content that a fuel particle will attain if exposed for an infinite period in an environment of specified constant temperature and humidity. When a fuel particle reaches equilibrium moisture content, net exchange of moisture between it and its environment is zero. (USFS)



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Equipment manager - The person responsible to the ground support unit leader for servicing, repairing, and fueling all apparatus and equipment on the incident, for obtaining transportation and scheduling its use, and for maintaining records of equipment service and use.

Equipment time recorder – The person responsible to the time unit leader for assisting all other units at the incident in properly maintaining a daily record of equipment use time, maintaining current records for charges and credits for fuel, parts, services, and commissary items for all equipment, and checking and closing all-time record forms before demobilization of equipment.

Equipment use fire - Fire caused by mechanical equipment other than railroad operations.

ERC - Energy release component.

Escape fire - An intentional fire ignited by a fire crew, usually in a grassland environment, to escape a dangerous situation.

Escaped fire - A fire, which has exceeded or is expected to exceed initial attack capabilities or prescription. (USFS)

Escape route – (1) A preplanned and understood route firefighters take to move to a safety zone or other low-risk area, such as an already burned area, previously constructed safety area, a meadow that won't burn, natural rocky area that is large enough to take refuge without being burned. When escape routes deviate from a defined physical path, they should be clearly marked (flagged). (2) A preplanned and understood route firefighters take to move to a safety zone or other low-risk area. When escape routes deviate from a defined physical path, they should be clearly marked (flagged).

Estimated time en route (ETE) - Term used in resource planning/following to estimate time spent between points.

Estimated time of arrival (ETA) - Term used in resource planning/following to estimate time of arrival at a point.

Estimated time of departure (ETD) - Term used in resource planning/following to estimate time of departure from a point.

ETA - Estimated time of arrival.

ETD - Estimated time of departure.

ETE - Estimated time en route.



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Evacuation - An organized, phased, and supervised withdrawal, dispersal, or removal of civilians from dangerous or potentially dangerous areas, and their reception and care in safe areas.

Evaluator - The individual who is qualified in the position being evaluated, or supervises the position being evaluated, having responsibility for observing task(s) being performed and documenting successful performance for agency certification or re-certification. Evaluator responsibilities must remain separate from the individual assigned as Trainer/Coach. (See: Agency certification; Re-Certification; Trainer/Coach)

Evaporation - The transformation of a liquid to its gaseous state; heat is released by the liquid during this process.

Event - A planned, non-emergency activity. ICS can be used as the management system for a wide range of events, e.g., parades, concerts, or sporting events.

Exempt/Nonexempt - Categories of employees as defined in the Fair Labor Standards Act (FLSA), who are either covered or exempted from coverage under the Act. Pay entitlements vary depending on the employee's FLSA status.

Exhaust primer - Device which uses the exhaust gas flow of an engine for priming a centrifugal pump.

Expanded dispatch - An organization needed to support an incident which expands along with the Incident Command System.

Expansion - The ratio of the volume of the foam in its aerated state to the original volume of the non-aerated foam solution.

Expert witness - Someone with sufficient skill, knowledge, or experience in each field capable of drawing inferences or reaching conclusions or opinions that an average person would not be competent to reach. The expert's opinion testimony should aim the judge or jury in their understanding of the fact at issue.

Exposure - (1) Property that may be endangered by a fire burning in another structure or by a wildfire. (2) Direction in which a slope faces, usually with respect to cardinal directions. (3) The general surroundings of a site with special reference to its openness to winds. (See: Aspect)

Exposure fire - Classification for a fire not originating in a building, but which ignites building(s). A fire originating in one building and spreading to another is classified under the original cause of fire.

Extend - To drop retardant in such a way that the load slightly overlaps and links a previous drop. "Extend your last drop."



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Extended attack - (1) Fires that go beyond three burning periods. (NWCG) (2) Situation in which a fire cannot be controlled by initial attack resources within a reasonable period. Committing additional resources within 24 hours after commencing suppression action will usually control the fire. (3) Suppression activity for a wildfire that has not been contained or controlled by initial attack or contingency forces and for which more firefighting resources are arriving, en route, or being ordered by the initial attack incident commander.

Extended attack incident - A wildland fire that has not been contained or controlled by initial attack forces and for which more firefighting resources are arriving, en route, or being ordered by the initial attack incident commander. Extended attack implies that the complexity level of the incident will increase beyond the capabilities of initial attack incident commander. (USFS)

Exterior fire protection - The protection of structures from the exterior, with no interior access or activity.

External load - A load that is carried or extends outside of the aircraft fuselage.

External payload - Maximum external stress load (in pounds) with full fuel and pilot in calm air at standard atmospheric temperature.

Extinguishing agent - Substance used to put out a fire by cooling the burning material, blocking the supply of oxygen, or chemically inhibiting combustion.

Extra burning period - For any fire which is neither contained nor controlled, any 24-hour period following the termination of the first burning period.

Extrication - The systematic and safe freeing or removal of persons who are trapped or pinned. This can be accomplished by highly technical means or may be as easy as opening a locked door.

Extreme fire behavior – (1) When a wildland fire is influenced by adverse winds, fuels, adverse topography, or any combination of the above. High rates of spread, spotting, and thermal outputs are associated with extreme fire behavior. (NWCG) (2) A level of fire characteristics that ordinarily preclude methods of direct control, usually involving high rate of spread, prolific crown fires or spotting, presence of fire whirlwinds, or a strong convection column. Education Note #1: An extreme fire behavior is difficult to predict because such fires behave erratically, sometimes dangerously. Education Note #2: “Extreme” implies a level of fire behavior characteristics that ordinarily precludes methods of direct control action. One or more of the following is usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment and behave erratically, sometimes dangerously. (See: Blowup; Fire storm; Flare-up)

Eyewitness - The person who sees evidence of criminal activity, actual commission of a crime or a criminal fleeing a crime scene.



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FAC - Fire adapted community.

Facilities Unit - A functional unit within the logistics section that provides the layout, activation, and management of all incident facilities. These facilities may include the incident base, feeding areas, sleeping areas, sanitary facilities, etc.

Facilities Unit Leader (FACL) - An ICS person who responsible for supervising the Facilities Unit. Reports to the Service Branch Director or Logistics Section Chief. (See: Facilities Unit)

Facility maintenance specialist - Person responsible to the base / camp manager for general maintenance of the base or camp, including provision of sleeping and sanitation facilities, lighting and electricity, and camp cleanliness.

FACL - Facilities unit leader.

Fahrenheit - A temperature scale on which 320°F denotes the temperature of melting ice, and 2,120°F the temperature of boiling water, both under standard atmospheric pressure.

Faller (Sawyer; Cutter) - A person who fells trees.

False alarm - A reported smoke or fire requiring no suppression; for example, brush burning under control, mill smoke, false smoke, etc.

FAR - Federal Aviation Regulation.

FAST - Firefighter Assist and Search Team.

FDUL - Food unit leader.

Federal Aviation Regulation (FAR) - Refers to the regulations governing all aviation activities of civil aircraft within the United States and its territories.

Federal Land Policy and Management Act (FLPMA) - Federal Land Policy and Management Act of 1976 (Public Law 94-570, 90 Stat. 2743, 43 USC 1701).

Female coupling - Coupling made to receive a male coupling of the same thread, pitch and/or diameter.



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Field Observer (FOBS) - Person responsible to the Situation Unit Leader for collecting and reporting information about an incident obtained from personal observations and interviews. Person responsible to the Situation Unit Leader for collecting and reporting information about an incident obtained from personal observations and interviews. An ICS person who is responsible for collecting and reporting situation information for an incident through personal observations and interviews and reports to the Situation Unit Leader. (See: Situation Unit)

Field test - A job-related test of work capacity designed for those with moderately strenuous duties. This test consists a two-mile hike with a 25-pound pack. A time of 30 minutes, the passing score for this test, approximates an aerobic fitness score of 40. (See: Work capacity test)

Fill tank - Large, portable tank from which helitankers can hover-fill.

Filling - An increase in the central pressure of a low. Counter-clockwise wind flow around the low usually decreases as filling occurs.

Final approach - Flight path in the direction of the landing along the extended runway center line from the base leg to the runway.

Final evaluator - The individual responsible for completing the position task book's verification statement once all tasks in the position task book have been completed and signed off. Only the evaluator on the final position performance assignment (the assignment in which all remaining tasks have been evaluated and signed off) will complete the verification statement recommending certification. (See: Position performance assignment; Position task book)

Final run - An air tanker is “on final” approach when it is online with the target, where it intends to make the drop on that pass. Final run also applies to cargo dropping.

Finance/Administration Section - The section responsible for all administrative and financial considerations on an incident. (See: Compensation/Claims Unit; Cost Unit; Procurement Unit; Time Unit)

Finance/Administration Section Chief (FSC1 or FSC2) - An ICS person who responsible for supervising the Finance/Administration Section. Reports to the Incident Commander and is a member of the General Staff. This position may have one or more deputies assigned. (See: Finance/Administration Section)

Fine fuel moisture - The probable moisture content of fast-drying fuels which have a timelag constant of 1 hour or less, such as, grass, leaves, ferns, tree moss, pine needles, and small twigs (0-1/4”).

Fine (Light) fuels – (1) A term expressing the moisture level (in percentage) found in fine fuels (such as grass). (NWCG) (2) Fast-drying dead or live fuels, generally characterized by comparatively high surface-area-to-volume ratio, which are less than 1/4-inch in diameter and have a timelag of one hour or less. These fuels (grass, leaves, needles, etc.) ignite readily and are consumed rapidly by fire when dry. (USFS) (See: Flash fuels)

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Fingers of a fire - The long narrow extensions of a fire projecting from the main body. (USFS; NWCG)

FIRDAT - Fire Data Manipulation Program. A routine of FireFamily that combines historical weather records with the equations of the NFDRS to produce frequency distributions of the NFDRS indexes and components.

Fire - Rapid oxidation, usually with the evolution of heat and light; heat fuel, oxygen, and interaction of the three.

Fire adapted community (FAC) - A human community consisting of informed and prepared citizens collaboratively planning and acting to safely co-exist with wildland fire.

Fire Agency - Official group or organization compelled and authorized under statutes or law to control fires within a designated area or upon designated lands. (See: Protecting Agency; Responsible Fire Agency)

Fire analysis (Hot line review) - Review of fire management actions taken on a specific fire, group of fires, or fire season in order to identify reasons for both effective and ineffective actions, and to recommend or prescribe ways and means of doing a more efficient job.

Fire behavior (n) - (1) The manner in which a fire reacts to the influences of fuel, weather and topography. (USFS) (2) The way a fire reacts to its fire environment (SAF 1990). (3) The way a fire reacts to the influences of fuel, weather, and topography. The term fire behavior is used to describe the magnitude, direction, and intensity of fire spread. The magnitude is measured as the velocity, in m/s, of the leading edge of the flaming portion of the fire. The direction is measured as the bearing of the leading edge of the fire and will vary from 0 to 360 degrees. Finally, the intensity is measured as the energy released from the fire per unit area, in J/m². A fire which spreads rapidly and releases a large amount of energy is sometimes referred to as a conflagration or firestorm. Fires burning through Southern California chaparral can display this type of behavior. Fires which spread rapidly, but with low intensity, are sometimes referred to as flashy. Fires burning through grass, which lacks the biomass of chaparral, are often described in this way. A fire which spreads neither rapidly nor with great intensity is referred to as a creeping fire. Typically, a fire spreading downslope without the assistance of the wind is described in this way. (Physics Department UCSB)

Fire behavior analyst - The person responsible to the planning section chief for establishing a weather data collection system and for developing fire behavior predictions based on fire history, fuel, weather, and topography.

Fire behavior forecast - Prediction of probable fire behavior, usually prepared by a fire behavior analyst, in support of fire suppression or prescribed burning operations. (USFS)

Fire behavior prediction model - A set of mathematical equations that can be used to predict certain aspects of fire behavior when provided with an assessment of fuel and environmental conditions.



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Fire behavior prediction system - A system that uses a set of mathematical equations to predict certain aspects of fire behavior in wildland fuels when provided with data on fuel and environmental conditions.

Fire behavior specialist – A person responsible to the Planning Section Chief for establishing a weather data collection system and for developing fire behavior predictions based on fire history, fuel, weather, and topography. (USFS)

Fire benefits - Fire effects with positive monetary, social, or emotional value or that contribute, through changes in the resource base, to the attainment of organizational goals.

Fire break – (1) An existing barrier, man-made or natural, that will stop or slow an oncoming wildland fire. (NWCG) (2) A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work. (USFS)

Fire bug – An arsonist, especially a repetitive firesetter.

Fire business - The characterization of fire occurrence in an area, described in terms of total number of fires and acres per year; and number of fires by time, size, cause, fire-day, large fire-day, and multiple fire-day.

Fire business thresholds - Values of one or more fire weather/fire danger indexes that have been statistically related to occurrence of fires (fire business). Generally, the threshold is a value, or range of values where historical fire activity has significantly increased or decreased.

Fire cache - A supply of fire tools and equipment assembled in planned quantities or standard units at a strategic point for exclusive use in fire suppression. (USFS)

Fire camp - Temporary camp established at large fires to provide food, rest, and other necessities to fire crews.

Fire cause - Agency or circumstance which started a fire or set the stage for its occurrence, source of a fire's ignition. For statistical purposes fires are grouped into broad cause classes. The nine general causes used in the U.S. are lightning, campfire, smoking, debris burning, incendiary, machine use (equipment), railroad, children, and miscellaneous.

Fire cause class - Any class into which wildland fires are grouped according to their origin.

Fire climate - Composite pattern of weather elements over time that affect fire behavior in each region.

Fire climax - Plant community maintained by periodic fires.

Fire concentration (complex) - (1) Generally, a situation in which numerous fires are burning in a locality. (2) More specifically, the number of fires per unit area or locality for a given period, generally a year.



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Fire control - Effective fire control and extinguishment require a basic understanding of the chemical and physical nature of fire. This includes information describing sources of heat energy, composition and characteristics of fuels, and environmental conditions necessary to sustain the combustion process.

Fire crew – (1) A general term for two or more firefighters organized to work as a unit. (2) An organized group of firefighters under the leadership of a crew leader or other designated official. (USFS)

Fire crew work formation - Standard crew arrangement used for fireline construction in direct or indirect attack; consists of line locator, line cutters, rakers, torch operators, and mop-up crew.

Fire damage - Detrimental fire effects expressed in monetary or other units, including the unfavorable effects of fire-induced changes in the resource base on the attainment of organizational goals.

Fire damage appraisal - Method of determining financial or other losses resulting from a fire.

Fire danger - Sum of constant danger and variable danger factors affecting the inception, spread, and resistance to control, and subsequent fire damage; often expressed as an index.

Fire danger continuum - The range of possible values for a fire danger index or component, given a set of NFDRS parameters and weather input.

Fire danger index - A relative number indicating the severity of wildland fire danger as determined from burning conditions and other variable factors of fire danger.

Fire danger rating - A fire management system that integrates the effects of selected fire danger factors into one or more qualitative or numerical indices of current protection needs.

Fire danger rating area - A geographic area of relatively homogenous climate, fuels and topography, tens of thousands of acres in size, within which the fire danger can be assumed to be uniform. The basic on-the-ground unit for which unique fire management decisions are made based on fire danger ratings. Weather is represented by one or more NFDRS weather stations.

Fire danger rating operating plan - A guide to collection, communication, and application of fire danger ratings at the local level.

Fire danger rating pocketcard for firefighter safety - A communication aid designed to help firefighters develop an awareness of the local fire situation by providing a visual reference to fire danger rating.

Fire danger rating system - The complete program necessary to produce and apply fire danger ratings, including data collection, data processing, fire danger modeling, communications, and data storage. (See: National Fire Danger Rating System)



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Fire day - Standard 24-hour period beginning at 1000 hours, during which most wildfires undergo a predictable speeding up and slowing down of intensity, depending primarily on the influence of weather and fuel factors.

Fire death - Fire casualty which is fatal or becomes fatal within one year of the fire.

Fire department - The department of a municipal government who is charges with the prevention and fire extinguishing activities.

Fire truck - (See: Fire engine)

Fire dependent - Plants and vegetation communities which have evolved adaptations such as a reliance on fire as a disturbance agent, protection as a species against the effects of wildland fire, or even a strengthening or enhancement by it.

Fire detection - Act or system of discovering and locating fires. Synonym: Detection.

Fire development - A function of many factors including fuel properties, fuel quantity, ventilation (natural or mechanical), compartment geometry (volume and ceiling height), location of fire, and ambient conditions (temperature, wind, etc.).

Fire discovery - The act of determining that a fire exists; does not include determining its location.

Fire District - (1) A rural or suburban fire organization, usually tax supported, that maintains fire companies and apparatus. It is also called a fire protection district. This is different from a district within a city or a District Chief. (See: District Chief) Education Note: A fire district is an established tax district. This may include several cities or towns. It may also be a rural area. You can almost think of this as a co-op. Many volunteer fire departments are set up as districts that serve several communities. But this is not always the case. There are some incredibly famous fire protection districts. Probably the most famous is LA County. The City of Los Angeles has its own fire department, but the rest of the county is under one huge fire department. Today, 57 cities contract with the Los Angeles County Fire Department which staffs a total of 163 engine companies, 31 truck companies, 79 paramedic units, and numerous other pieces of specialized apparatus. Many consider this a very efficient way of providing fire and rescue service. An example of NOT having a large fire district might be Dallas County in Texas. There are over 20 fire departments just in Dallas County. Every city has a different way of doing some things. This situation exists all over the country. Sometimes cities, to adequately protect its citizens, are forced to build fire stations within sight of another city's stations. A combined fire district would prevent this. Resources could be shared or spread more evenly. Unfortunately, cities are often reluctant to let go of their fire departments once they are established. <http://www.lacofd.org/>

Fire duty - Actual physical engagement in firefighting service as distinguished from staff work at headquarters or maintenance division; work at an individual fire done by an individual firefighter or by a company.



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Fire dynamics, about - The study of how chemistry, fire science, material science and the mechanical engineering disciplines of fluid mechanics and heat transfer interact to influence fire behavior. In other words, fire dynamics is the study of how fires start, spread and develop. Heat energy is a form of energy characterized by vibration of molecules and capable of initiating and supporting chemical changes and changes of state (NFPA 921). In other words, it is the energy needed to change the temperature of an object - add heat, temperature increases; remove heat, temperature decreases. Heat energy is measured in units of Joules (J); however, it can also be measured in Calories (1 Calorie = 4.184 J) and BTU's (1 BTU = 1055 J). Temperature is a measure of the degree of molecular activity of a material compared to a reference point. Temperature is measured in degrees Fahrenheit (melting point of ice = 32°F, boiling point of water = 212°F) or degrees Celsius (melting point of ice = 0°C, boiling point of water = 100°C).

Fire ecology - The study of the effects of fire on living organisms and their environment.

Fire edge - The boundary of a fire at a given moment.

Fire education - Activities to change behaviors and attitudes about fire ecology, wildland fire and the role of fire in natural resource management. Defines the purposes for actions that provide information about and improve understanding of wildland fire. (See: Prevention)

Fire effects - The physical, biological, and ecological impacts of fire on the environment.

Fire engine - Any of various large motor vehicles that carry firefighters and equipment to a fire and support extinguishing operations, as by pumping water.

Fire environment - The surrounding conditions, influences, and modifying forces of topography, fuel, and weather that determine fire behavior.

Fire flank – The sides of a wildland fire between the tail and the head. A fire flank can be identified with compass directions, left and right, hot, or cold. (NWCG)

Fire frequency - A general term referring to the recurrence of fire in each area over time.

Fire front - The part of a fire within which continuous flaming combustion is taking place. Unless otherwise specified, the fire front is assumed to be the leading edge of the fire perimeter. In ground fires, the fire front may be mainly smoldering combustion. (USFS)

Fire guard - A general term for a firefighter, lookout, patrol, prevention guard, or other person directly employed for prevention and/or detection and suppression of fires.

Fire hazard - A fuel complex, defined by volume, type condition, arrangement, and location, that determines the degree of ease of ignition and of resistance to control.



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Fire Hazard Index - A numerical rating for specific fuel types, indicating the relative probability of fires starting and spreading, and the probable degree of resistance to control; like burning index, but without effects of wind speed.

Fire hazardous areas - Those wildland areas where the combination of vegetation, topography, weather, and the threat of fire to life and property create difficult and dangerous problems.

Fire Information Retrieval and Evaluation System (FIRES) - A personal computer (PC) program that merges fire and weather/index files and allows plotting and analysis of fire occurrence and fire danger.

Fire injury - Injury suffered as the result of a fire that requires (or should require) treatment by a practitioner of medicine within one year of the fire, regardless of whether treatment was received.

Fire inspector - Fire prevention specialist or arson investigator.

Fire intensity – A general term relating to the heat energy released by a fire. (USFS)

Fire interval - The number of years between two successive fire events for a given area; also referred to as fire-free interval or fire-return interval.

Fire investigation - The process of determining the ignition source, materials first ignited, ignition factors, and party responsible for a fire.

Fire lane - Cleared path wide enough to permit single-lane vehicular access in a remote area.

Fire line – (1) The part of a control line that is scraped or dug down to mineral soil. (NWCG) (2) A linear fire barrier that is scraped or dug to mineral soil. (USFS)

Fire load - The number and size of fires historically experienced on a given unit over a given period (usually one day) at a given index of fire danger. (USFS)

Fire Load Index (FLI) - Numerical rating of the maximum effort required to contain all probable fires occurring within a rating area during the rating period.

Fire lookout - A person that keeps an eye for possible fire starts and conditions. They can work in a fire lookout tower or perform the duty as a role for a fire crew on the fireline.

Fire lookout tower - A structure located at a high vantage point to house and protect the person performing the duties of a fire lookout.

Fire management - Activities required for the protection of burnable wildland values from fire and the use of prescribed fire to meet land management objectives.



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Fire management area - One or more parcels of land having a common set of fire management objectives.

Fire management improvements - All structures built and used primarily for fire management, such as lookout towers, lookout cabins, telephone lines, and firebreaks, fuelbreaks, and roads to lookouts.

Fire management objective - Planned, measurable result desired from fire protection and use based on land management goals and objectives.

Fire management plan (FMP) - A plan which identifies and integrates all wildland fire management and related activities within the context of approved land/resource management plans. It defines a program to manage wildland fires (wildfire, prescribed fire, and wildland fire use). The plan is supplemented by operational plans, including but not limited to preparedness plans, preplanned dispatch plans, and prevention plans.

Education Note: Fire Management Plans assure that wildland fire management goals and components are coordinated.

Fire Management Unit (FMU) - A land management area definable by objectives, management constraints, topographic features, access, values to be protected, political boundaries, fuel types, major fire regime groups, etc. that set it apart from the characteristics of an adjacent FMU. The FMU may have dominant management objectives and pre-selected strategies assigned to accomplish these objectives.

Fire pack - A one-person unit of fire tools, equipment, and supplies prepared in advance for carrying on the back.

Fire perimeter – (1) The entire outer edge or boundary of a fire. (2) The entire length of the outer edge of the fire. (NWCG)

Fire planning - Systematic technological and administrative management process of designing organization, facilities, and procedures, including fire use, to protect wildland from fire.

Fire Planning Unit (FPU) - The geographic scope of the landscape defined for the fire management analysis. A Fire Planning Unit consists of one or more Fire Management Units. FPUs may relate to a single administrative unit, a sub-unit, or any combination of units or sub-units. FPUs are scalable and may be contiguous or non-contiguous. Education Note: FPUs are not predefined by agency administrative unit boundaries and may relate to one or more agencies. They may be described spatially.

Fire plotting map - A map used for determining the location of fires, commonly provided with an azimuth circle to facilitate location by cross bearings.

Fire plow - A heavy duty plowshare or disc plow usually pulled by a tractor to construct a fireline.

Fire potential - The likelihood of a wildland fire event measured in terms of anticipated occurrence of fire(s) and management's capability to respond. Fire potential is influenced by a sum of factors that includes fuel



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conditions (fuel dryness and/or other inputs), ignition triggers, significant weather triggers, and resource capability. (See: Ignition trigger; Resource capability; Significant weather trigger)

Fire presuppression - Activities undertaken in advance of fire occurrence to help ensure more effective fire suppression. Activities includes overall planning, recruitment and training of fire personnel, procurement and maintenance of firefighting equipment and supplies, fuel treatment and creating, maintaining, and improving a system of fuelbreaks, roads, water sources, and control lines.

Fire prevention - Activities such as public education, community outreach, law enforcement, engineering, and reduction of fuel hazards that are intended to reduce the incidence of unwanted human-caused wildfires and the risks they pose to life, property or resources.

Fire progress map - A map maintained on a large fire to show at given times the location of the fire, deployment of suppression forces, and progress of suppression.

Fire progression - The progress of the fire outwards from the point of origin.

Fire qualifications - Computerized interagency summary of fire suppression qualifications of listed personnel. Available information includes fire training record, fire experience record, and physical fitness testing score for everyone.

Fire rake - A rake with sharpened teeth instead of blades, for raking fire breaks. A fire rake is a McLeod tool.

Fire regime - Description of the patterns of fire occurrences, frequency, size, severity, and sometimes vegetation and fire effects as well, in each area or ecosystem. A fire regime is a generalization based on fire histories at individual sites. Education Note: Fire regimes can often be described as cycles because some parts of the histories usually get repeated, and the repetitions can be counted and measured, such as fire return interval. (See: Fire Regime Groups)

Fire regime current condition class - A qualitative measure classified into three classes describing the relative degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings. (See: Condition class)

Fire Regime Groups - A classification of fire regimes into a discrete number of categories based on frequency and severity. The national, coarse-scale classification of fire regime groups commonly used includes five groups: I - frequent (0-35 years), low severity; II - frequent (0-35 years), stand replacement severity; III - 35-100+ years, mixed severity; IV - 35-100+ years, stand replacement severity; and V - 200+ years, stand replacement severity. (See: Fire Regime)



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Fire report - An official record of a fire, generally including information on cause, location, action taken, damage, costs, etc., from start of the fire until completion of suppression action. These reports vary in form and detail from agency to agency.

Fire resistant tree - A species with compact, resin-free, thick corky bark and less flammable foliage that has a relatively lower probability of being killed or scarred by a fire than a fire sensitive tree. (See: Fire sensitive tree)

Fire resources - All personnel and equipment available or potentially available for assignment to incidents.

Fire retardant – (1) Any substance or chemical applied to wildland fuels to slow the rate of combustion or reduce flammability, generally expressed as long-term or short-term. Long-term retardants are generally chemical based, whereas short-term retardants are primarily thickened soapy water. (NWCG) (2) Any substance (except plain water) that by chemical or physical action reduces flammability of fuels or slows their rate of combustion. (See: Retardant slurry; AFFF; Foam)

Fire return interval - (See: Fire interval)

Fire risk - (1) The chance of fire starting, as determined by the presence and activity of causative agents. (2) A causative agent. (3) A number related to the potential number of firebrands to which a given area will be exposed during the rating day (National Fire Danger Rating System).

Fire scar - (1) A healing or healed injury or wound to woody vegetation, caused, or accentuated by a fire. (2) The mark left on a landscape by fire.

Fire scar analysis - Analysis of one or more fire scars to determine individual tree fire frequency or mean fire intervals for specified areas.

Fire season - (1) Period(s) of the year during which wildland fires are likely to occur, spread, and affect resources values sufficient to warrant organized fire management activities. (USFS) (2) A legally enacted time during which burning activities are regulated by federal, state, or local authority. (USFS)

Fire sensitive tree - A species with thin bark or highly flammable foliage that has a relatively greater probability of being killed or scarred by a fire. (See: Fire resistant tree)

Fire service - The organized fire protection service; its members, individually and collectively; allied organizations assisting protection agencies.

Fire severity - Degree to which a site has been altered or disrupted by fire; loosely, a product of fire intensity and residence time. (See: Burn severity)

Fire shelter - An aluminized tent offering protection by means of reflecting radiant heat and providing a volume of breathable air in a fire entrapment situation. Education Note: Fire shelters are carried as a safety tool,



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and as a last resort, they should only be used in life-threatening situations, as severe burns or asphyxiation can result.

Fire shelter deployment - The removing of a fire shelter from its case and using it as protection against fire.

Fire shirt - Distinctive yellow shirts made of Nomex or other lightweight materials of low combustibility, used as uniform PPE of wildland firefighters, and more recently available in other colors, such as red, khaki, blue, etc.

Fire shovel - A type of shovel specifically designed for use in constructing a fireline; has a tapered blade with both edges sharpened for scraping, digging, grubbing, cutting, and throwing.

Fire simulator - A training device that imposes simulated fire and smoke on a landscape image, for the purpose of instructing fire suppression personnel in different fire situations and fire suppression techniques.

Fire spread model - A set of physics and empirical equations that form a mathematical representation of the behavior of fire in uniform wildland fuels.

Fire storm - Violent convection caused by a large continuous area of intense fire. Often characterized by destructively violent surface indrafts, near or beyond the perimeter, and sometimes by tornado-like whirls. (USFS) (See: Blowup; Extreme Fire Behavior; Flare-up)

Fire suppressant - Any agent used to extinguish the flaming and glowing phases of combustion by direct application to the burning fuel.

Fire suppression - All work and activities connected with control and fire-extinguishing operations, beginning with discovery, and continuing until the fire is completely extinguished.

Fire suppression organization - (1) The personnel and equipment collectively assigned to the suppression of a specific fire or group of fires. (2) The personnel responsible for fire suppression within a specified area. (3) The management structure, usually shown in the form of an organization chart of the persons and groups having specific responsibilities in fire suppression.

Fire swatter - A fire tool that consists of a thick, flat piece of rubber on a long handle used to drag over or smother out flames of grass fires. (See: Flapper)

Fire tool cache - A supply of fire tools and equipment assembled in planned quantities or standard units at a strategic point for exclusive use in wildland operations.

Fire trail - An Australian firefighting term for a fire road, which is built specifically for access for “fire management purposes.”



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Fire trap - (1) An accumulation of highly combustible material, rendering firefighting dangerous. (2) Any situation in which it is highly dangerous to fight fire.

Fire treatment - The use of fire to accomplish a specified objective.

Fire triangle - Instructional aid in which the sides of a triangle are used to represent the three factors (oxygen, heat, fuel) necessary for combustion and flame production; removal of any of the three factors causes flame production to cease. (USFS)

Fire weather - Weather conditions which influence fire ignition, behavior, and suppression.

Fire weather forecast - A weather prediction specially prepared for use in wildland fire operations and prescribed fire.

Fire Weather Index (FWI) - A numerical rating in the Canadian fire danger rating system, based on meteorological measurements of fire intensity in a standard fuel type. (The standard fuel type is representative of jack pine and lodgepole pine.) Education Note: The FWI is comprised of three fuel moisture codes, covering classes of forest fuel of different drying rates, and two indices that represent rate of spread and the amount of available fuel.

Fire weather station - A meteorological station specially equipped to measure weather elements that have an important effect on fire behavior.

Fire weather watch - A watch that is issued to advise of conditions which could result in extensive wildland fire occurrence or extreme fire behavior, which are expected to develop in the next 12 to 48 hours, but not more than 72 hours. In cases of dry lightning, a fire weather watch may be issued for the next 12 hours. (See: Red flag warning)

Fire whirl - (1) A tornado-like vortex that forms from the stretching of vorticity due to the interaction of air flowing towards and upwards in a fire. (2) Spinning vortex column of ascending hot air and gases rising from a fire and carrying aloft smoke, debris, and flame. Fire whirls range in size from less than one foot to over 500 feet in diameter. Large fire whirls have the intensity of a small tornado.

Fire whirl (Whirlwind) - t

– A spinning, tornado-like vortex of ascending hot air, flame, smoke, and debris. Education Note: A fire whirlwind is one of the most destructive fire phenomena and can have the strength of a tornado.

Firebase - A computerized program utilized to analyze the fire workload and project the organization to adequately manage the workload for a given response area.



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Firebrand - Any source of heat, natural or human made, capable of igniting wildland fuels. Flaming or glowing fuel particles that can be carried naturally by wind, convection currents, or by gravity into unburned fuels.

Firebreak - A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work.

Firecast - A computerized set of “fire models” that are run during fire season at the operations coordination center on preselected locations to indicate possible fire spread from those points for that date.

FireCode - A unique code (alpha-numeric) assigned to wildland fires. One FireCode project number per fire is assigned for use by all five federal wildland firefighting agencies. Fire codes may be any combination of four-digit alpha-numeric characters. Each agency’s finance community incorporates the FireCode project number into the accounting code.

Fire-Day - In FireFamily Plus, a day with both a weather observation and at least one fire. (See: Large fire-day; Multiple fire-day)

FireFamily (fire data program) - A computer program that uses historical weather and fire data for fire planning. Its three major routines are FIRDAT, SEASON, and FIRINF.

FireFamily Plus - A software application that provides summaries of fire weather/danger climatology and occurrence for one or more weather stations extracted from NIFMID.

Firefighter - A trained person whose principal function is fire suppression.

Firefighting foam - The aerated solution created by forcing air into, or entraining air in water containing a foam concentrate by means of suitably designed equipment or by cascading it through the air at a high velocity. Foam reduces combustion by cooling, moistening, and excluding oxygen.

Firefighting forces - Qualified firefighters, together with their equipment and material, used to suppress wildland fires.

Firefighting Resources - All people and major items of equipment that can or potentially could be assigned to fires.

Firefighting Technology Implementation Program (FIRETIP) - A computer program through which the technology of FIREScope is transferred to areas outside southern California, where complex, multi-agency fires and other incidents commonly occur.

Firefinder map - A map, generally mounted on a wood or metal base, that is provided with an azimuth circle at the center of which is pivoted an alidade, and forms part of an Osborne Firefinder. (See: Osborne Firefinder)



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Fire-flood cycle - The greatly increased rate of water runoff and soil movement from steep slopes that may follow removal of the vegetative cover by burning.

Fireground - Operational area on which firefighters combat a fire.

FIRELAMP (Firelamp) - Fire and Land Management Planning. Computerized multi-resource model that simulates the effects that naturally caused prescribed fires have on the future production of natural resources such as timber, forage, wildlife, recreation, and water.

Fireline - The part of a control line that is scraped or dug to mineral soil. Also called fire trail. Fireline is working a fire, which is called being “on the fireline.” Education Note: A fireline may also refer to a “wet line” where water has been used to create a burn boundary in light fuels such as grass.

Fireline explosives (FLE) - Specially developed coils containing explosive powder that are detonated to create a fireline through ground fuels.

Fireline handbook - A small red booklet carried by U.S. firefighters on the firelines, as a quick reference on various firefighting topics.

Fireline intensity - (1) The product of the available heat of combustion per unit of ground and the rate of spread of the fire, interpreted as the heat released per unit of time for each unit length of fire edge. The primary unit is Btu per second per foot (Btu/sec/ft) of fire front. (2) The rate of heat release per unit time per unit length of fire front. Numerically, it is the product of the heat yield, the quantity of fuel consumed in the fire front, and the rate of spread.

FireModel - Computer program which with specified information (fuel, weather, topography) predicts an hourly rate of spread from a point of origin.

Fire-proofing - Removal or treatment of fuels to reduce the danger of fires igniting or spreading such as fire-proofing roadsides, campsites, structural timber. Protection is relative, not absolute.

FIRES - Fire Information Retrieval and Evaluation System.

FIRESCOPE (Firescope) - Firefighting Resources of California Organized for Potential Emergencies.

Education Note: A multi-agency coordination system designed to improve the capabilities of California's wildland fire protection agencies. Its purpose is to provide more efficient resources allocation and utilization, particularly in multiple or large fire situations during critical burning conditions.

Firesetter - A person who starts a fire, usually deliberately and maliciously.

Firesetting - A person who starts a fire, usually deliberately and maliciously.



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Firestorm - Extreme fire behavior indicated by widespread in-drafts and a tall column of smoke and flame, where added air increases fire intensity, creating runaway fire growth.

FIRE TIP - Firefighting Technology Implementation Program.

Firing out – (1) The act of setting fire to unburned fuels located between the control line and main fire in burning out operations. (2) The intentional setting on fire of fuels between the control line and the main body of fire in either a backfiring or burning-out operation. (NWCG)

Firing team – Experienced wildland firefighters and firing boss in charge of carrying out backfiring or burn-out function. (NWCG)

Firing technique - Any method or pattern of igniting a wildland area to consume the fuel in a prescribed pattern. E.g., heading or backing fire, spot fire, strip-head fire, and ring fire. (See: Ignition pattern)

First order fire effects (FOFE) - The effects that concern the direct or immediate consequences of fire, such as biomass consumption, crown scorch, bole damage, and smoke production. Education Note: First order effects form an important basis for predicting secondary effects such as tree regeneration, plant succession, and changes in site productivity, but these involve interaction with many other non-fire variables. (See: Second order fire effects)

First-in - Firefighters initially attacking a fire, usually the first to arrive at the fire scene.

Fix - A geographical position determined by visual reference to the surface, by reference to one or more radio navigational aids, by celestial plotting, or by any other navigational device.

Fixed tank - A device mounted inside or directly underneath an aircraft which can contain water or retardant for dropping onto a fire.

Fixed-point detection - Detection of fires from lookout towers or other semi-permanent locations as distinguished from roving ground patrols or aerial detection.

Flame - (1) A mass of gas undergoing rapid combustion, generally accompanied by evolution of sensible heat and incandescence. (2) Light given off by burning gasses during the combustion process.

Flame angle - Angle between the flame at the leading edge of the fire front and the ground surface, expressed in degrees.

Flame depth - The depth of the fire front.



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Flame height - The average maximum vertical extension of flames at the leading edge of the fire front. Occasional flashes that rise above the general level of flames are not considered. This distance is less than the flame length if flames are tilted due to wind or slope. (USFS)

Flame length - The distance between the flame tip and the midpoint of the flame depth at the base of the flame (generally the ground surface), an indicator of fire intensity.

Flame thrower - Device for throwing a stream of flaming liquid, used to facilitate rapid ignition during burn out operations on a wildfire or during a prescribed fire operation. Synonym: Terra Torch ® (See: Backfire torch; Burning torch; Drip torch)

Flaming combustion phase - Luminous oxidation of gases evolved from the rapid decomposition of fuel. This phase follows the pre-ignition phase and precedes the smoldering combustion phase, which has a much slower combustion rate. Education Note: Water vapor, soot, and tar comprise the visible smoke. Relatively efficient combustion produces minimal soot and tar, resulting in white smoke; high moisture content also produces white smoke.

Flaming front - That zone of a moving fire where the combustion is primarily flaming. Behind this flaming zone combustion is primarily glowing or involves the burning out of larger fuels (greater than about 3 inches in diameter). Light fuels typically have a shallow flaming front, whereas heavy fuels have a deeper front. (See: Fire front)

Flaming phase - That phase of a fire where the fuel is ignited and consumed by flaming combustion.

Flammability - The relative ease with which fuels ignite and burn regardless of the quantity of the fuels. Preferred to “inflammability.”

Flammable - Easily ignitable and capable of burning and producing flames. (See: Nonflammable)

Flammable liquid - A liquid generally with a flash point below 140F (60C) and a vapor pressure that does not exceed 40 PSI at 100°F (37.8°C).

Flank fire - A firing technique consisting of treating an area with lines of fire set into the wind which burn outward at right angles to the wind. Synonym: Lateral fire.

Flanking – Attacking a wildland fire by working the sides of the fire between the head and rear. (NWCG)

Flanking action - (See: Flanking fire suppression)

Flanking fire suppression - Attacking a fire by working along the flanks either simultaneously or successively from a less active or anchor point and endeavoring to connect two lines at the head.



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Flanks of a fire - The parts of a fire's spread perimeter that grow to the sides then run roughly parallel to the main direction of spread. Separated flank heads are extremely dangerous in steep terrain.

Flare-up - Any sudden acceleration in the rate of spread or intensity of a fire or part of a fire that is of relatively short duration and does not radically change existing control plans.

Flash fuels - Fuels such as grass, leaves, draped pine needles, fern, tree moss and some kinds of slash, which ignite readily and are consumed rapidly when dry.

Flashover - The transition phase in the development of a contained fire in which surfaces exposed to the thermal radiation, from fire gases in excess of 600°C, reaching ignition temperatures more or less simultaneously and fire spreads rapidly through the space. Education Note: A flashover is the most dangerous stage of fire development. A flashover is like a backdraft with the exception that the room is not closed or pressurized to the point of explosion. All the contents of the room have given off flammable gases that have been heated to their ignition point and a fire suddenly envelopes the room. From the outside you will often see the exiting smoke appear to instantly ignite.

FLE - Fireline explosives.

FLI - Fire load index.

FLIR - Forward looking infrared.

Flow conditioner - Chemical powders that will, in small quantities, tend to prevent other powders from caking and flocculating. Imparts free-flowing qualities to powder. Used with fire retardant chemicals.

FLPMA - Federal Land Policy and Management Act.

Fluid foam - A low expansion foam type with some bubble structure and moderate drain time, exhibiting properties of both wet and dry foam types, which is used for extinguishment, protection, and mop-up.

Fly ash - Particulate matter emitted by a fire and larger than 10 microns in diameter with a consequently short residence time in the atmosphere.

FMP - Fire Management Plan.

FMU - Fire Management Unit.

Foam - The aerated solution created by forcing air into, or entraining air in water containing a foam concentrate by means of suitably designed equipment or by cascading it through the air at a high velocity. Foam reduces combustion by cooling, moistening, and excluding oxygen. Education Note: Foam is mixture of water and a product that causes foam OR reduces the surface tension of the water. In the movies you think of airports "foaming the runways." Today, foam is use more often for structure fires and protecting exposures. The mixture



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of foam concentrate can be from as much 6% to as little as .3%. The lower concentrations are to cause the water to be able to penetrate burning substances by reducing the surface tension. This is especially valuable in situations where there is debris. It is difficult to extinguish bales of hay or tires without foam. A mixture of 3% might be used for a liquid hydrocarbon fire while 6% is used for burning alcohol. In the past it was only specialized apparatus that had the ability to pump foam at will. It is now common for fire engines to be able to provide foam at the flip of a switch in many communities. There is more than one type of foam.

Foam blanket - A layer of foam which forms an insulating and reflective barrier to heat and is used for fuel protection, suppression, and mop-up.

Foam concentrate - The concentrated foaming agent as received from the manufacturer which, when added to water, creates a foam solution; use only those approved for use in wildland fire situations by the authority having jurisdiction.

Foam generation - The foam production process of forcing air into or entraining air in foam solution, creating a mass of bubbles.

Foam line - A body of foam placed along areas to be protected from fire; also used as an anchor for indirect attack in place of hand-made fire line.

Foam solution - A low expansion foam type with no expansion, therefore lacking bubble structure, which is used for mop-up and flame knockdown.

Foam systems - The apparatus and techniques used to mix concentrate with water to make solution, pump and mix air and solution to make foam, and transport and apply foam. (Systems defined here include compressed air foam and nozzle aspirated.)

Foam type - A term used to describe the consistency and viscosity of low expansion foam as the combination of drain time and expansion.

Foaming agent - An additive that reduces the surface tension of water (producing wet water) causing it to spread and penetrate more effectively and which produces foam through mechanical means.

FOBS - Field observer.

Foehn wind - A warm, dry, and strong general wind that flows down into the valleys when stable, high pressure air is forced across and then down the lee slopes of a mountain range. The descending air is warmed and dried due to adiabatic compression producing critical fire weather conditions. Locally called by various names such as Santa Ana winds, Devil winds, North winds, Mono winds, etc.

FOFE - First order fire effects.



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Folding tank - A portable, collapsible water tank with a tubular frame. Tank capacities vary in size from 500-1500 gallons.

Foliage freeze indicators - Small branches, needles, and leaves on green vegetation that take on a windswept appearance and “freeze” in that position.

Food unit - Functional unit within the Logistics Section responsible for providing meals for incident personnel.

Food Unit Leader (FDUL) - An ICS person who responsible for supervising the Food Unit. Reports to the Service Branch Director or Logistics Section Chief. (See: Food Unit)

Forb - A plant with an herbaceous (soft, rather than permanent woody) stem, that is not a grass or grass-like plant.

Forced landing - Landing necessitated by failure of engines, systems, or components which makes continued flight impossible and which may not result in damage.

Forcible entry - (1) The act of gaining access to a structure or vehicle through means other than an open window or door. Frequently, firefighters must force open doors that are locked or blocked to enter a structure to search for victims & extinguish a fire. A wide variety of hand, power & hydraulic tools can be used for forcible entry. (2) Entering a structure of vehicle illegally by means or physical force, often characterized by prying doors and breaking windows.

Forecast area - Geographical area for which a fire weather forecast is specified.

Forest fire - Variously defined for legal purposes (e.g., the State of California Public Resources Code: uncontrolled fire on lands covered wholly or in part by timber, brush, grass, grain, or other flammable vegetation). Types of fires are ground, surface, and crown.

Forest Planning Language and Simulator (FORPLAN) - Computer program developed to facilitate the use of simulation for integrating many different resource management activities, including fire, into the land management planning process. Education Note: FORPLAN incorporates unique characteristics of previous systems, links numerous models and data bases, allows selection of variable resolution levels, and permits discrete time simulation of disturbances on plants, fuels, and animals.

Forest protection - Forestry branch concerned with prevention and damage control to forests from human actions (unauthorized fire, grazing, felling, smoke), pests and pathogens, and damage from storm, frost, and other climatic agents.

Forest residue - Accumulation in the forest of living or dead (mostly woody) material that is added to and rearranged by human activities such as harvest, cultural operations, and land clearing.



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Forest service - Generally understood to mean an agency of the U.S. Department of Agriculture. However, some states also use Forest Service, e.g., Colorado State Forest Service.

Forestry Weather Information System (FWIS) - A real time system which takes observations and forecasts supplied by NWS in coded numeric form, reformats that input by computer based algorithms, and distributes the reformatted information as numeric and worded diagnoses and forecasts for specialized users in localized areas.

FORPLAN - Forest Planning Language and Simulator.

Forward looking infrared (FLIR) - A handheld or aircraft mounted device designed to detect heat differentials and display their images on a video screen. FLIRs have thermal resolution like IR line scanners, but their spatial resolution is substantially less; commonly used to detect hot spots and flare-ups obscured by smoke, evaluate the effectiveness of firing operations, or detect areas needing mop-up.

Forward rate of spread - The speed with which a fire moves in a horizontal direction across the landscape, usually expressed in chains per hour or feet per minute.

Fragile fire cause objects - Objects that are easily susceptible to damage from heat and flame and can be easily damaged or destroyed by suppression action and/or during the evidence collection process. E.g., cigarette ash.

FPU - Fire planning unit.

FRA - Friction reducing agent.

Free burning - The condition of a fire or part of a fire that has not been slowed by natural barriers or by control measures.

Free drop - Cargo, not attached to a parachute that is dropped intentionally from an aircraft in flight.

Free flow (hydraulics) - Maximum water flow rate a fire pump will attain when there are no restrictions at the pump outlet or losses due to friction or head.

Freezing rain - Rain that freezes upon contact with objects on the ground.

Frequency of occurrence - A quantitative expression of the presence or absence of individuals of a species in a population; the ratio between the number of sample units that contain a species and the total number of sample units.

Friction layer - The layer of the atmosphere in which the frictional force of the earth's surface exercises an appreciable influence on winds.



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Friction loss - Pressure loss caused by the movement of water or solution against the interior surface of fire hose, pipe, or fittings; normally measured in pressure loss per length of hose or pipe.

Friction reducing agent (FRA) - Water soluble substance that reduces frictional drag of solutions and dampens turbulent flow while being pumped through pipe or hose.

Front (meteorology) - The boundary between two air masses of differing atmospheric properties.

Frost - Crystals of ice formed and deposited like dew, but at a temperature below freezing.

Frozen - In the 1978 version of NFDRS, the herbaceous stage when cold temperatures kill herbaceous plants and force woody fuels into dormancy.

FSC1/FSC2 - Finance/Administration Section Chief.

Fuel - Any combustible material, especially petroleum-based products, and wildland fuels.

Fuel arrangement - A general term referring to the spatial distribution and orientation of fuel particles or pieces.

Fuel bed - An array of fuels usually constructed with specific loading, depth, and particle size to meet experimental requirements; also, commonly used to describe the fuel composition.

Fuel bed depth - Average height of surface fuels contained in the combustion zone of a spreading fire front.

Fuel characteristics - Factors that make up fuels such as compactness, loading, horizontal continuity, vertical arrangement, chemical content, size and shape, and moisture content.

Fuel class - Part of the National Fire Danger Rating System (NFDRS). Group of fuels possessing common characteristics. Dead fuels are grouped according to 1-, 10-, 100-, and 1000-hour time lag, and living fuels are grouped as herbaceous (annual or perennial) or woody.

Fuel condition - Relative flammability of fuel as determined by fuel type and environmental conditions.

Fuel continuity - The degree or extent of continuous or uninterrupted distribution of fuel particles in a fuel bed thus affecting a fire's ability to sustain combustion and spread. This applies to aerial fuels as well as surface fuels.

Fuel depth - The average distance from the bottom of the litter layer to the top of the layer of fuel, usually the surface fuel. (See: Fuel bed depth)

Fuel dryness level (DL) - A quantitative measure of fuel moisture and receptability to ignition as determined by an accepted Fire Danger Rating System index that influences fire growth, intensity, or activity.



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Fuel group - An identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics. General fuel groups are grass, brush, timber, and slash.

Fuel load - The mass of combustible materials available for a fire usually expressed as weight of fuel per unit area (e.g., 20 tons per acre).

Fuel loading - The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area. This may be available fuel (consumable fuel) or total fuel and is usually dry weight.

Fuel management - Act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire, in support of land management objectives.

Fuel model - Simulated fuel complex for which all fuel descriptors required for the solution of a mathematical rate of spread model have been specified.

Fuel modification - Manipulation or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control (e.g., lopping, chipping, crushing, piling and burning). Synonym: Fuel treatment.

Fuel moisture - Percent water content of vegetation, an important factor in rate of spread, ranging from dead-fuel and fine-fuel moisture (FFM), of 10 percent or less, to live-fuel moisture (LFM), of 60 percent or more. FFM can be estimated by weighing calibrated wood sticks.

Fuel moisture analog - Device that emulates the moisture response of specific classes of dead fuels, constructed from organic or inorganic materials (e.g., half-inch ponderosa pine dowels representing ten-hour time lag fuels).

Fuel moisture content - The quantity of moisture in fuel expressed as a percentage of the weight when thoroughly dried at 212 degrees F.

Fuel moisture indicator stick - A specially prepared stick or set of sticks of known dry weight continuously exposed to the weather and periodically weighed to determine changes in moisture content as an indication of moisture changes in wildland fuels.

Fuel reduction - Manipulation, including combustion, or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control.

Fuel size class - A category used to describe the diameter of down dead woody fuels. Fuels within the same size class are assumed to have similar wetting and drying properties, and to preheat and ignite at similar rates during the combustion process.



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Fuel temperature - The temperature reading measured from a fuel stick fully exposed to sunlight, above a representative fuel bed, using one of two methods (within a 3/4-inch or across a 1/2-inch pine dowel).

Fuel tender - Any vehicle capable of supplying engine fuel to ground or airborne equipment.

Fuel treatment - Manipulation or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control (e.g., lopping, chipping, crushing, piling, and burning). Synonym: Fuel Modification.

Fuel type - An identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause a predictable rate of spread or resistance to control under specified weather conditions.

Fuelbreak - A natural or manmade change in fuel characteristics which affects fire behavior so that fires burning into them can be more readily controlled.

Fuelbreak system - A series of modified strips or blocks tied together to form continuous strategically located fuel breaks around land units.

Fuels wet flag - A one-character code indicating whether fine fuels or not are wet or dry.

Fugitive color - A coloring agent used in fire retardants that is designed to fade rapidly following retardant application to minimize the visual impacts of the retardant.

Full-thickness burn - A burn involving all the layer of the skin. Muscle layers below the skin and bones may also be damaged. Muscle layers below the skin and bones may also be damaged. Areas of the skin may be charred black or areas that are dry and white. A full-thickness burn is also known as a third-degree burn. (See: Partial-thickness burn; Superficial burn)

Fume - An airborne irritating, noxious, or toxic smoke, vapor, or any combination of these produced by a volatile substance or a chemical reaction.

Function - In ICS, function refers to the five major activities, command, operations, planning, logistics and finance/administration.

Fusee - A colored flare designed as a railway warning device, which has become widely used to ignite backfires and other prescribed fires.

FWI - Fire weather index.

FWIS - Forestry Weather Information System.



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GACC - Geographic Area Coordination Center.

Gallons per minute (GPM) - The measure of water flow in firefighting. It is used to measure the output of wildland and structural fire engines, pumps, hose streams, nozzles, hydrants, and water mains.

Gap - Weak or missed area in a retardant drop or in a fireline.

Gate valve - A valve with a gate-like disk that moves up and down at right angles to the flow when actuated by a stem screw and hand wheel. Gate valves are best for service that requires infrequent valve operation and where the disk is kept either fully open or closed.

GAWR - Gross axle weight rating.

Gear pump - Positive displacement pump which uses closely meshed gears to propel water when high pressures and low volumes are desired; can be used safely only with clear water-- suspended particles of soil or rocks can quickly wear the gears and reduce pressure and volume of water.

General fire weather forecast - A forecast, issued daily during the regular fire season to resource management agencies, that is intended for planning of daily fire management activities, including daily staffing levels, prevention programs, and initial attack on wildfires. Also called presuppression forecast. (See: Incident weather forecast; Spot weather forecast)

General origin area - The larger area where the fire started that is readily identifiable based on macro scale indicators and witness statements.

General Services Administration (GSA) - An agency of the United States Government that includes the Federal Supply Service, the Automated Data and Telecommunications Service, the Public Buildings Service, and the National Archives and Records Service.

General staff - The group of incident management personnel reporting to the Incident Commander. They may each have a deputy, as needed. The General Staff consists of: Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Finance/Administration Section Chief. (USFS)

General winds - Large scale winds caused by high- and low-pressure systems but generally influenced and modified in the lower atmosphere by terrain. (See: Local winds; Slope winds)



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Geographic area – (1) A political boundary designated by the wildland fire protection agencies, where these agencies work together in the coordination and effective utilization. (USFS) (2) A boundary designated by governmental agencies (wildland fire protection agencies) within which they work together for the interagency, intergovernmental planning, coordination, and operations leadership for the effective utilization of emergency management resources within their area. There are nine geographic areas. A listing of the areas can be found in the National Interagency Mobilization Guide, Chapter 20, section 21.1 along with listings of the Geographic Coordinating Areas and Geographic Area Coordination Centers. (See: Geographic Area Coordination Center; Geographic Coordinating Area)

Geographic Area Coordination Center (GACC) - The physical location of an interagency, regional operation center for the effective coordination, mobilization, and demobilization of emergency management resources. Listings of geographic coordination centers and their respective geographic coordinating areas can be found within the National Interagency Mobilization Guide, Chapter 20, Section 21.1 (See: Geographic Area; Geographic Coordinating Area)

Geographic coordinating area - A boundary designated by governmental agencies (wildland fire protection agencies), that may coincide with a geographic area boundary or may be a subdivision of a geographic area within which they work together coordinating, for the effective, mobilization and demobilization of emergency management resources within their area. Listings of geographic coordinating areas and geographic coordination centers can be found in the National Interagency Mobilization Guide, Chapter 20, Section 21.1. (See: Geographic Area; Geographic Area Coordination Center)

Geographic Information System Specialist (GISS) - The incident support person responsible for collecting and maintaining geospatial data and providing geospatial analysis and producing products (maps, etc.) in support of wildland fire incident planning. GISS is utilized in support of incident management, assigned to an ICS organization's Situation Unit.

Geostationary Operational Environmental Satellite (GOES) - The satellite used for data relay from NFDRS weather stations to ASCADS. (See: National Fire Danger Rating System)

Getaway time - Elapsed time from receipt of notification by the personnel charged with initiating suppression action to the departure of the first attack unit.

GISS - Geographic Information System Specialist.

Global positioning system (GPS) - A system of navigational satellites operated by the U.S. Department of Defense and available for civilian use. The system can track objects anywhere in the world with an accuracy of approximately 40 feet.



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Glowing combustion - The process of oxidation of solid fuel accompanied by incandescence. All volatiles have already been driven off, oxygen reaches the combustion surfaces, and there is no visible smoke. This phase follows the smoldering combustion phase and continues until the temperature drops below the combustion threshold value, or until only non-combustible ash remains.

Glowing combustion phase - The final phase of combustion following flaming and smoldering phases. (See: Glowing combustion)

GOES - Geostationary Operational Environmental Satellite.

Going fire - Any wildfire on which suppression action has not reached an extensive mop up stage. Synonym: Active fire.

GPM - Gallons Per Minute. Everything we do, about extinguishing fires with water, is about GPM. Education Note: When speaking about the amount of GPMs you will need to extinguish a theoretical fire or while formulating strategy on a working fire. A large apartment or warehouse fire may require thousands of gallons a minute to stop the spread and extinguish. A simple formula we might use is length X width = (area) X .33. Using this, a 6000 square foot structure would need a minimum of approximately 2000 GPM, per floor, to extinguish. This is more than the average fire hydrant or fire engine can provide.

GPS - Global Positioning System. A U.S.–owned utility that provides users with positioning, navigation, and timing (PNT) services. This system consists of three segments: the space segment, the control segment, and the user segment. The U.S. Air Force develops, maintains, and operates the space and control segments. For more information go to: <https://www.gps.gov/systems/gps/>

Gradient wind - (1) Wind flowing parallel to pressure isobars or contours with low pressure on the left of the observer in the Northern Hemisphere; velocity such that the pressure gradient, Coriolis, and centrifugal force acting in the area are in balance. (2) Wind created by differing barometric pressures between high- and low-pressure systems. (NWCG) Velocity is generally five to 30 miles per hour, and wind shifts are usually gradual as systems move and shift.

Grass fire - Any fire in which the predominant fuel is grass or grass-like.

Grass stem indicators - Remains of grass stems having different appearances based on the direction of fire spread.

Grass type - In NFDRS, the two grass types (annual, perennial) determine how seasonal drying of live herbaceous fuels is modeled.

Grass wagon - (Grass Truck; A-wagon; Booster; Brush truck; Patrol truck) A small vehicle, usually built on a pick-up truck frame. It carries a small amount of water and the main purpose is to fight grass fires. It will often



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pump and roll and will sometimes have a seat of some form, for the hose operator to use as they roll down a fire line.

Gravimetric - Of, or pertaining to, measurement by weight.

Gravity tank - Water storage tank for fire protection and sometimes community water service that supplies water by gravity pressure.

Greenbelt - Landscaped and regularly maintained fuel break, usually put to some additional use (e.g., golf course, park, playground). (See: Fuelbreak)

Greenhouse effect - The heating of the earth's surface by both atmospheric infrared radiation and incoming solar radiation.

Greenness factor - In the 1988 version of NFDRS, a code scaled from 0 to 20 representing the greenness of grasses and shrubs from near dead to maximum greenness. (See: Relative greenness)

Green-up - Green-up for the 1978 version of NFDRS model is defined as the beginning of a new cycle of plant growth. Green-up usually occurs once a year, except in desert areas where rainy periods can produce a flush of new growth more than once a year. Green-up may be signaled at different dates for different fuel models. Green-up should not be started when the first flush of green occurs in the area. Instead, the vegetation that will be the fire problem (represented by the NFDRS fuel model associated with the weather station) when it matures, and cures should be identified. Green-up should start when most of this vegetation starts to grow.

Grid ignition technique - Method of igniting prescribed fires in which ignition points are set individually at predetermined spacing with predetermined timing throughout the area to be burned. Also called point source ignition technique.

Gridding - To search for a small fire by systematically traveling over an area on parallel courses or gridlines.

Gross axle weight rating (GAWR) - The value specified by the manufacturer as the maximum allowable weight placed on an axle of a vehicle when fully equipped, including payload, fluids, and occupants.

Gross vehicle weight (GVW) - Actual vehicle weight, including chassis, body, cab, equipment, water, fuel, crew, and all other load.

Gross vehicle weight rating (GVWR) - The value specified by the manufacturer as the maximum allowable weight of a vehicle fully equipped, including payload, fluids, and occupants.

Gross weight - Total allowable weight of a loaded aircraft for takeoff or landing, adjusted for altitude differences.



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Ground effect - Reaction of a rotor downdraft against the ground surface, forming a “ground cushion” that increases lifting capability of that section of air.

Ground fire - Fire that consumes the organic material beneath the surface litter ground, such as a peat fire.

Ground fog - Fog which extends vertically to less than 20 feet.

Ground fuel - All combustible materials below the surface litter, including duff, tree or shrub roots, punkie wood, peat, and sawdust that normally support a glowing combustion without flame. (USFS)

Ground speed - Speed with which an aircraft traverses the ground over which it flies.

Ground support unit - Functional unit within the Logistics Section responsible for the fueling, maintaining, and repairing of vehicles, and the transportation of personnel and supplies.

Ground Support Unit Leader (GSUL) - An ICS person who responsible for supervising the ground support unit. GSUL reports to the Support Branch Director or Logistics Section Chief. (See: Ground support unit)

Ground truth - Verification at the site of what has been observed and/or measured from aircraft, satellites, other aerial platforms, aerial photographs, or maps.

Ground visibility - Horizontal visibility observed at the ground.

Group – (1) Resources assembled at an incident to perform a special function, not necessarily within a single geographic division. (NWCG) (2) Groups of firemen, supporting staff and equipment that are established and divided the incident into functional areas of operation. Groups are composed of resources assembled to perform a special function not necessarily within a single geographic division. Groups, when activated, are located between branches and resources in the operations section. (See: Division)

Growing season burning - Prescribed burning or wildland fire use during the photo- synthetically-active growing season, where live fuel moistures are relatively high and the dominant vegetation, grasses, forbs, and herbaceous vegetation are fully greened.

GSA - General Services Administration.

GSUL - Ground Support Unit Leader.

GTS - Gum thickened sulphate.

Guard unit - Geographic subdivision of a fire-protected area, delimiting the initial attack bounds of a single fire guard or fire crew.



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Gum thickened sulphate (GTS) - A dry chemical product which is mixed with water to form a fire-retardant slurry.

Gust - Rapid fluctuations in wind speed with a variation of 10 knots (11.5 mph) or more between peaks and lulls.

GVW - Gross vehicle weight.

GVWR - Gross vehicle weight rating.



Haines Index - An atmospheric index used to indicate the potential for wildfire growth by measuring the stability and dryness of the air over a fire. (USFS)

Halligan - An all-purpose steel prying bar used as a forcible entry tool. It looks like an adze with a point on the side. The story is that it was invented by a New York City firefighter named Huey Halligan. In some circles it is known as a “Pro Tool.” Often this tool is married together with an ax. Together with possibly some other forcible entry tools, this is often referred to as “Irons.”

Hand crew - Several individuals that have been organized and trained and are supervised principally for operational assignments on an incident, typically using hand tools. In the United States, an ordinary hand crew is 20 firefighters, including supervisors.

Hand line – A fireline constructed with hand tools.

Hang-up (tree falling) - A situation in which a tree is lodged in another, preventing it from falling to the ground.

Hard suction hose - Noncollapsible suction hose attached to a pump and used to draft water from a source lower than the pump. Customary hose sizes in wildland fire engines are 2 and 2-1/2 inches in diameter (51 and 64 mm).

HASP - Health and Safety Plan. A plan that is written for a specific clean up activity required under the HAZWOPER regulation. It is broad in its scope and incredibly detailed covering the specific operations that must be conducted.

Haz Mat - (See: HazMat)



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Haz mat team member - Those employees or firemen trained to respond to an emergency response involving hazardous substances and who will assume an aggressive role in stopping the release.

Haz Mat Unit - (See: HazMat Unit)

Hazard - Any real or potential condition that can cause injury, illness or death of personnel, or damage to, or loss of equipment or property.

Hazard abatement - The process of controlling and eliminating hazards (NIOSH).

Hazard and risk assessment - The process of determining the hazards of a particular materials and interjecting action that will be taken.

Hazard assessment (human health exposure) - (1) The identification of hazards on the job and the establishment for determining what to do to eliminate or control hazards. (2) Assess hazards to determine risks. Assess the impact of each hazard in terms of potential loss, cost, or strategic degradation based on probability and severity. (3) Determination of factors controlling the likely effects of a hazard such as the dose-effect and dose-response relationships, variations in target susceptibility, and mechanism of toxicity. (4) The process of determining whether exposure to an agent can cause an increase in the incidence of a particular adverse health effect (e.g., cancer, birth defect) and whether the adverse health effect is likely to occur in humans. (EPA) (See: Hazard fuel; Risk)

Hazard categorizing (Haz-Cat) - Field analysis that can be performed by appropriate trained personnel working at an emergency response site.

Hazard category - The division of criteria within each hazard class, such as oral acute toxicity includes five hazard categories and flammable liquids include four hazard categories. These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally (OSHA).

Hazard characterization - Potential adverse health effects attributable to a specific environmental agent, the mechanisms by which agents exert their toxic effects, and the associated dose, route, duration, and timing of exposure (EPA).

Hazard class - The nature of the physical, health or environmental hazard, e.g., flammable solid carcinogen, oral acute toxicity (OSHA).

Hazard Class 1 - Explosives, including: 1.1 mass explosion hazard; 1.2 projectile hazard; 1.3 minor blast/projectile/fire; 1.4 minor blast; 1.5 insensitive explosives; and 1.6 very insensitive explosives.

Hazard Class 2 - Compressed gases, including: 2.1 flammable gases; 2.2 non-flammable compressed; and 2.3 poisonous.



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Hazard Class 3 - Flammable liquids, including: Flammables having a flashpoint below 141°F; and Combustibles having a flashpoint 141° to 200°F.

Hazard Class 4 - Flammable solids including: 4.1 flammable solids; 4.2 spontaneously combustible; and 4.3 dangerous when wet.

Hazard Class 5 - Oxidizers and organic peroxides, including: 5.1 Oxidizers; 5.2 Organic peroxide.

Hazard Class 6 - Toxic materials, including: 6.1 Material that are poisonous; 6.2 Infectious agents.

Hazard Class 7 - Radioactive material, including: Radioactive I; Radioactive II; and Radioactive III.

Hazard Class 8 - Corrosive material, including: agents that are destructive to human skin; agents that can corrode steel at a rate of 0.25 inches per year.

Hazard Class 9 - Miscellaneous, including: Any material that presents a hazard during shipment but does not meet the definition of the other classes.

Hazard communication - The title of the OSHA regulation that is sometimes known as the Employee Right-To-Know rule. It requires employers to make information available to employees on all hazardous substances in the workplace to which they may be exposed.

Hazard Communication Standard (HCS) (HazCom) - (1) A U.S. OSHA standard requiring all employers to inform employees of the hazard of substances in the workplace and the steps necessary to avoid harm. (2) An OSHA regulation that requires chemical manufacturers, suppliers, and importers to assess the hazards of the chemicals they make, supply, or import, and to inform employers, customers, and workers of these hazards through a Material Safety Data Sheet (USEPA). For more information go to:

http://www.ilpi.com/msds/osha/1910_1200_APP_E.html (See: General duty clause; MSDS)

Hazard determination - The process of evaluating available scientific evidence to determine if a chemical is hazardous pursuant to the HCS. This evaluation identifies both physical hazards (e.g., flammability or reactivity) and health hazards (e.g., carcinogenicity or sensitization). The hazard determination provides the basis for the hazard information that is provided in SDS, labels, and employee training. Education Note: Hazard determination does not involve an estimation of risk. The difference between the terms hazard and risk is often poorly understood. Hazard refers to an inherent property of a substance that can cause an adverse effect. Risk, on the other hand, refers to the probability that an adverse effect will occur with specific exposure conditions. Thus, a substance will present the same hazard in all situations due to its innate chemical or physical properties and its actions on cells and tissues. However, considerable differences may exist in the risk posed by a substance, depending on how the substance is contained or handled, personal protective measures used, and other conditions that result in or limit exposure. This document addresses only the hazard determination



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process, and will not discuss risk assessment, which is not performed under the OSHA Hazard Communication Standard (HCS).

Hazard evaluation - (1) Establishment of a qualitative or quantitative relationship between hazard and benefit, involving the complex process of determining the significance of the identified hazard and balancing this against identifiable benefit. (2) A component of risk assessment that involves gathering and evaluating data on the types of health injury or disease (e.g., cancer) that may be produced by a chemical and on the conditions of exposure under which injury or disease is produced. (EPA) Education Note: A hazard evaluation may subsequently be developed into a “risk evaluation.”

Hazard (Hazardous) fuel - A fuel complex defined by kind, arrangement, volume, condition, and location that presents a threat of ignition and resistance to control.

Hazard map - A map of the area of operations that shows all the known aerial hazards, including but not limited to power lines, military training areas, hang gliding areas, etc.

Hazard pay - A salary differential that compensates employees for exposure to hazards in the course of their duties.

Hazard reduction - (1) Any treatment of a hazard that reduces the threat of ignition and fire intensity or rate of spread. (USFS) (2) Precautionary controlled and managed fire lit during cooler and/or wetter weather to reduce the available fuel load. (3) Any treatment of living and dead fuels that reduces the potential spread or consequences of fire. Education Note: A hazard reduction is sometimes incorrectly called a backburn.

Hazardous areas - Those wildland areas where the combination of vegetation, topography, weather, and the threat of fire to life and property create difficult and dangerous problems.

Hazardous materials - (1) Substances that are identified, classified, and regulated in the Code of Federal Regulations, Title 49, and Hazardous Materials Regulations 175. (2) A substance or material which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce and which has been so designated.

HazMat (Haz Mat; Hazmat) - An abbreviation for a hazardous material. Any substance or material that could adversely affect the safety of the public, handlers, or carriers during transportation.

HazMat Unit (Haz Mat Unit; Hazmat unit) - An abbreviation for Hazardous Materials Response Unit. With today’s complex and high technology world, many departments have invested resources and money to responding to such emergencies. Most of us would be surprised, if not alarmed to learn the many types and dangers associated with chemicals and products in our communities. Typically, one department in a region will have a HazMat unit and through mutual aid agreements other departments will support and share that unit.



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Haze - A sufficient concentration of atmospheric aerosols to affect a visible attenuation of light and measurable reduction in visual range. The aerosol particle diameter is near the wavelength of visible light, optimizing the light scattering efficiency of the particles.

Haze meter - An instrument for measuring the dependable range of distance at which a standard smoke column can be detected by the unaided eye under existing haze conditions.

HCWN - Helicopter manager.

Head fire - A fire spreading or set to spread with the wind. Synonym: Advancing fire.

Head of a fire – (1) The side of the fire having the fastest rate of spread. (USFS) (2) The most active part of a wildland fire. (NWCG) (3) The most rapidly spreading portion of a fire's perimeter, usually to the leeward or up slope. Education Note: The head of a fire may have multiple heads if there are separated flanking fires.

Head pressure - Pressure due to elevation of water. Equals 0.433 pounds per square inch (PSI) per foot of elevation. (Approximately 0.5 PSI is required to lift water 1 foot in elevation)

Heading - The compass direction in which the longitudinal axis of the aircraft points.

Headlamp - Flashlight, ordinarily worn by firefighter on the front of the helmet.

Heat - Temperatures higher than that of the normal atmosphere, produced by the process of burning or oxidation.

Heat content - The net amount of heat that would be given off if fuel burns when it is “absolutely dry,” noted as Btu per pound of fuel.

Heat low - An area of low pressure caused by intense heating of the earth's surface. High surface temperature causes air to expand and rise, resulting in low atmospheric pressure and induces a weak inflow of air at the surface. Air which rises in a heat low is “very dry” so clouds seldom form. Rising air above a heat low produces a warm upper level high and results in a net outflow of air aloft. Heat lows remain practically stationary over areas which produce them.

Heat of combustion - The heat energy resulting from the complete combustion of a fuel, expressed as the quantity of heat per unit weight of fuel. The high heat of combustion is the potential available, and the low heat of combustion is the high heat of combustion minus several losses that occur in an open system (primarily heat of vaporization of moisture in the fuel).

Heat per unit area - Total amount of heat released per unit area as the flaming front of the fire passes, expressed as Btu/square foot; a measure of the total amount of heat released in flames.

Heat probe - A scientific-based apparatus used to detect and measure heat.



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Heat release rate - (1) Total amount of heat produced per unit mass of fuel consumed per unit time. (2) The amount of heat released to the atmosphere from the convective-lift fire phase of a fire per unit time. Education Note: The rate at which fire releases energy; this is also known as power. HRR is measured in units of Watts (W), which is an International System unit equal to one Joule per second. Depending on the size of the fire, HRR is also measured in Kilowatts (equal to 1,000 Watts) or Megawatts (equal 1,000,000 Watts).

Heat transfer - Process by which heat is imparted from one body to another, through conduction, convection, and radiation.

Heat transfer, about - A major factor in the ignition, growth, spread, decay, and extinction of a fire. It is important to note that heat is always transferred from the hotter object to the cooler object - heat energy transferred to an object increases the object's temperature, and heat energy transferred from an object decreases the object's temperature.

Heat trough - A “heat low” which is elongated in shape. A heat trough is also called a heat low; thermal low; and a thermal trough.

Heat value - The total heat energy released during combustion, usually published as units of heat energy produced per unit mass of oven-dry fuel consumed.

Heat yield - The heat of combustion corrected for various heat losses, mainly the presence of moisture in the fuel. To a “very close” approximation, the quantity of heat per pound of fuel burned that passes through a cross section of the convection column above a fire that is burning in a neutrally stable atmosphere. Heat yield is also known as “low heat of combustion.”

Heavy equipment transport - Any ground vehicle capable of transporting a dozer, tractor, or other heavy piece of equipment. The trailer transporting a vehicle is also known as a “lowboy.”

Heavy fuels - Fuels of large diameter such as snags, logs, large limb wood, which ignite and are consumed more slowly than flash fuels. Heavy fuels ignite slowly and burn slow but hot. (USFS; NWCG) Education Note: Heavy fuels are sometimes referred to as “coarse fuels.”

Heavy ignition source - Objects that will tend to settle or burrow under the surface of the materials first ignited because of either weight or temperature. Such as welding slag, exhaust particles, large metal fragments, etc.

HEB1/HEB2 - Helibase manager.

HECM - Helicopter crewmember.

Height - The vertical measurement of vegetation from the top of the crown to ground level.

HELB - Helicopter boss.



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Held line - All control line that still contains the fire when mop-up is completed. Excludes lost line, natural barriers not backfired, and unused secondary lines.

Helibase – (1) The main location within the general incident area for parking, fueling, maintenance, and loading of helicopters. It is usually located at or near the incident base. (USFS) (2) A location within the general incident area for parking, fueling, maintenance, and loading of helicopters. (NWCG)

Helibase crew - A crew of individuals who may be assigned to support helicopter operations.

Helibase Manager (HEB1 or HEB2) - An ICS person who is responsible for controlling helicopter take-offs and landings at a helibase, managing helibase assigned helicopters, supplies, fire retardant mixing and loading and reports to the Air Support Group Supervisor.

Helibase Radio Operator (HERO) - This is an ICS person that are responsible for maintaining radio communications between incident assigned helicopters and helibases, and Takeoff and Landing Coordinator and reports to the Helibase Manager.

Helibucket - Specially designed bucket carried by a helicopter like a sling load and used for aerial delivery of water or fire retardants.

Helicopter - An aircraft that depends principally on the lift generated by one or more rotors for its support in flight. Synonym: Rotorcraft.

Helicopter Boss (HELB) - An individual assigned to an agency helicopter to supervise assigned crew members, oversee the loading and unloading of personnel and/or cargo, and ensure that agency policies and procedures governing helicopter operations are followed.

Helicopter Coordinator (HLCO) - This is an ICS position that are responsible for coordinating tactical and logistical helicopter missions at the incident and reports to the Air Tactical Group Supervisor. This position can be airborne or ground-based with one or more assigned to an incident, depending on the number and type of missions to be accomplished.

Helicopter Crewmember (HECM) - An individual assigned to an agency or call-when-needed helicopter to support helicopter operations.

Helicopter Manager (HCWN) - An individual assigned to a call-when-needed (CWN) helicopter to serve as helicopter boss, administer contracts, and verify CWN helicopter and pilot qualifications. (See: Helicopter boss)

Helicopter tender - A ground service vehicle capable of supplying fuel and support equipment to helicopters.

Helicopter timekeeper - An ICS person who is responsible for keeping time for helicopters assigned to the helibases and reports to the helibase radio operator.



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Heliport - A permanent facility for the operation of helicopters which has been built to FAA standards and which is marked on aeronautical charts. Natural resource agencies refer to agency heliports as permanent helibases.

Helipumper - Lightweight portable pump developed for transport by helicopter.

Helispot – (1) A temporary landing spot for helicopters. (USFS) (2) A natural or improved takeoff and landing area intended for temporary or occasional helicopter use, typically in remote areas without other access.

Helispot Manager (HESM) - An ICS person who is responsible for controlling helicopter take-offs and landings at a helispot, managing helispot assigned helicopters, supplies, fire retardant mixing and loading and reports to the helibase manager.

Helitack - (1) A fire crew trained to use helicopters for initial attack, and to support large fires through bucket drops and the movement of personnel, equipment, and supplies. (2) The utilization of helicopters to transport crews, equipment, and fire retardants or suppressants to the fireline during the initial stages of a fire. (USFS)
Education Note: The term also refers to the crew that performs helicopter management and attack activities. Another primary function of helitack is jumper support and retrieval.

Helitack crew - A crew of firefighters specially trained and certified in the tactical and logistical use of helicopters for fire suppression. (USFS)

Helitack foreman - A supervisory firefighter trained in the tactical use of helicopters for fire suppression.

Helitank - Specially designed tank, generally of fabric or metal, fitted closely to the bottom of a helicopter and used for transporting and dropping suppressants or fire retardants.

Helitanker - A helicopter equipped with a fixed tank, Air Tanker Board certified, capable of delivering a minimum of 1,100 gallons of water, foam, or retardant.

Helitorch - An aerial ignition device hung from or mounted on a helicopter to disperse ignited lumps of gelled gasoline. Used for backfires, burnouts, or prescribed burns. (See: Aerial ignition device; Delayed aerial ignition devices; Ping-pong ball system; Plastic sphere dispenser)

Herb - A plant that does not develop woody, persistent tissue but is relatively soft or succulent and sprouts from the base (perennials) or develops from seed (annuals) each year. Includes grasses, forbs, and ferns.

Herbaceous fuel moisture - In NFDRS, a calculated value representing the approximate moisture content of the live herbaceous vegetation in the rating area expressed as a percentage of the oven dry weight of the sample. (See: Woody fuel moisture)

Herbaceous stage - The modeled condition of herbaceous vegetation (pre-green, green-up, transition, cured, frozen) for the 1978 version of NFDRS.

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HERO - Helibase radio operator.

HESM - Helispot manager.

Hidden fire scar - Fire scar in a tree resulting from fire injury to the cambium without destruction of the overlying bark and therefore not readily discernible.

Higbee cut - Removal of the first (i.e., outside) thread of a female or male coupling to prevent crossing or mutilation of threads. Dimpled rocker lug on female coupling indicates beginning of Higbee cut.

HIGE - Hovering in ground effect.

High expansion - Foam with an expansion between 201:1 and 1000:1.

High fire risk day - A day when an ignition trigger and/or significant weather trigger and an appropriate fuel dryness level combine to create conditions that historically have resulted in a significant fire event for a area. (See: Fuel dryness level; Ignition trigger; Significant fire event; Significant weather trigger)

High pressure fog - Small capacity spray jet produced at “very high” pressures (greater than 250 psi, the normal maximum pressure for standard ground tankers) and discharged through a small hose with a gun-type nozzle.

Historical weather station - A weather station that is no longer in service for which access to archived observations is still available in NIFMID.

HLCO - Helicopter coordinator.

Holding actions – (1) All actions taken to stop the spread of fire. (2) Planned actions required to achieve wildland prescribed fire management objectives. These actions have specific implementation timeframes for fire use actions but can have less sensitive implementation demands for suppression actions. (USFS)

Holding forces - (See: Holding resources)

Holding orbit - A predetermined maneuver which keeps an aircraft within a specified airspace while awaiting further orders.

Holding resources - Resources assigned to do all required fire suppression work following fireline construction but generally not including extensive mop up. (USFS)

Holdover fire - A fire that remains dormant for a considerable time. Also called sleeper fire.

Home assessment - Evaluation of a dwelling and its immediate surroundings to determine its potential to escape damage by an approaching wildland fire. Includes the fuels and vegetation in the yard and adjacent to



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the structure, roof environment, decking and siding materials, prevailing winds, topography, fire history, etc., with the intent of mitigating fire hazards and risks.

Home unit - The designated agency or entity providing contracted resources that employs the individual who is actively pursuing a position performance assignment (completion of a position task book). (See: Position Performance Assignment; Position Task Book)

Hose clamp - Crimping device for stopping the flow of water in a hose.

Hose lay – (1) Arrangement of connected lengths of fire hose and accessories on the ground, beginning at the first pumping unit and ending at the point of water delivery. (USFS) (2) Connecting sections of fire hose together from the fire pump to the fire location with designated sections of line controlled by use of water. (NWCG)

Hose pack - A general term covering all types of hose configurations a person would carry to deploy.

Hose rack - Item for storing drying fire hose.

Hose reel - A rotating drum used for winding booster hose (normally) for storing and dispensing. (See: Booster reel)

Hose thread - The specific dimensions of screw thread employed to coupled fire hose and equipment. American National Standards (NH) have been adopted for fire hose couplings threads in 3/4, 1-1/2, 2-1/2, 3-1/2, 4, 5, and 6-inch sizes.

Hose vacuum - A small pneumatic vacuum generator that removes air from the inside of a fire hose making it smaller and firm, it is therefore easier to pack and takes up less space.

Hose washer - Device for cleaning the exterior of fire hose.

Hoseline Tee (Hoseline “T”) - A fitting that may be installed between lengths of hose to provide an independently controlled outlet for a branch line.

Hotspot - A particularly active part of a fire. (USFS)

Hotspotting – (1) Reducing or stopping the spread of fire at points of particularly rapid rate of spread or special threat, generally the first step in prompt control, with emphasis on first priorities. (2) Checking the spread of fire at points of more rapid spread or special threat. Is usually the initial step in prompt control, with emphasis on first priorities.



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Hotshot crew – (1) A highly trained fire crew used mainly to build fireline by hand. (USFS) (2) Intensively trained fire crew used primarily in hand line construction “Type-1.” The crew is trained and organized primarily to travel long distances from fire to fire as needed rather than serving only one geographic location.

Hover - A stationary in-flight condition for helicopters when no directional flight is achieved.

Hover Ceiling - Highest altitude above sea level at which a helicopter can hover at maximum computed gross weight. It is generally specified whether the quoted hover ceiling refers to hovering in ground effect (HIGE) or hovering out of ground effect (HOGE).

Hover hook-up - Attaching of a cargo lead line to a hovering helicopter.

Hoverfill - The process by which a helicopter fills a helibucket while hovering above the water source.

Hovering in ground effect (HIGE) - The situation in which a helicopter is hovering sufficiently close to the ground to achieve added lift because of “ground cushion.” The HIGE ceiling, for a given gross weight, thus is greater than the HOGE (Hovering out of ground effect) ceiling.

HRSP - Human resource specialist.

Human resource specialist (HRSP) - An individual having responsibility for assisting incident personnel and agency administrators with human resource, civil rights, and inappropriate behavior concerns. HRSP solicits involvement from the appropriate incident authorities to resolve human resource, civil rights, and inappropriate behavior issues informally, quickly, legally, and at the lowest impacted level.

Human-caused fire - Any fire caused directly or indirectly by person(s).

Human-caused risk - Part of the National Fire Danger Rating System (NFDRS). A model for predicting the average number of reportable human-caused fires from a given ignition component value.

Human-caused risk scaling factor - Part of the National Fire Danger Rating System (NFDRS). Number relating human-caused fire incidence to the ignition component in a fire danger rating area. It is based on three to five years of fire occurrence and fire weather data that adjusts the prediction of the basic human-caused fire occurrence model to fit local experience.

Humidity - General term referring to the moisture content of the atmosphere. (See: Relative humidity)

Humus – A layer of decomposed organic matter on the forest floor beneath the fermentation layer and directly above the soil. It is that part of the duff in which decomposition has rendered vegetation unrecognizable and mixing of soil and organic matter is underway. (See: Duff; Litter)



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Hurst tool – A tool that is often referred to as “The Jaws of Life.” There are several manufacturers of similar devices, but many departments use the Hurst brand and will refer to theirs as “The Hurst Tool”, “The Jaws”, or simply as part of their “extrication tools,” etc.

Hydrophobicity - Resistance to wetting exhibited by some soils, also called water repellency. The phenomenon may occur naturally or may be fire induced. It may be determined by water drop penetration time, equilibrium liquid-contact angles, solid-air surface tension indices, or the characterization of dynamic wetting angles during infiltration.

Hygrothermograph - Recording instrument combining, on one paper record, the variation of dry-bulb temperature and relative humidity as a function of time.



IA - Initial attack.

IAF - Initial attack fire.

IAIC - Initial Attack Incident Commander.

IAP - Incident Action Plan.

IARR - Interagency Resources Representative.

IAS - Indicated airspeed.

IBA - Incident Business Advisor.

ICP - Incident Command Post.

ICS - Incident Command System.

ICT1, ICT2, ICT3, ICT4, or ICT5 - Incident Commander, levels of.

ID - Inside diameter.

Identification run - Dry run over the target area by the lead plane to indicate an airtanker’s flight path and target, while the air tanker pilot is observing.

IFPL - Industrial Fire Precaution Level.



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IFR - Instrument Flight Rules Conditions.

Igniter - A pyrotechnic device specifically designed to initiate burning of a fuel mixture or propellant.

Ignition component - Part of the National Fire Danger Rating System (NFDRS). A rating of the probability that a firebrand will cause an actionable fire.

Ignition energy - Quantity of heat or electrical energy that must be absorbed by a substance to ignite and burn.

Ignition factor - The conditions, subsequent actions, and sequence of events that bring a competent ignition source into contact with the materials first ignited. Also referred to as the cause of the fire.

Ignition method - The means by which a fire is ignited, such as hand-held drip torch, helitorch, and backpack propane tanks.

Ignition pattern - The way a prescribed fire is ignited. The distance between ignition lines or points and the sequence of igniting them is determined by weather, fuel, topography, firing technique, and other factors which influence fire behavior and fire effects.

Ignition probability - Chance that a firebrand will cause an ignition when it lands on receptive fuels. Synonym: Ignition index.

Ignition time - Time between application of an ignition source and self-sustained combustion of a fuel.

Ignition trigger - A causative agent for wildland fire. For example, human or lightning.

ILS - Instrument Landing System.

IMET - Incident Meteorologist.

IMI - Interactive Multimedia Instruction.

IMI interactivity levels - Standards to which IMI products are developed conforming to interactivity level(s) which are appropriate for the instructional design, strategy, media, content, and course specifications. (See: IMI Level 1 Interactivity; IMI Level 2 Interactivity; IMI Level 3 Interactivity; Interactive Multimedia Instruction)

IMI Level 1 Interactivity (training) - The lowest level of courseware development. It is normally a knowledge familiarity lesson, provided in a linear format (one idea after another). Use Level 1 to introduce an idea or concept, or to familiarize. Provide minimal interactivity by using selectable screen icons that are inserted into the linear, or almost linear, flow of the courseware. Allow the student little or no control of the sequence of instructional media presented, including simple developed graphics, clip art, customer provided video and audio segments (clips). Make use of typical input/output peripherals throughout the lesson. (See: Interactive multimedia instruction)

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IMI Level 2 Interactivity (training) - The recall of more information than a level 1 and allows the student more control over the lesson's scenario through screen icons and other peripherals, such as light pens or touch screens. Typically, level 2 is used for non-complex operations and maintenance lessons. Simple emulations or simulations are presented to the user. As an example, the user is requested to rotate switches, turn dials, make adjustments, or identify and replace a faulted component as part of a procedure. This also may include simple to standard developed graphics, and/or clip art, and video and audio clips. (See: Interactive multimedia instruction)

IMI Level 3 Interactivity (training) - The recall of more complex information (compared to levels 1 and 2) and allows the user an increased level of control over the lesson scenario through peripherals such as light pen, touch screen, track ball, or mouse. Video, graphics, or a combination of both is presented simulating the operation of a system, subsystem, or equipment to the user. The lesson scenario training material typically is complex and involves more frequent use of peripherals to affect a transfer of learning. Operation and maintenance procedures are normally practiced with level 3 scenarios and students may be required to alternate between multiple screens to keep pace with the lesson material. Multiple software branches (two to three levels) and rapid response are provided to support remediation. Emulations and simulations are an integral part of this presentation. This may also include complex developed graphics, and/or clip art, and video and audio clips. (See: Interactive multimedia instruction)

Impeller - Rotating part of a centrifugal pump which imparts energy to the liquid to be moved. For shearing purposes, the impeller is on a rotating shaft within the body of liquid.

Implementation plan - The design and definition of all the activities, resources, limitations, and contingencies required for successful wildland fire management.

Impulse - A term used in weather primarily to describe a weak disturbance that does not necessarily have an associated storm center or surface low. The disturbance usually does not create severe weather and is frequently associated with a marine air push.

IMSA - Incident Medical Specialist Assistant.

IMSM - Incident Medical Specialist Manager.

IMST - Incident Medical Specialist Technician.

Incendiary - A burning compound or metal used to produce intense heat or flame, like a bomb.

Incendiary device - Contrivance designed and used to start a fire.

Incendiary fire – (1) A fire that is deliberately ignited when the person knows that the fire should not be ignited. An incendiary fire is not necessarily a fire that meets the legal definition of an arson fire. (2) A wildland fire willfully set by anyone to burn wildland or property not owned or leased by this person. (NWCG)



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Incident - An occurrence either human-caused or natural phenomenon, that requires action or support by emergency service personnel to prevent or minimize loss of life or damage to property and/or natural resources.

Incident action plan (IAP) - Contains objectives reflecting the overall incident strategy and specific tactical actions and supporting information for the next operational period. The plan may be oral or written. When written, the plan may have several attachments, including incident objectives, organization assignment list, division assignment, incident radio communication plan, medical plan, traffic plan, safety plan, and incident map. (USFS) Education Note: An IAP was formerly known as a shift plan. (See: Action plan)

Incident base - Location at the incident where the primary logistics functions are coordinated and administered. (Incident name or other designator will be added to the term Base.) The incident command post may be collocated with the base. There is only one Base per incident.

Incident Action Plan (IAP) – A response plan which contains objectives for the overall incident strategy and specific control actions for the next operational period of an incident. (NWCG)

Incident Business Advisor (IBA) - Liaison and advisor to the Agency Administrator or Area Commander and works directly for the Agency Administrator or Area Commander. Serves as a bridge to the Agency Administrator, Incident Management Team, and other incident support functions.

Incident Command Post (ICP) - Location at which primary command functions are executed. The ICP may be collocated with the incident base or other incident facilities. (USFS)

Incident Command System (ICS) – (1) The combination of facilities, equipment, personnel, procedure, and communications operating within a common organizational structure, with responsibility for the management of assigned resources to effectively accomplish stated objectives pertaining to an incident. (USFS) (2) A standardized on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents, without being hindered by jurisdictional boundaries. Education Note: The ICS was first developed to provide a command structure to manage large wildfires in the United States, now widely used by many emergency management agencies.

Incident Commander (ICT1, ICT2, ICT3, ICT4, or ICT5) – (1) Individual responsible for the management of all incident operations at the incident site. (USFS) (2) An ICS person where this commander is responsible for overall management of the incident and reports to the Agency Administrator for the agency having incident jurisdiction. This position may have one or more deputies assigned from the same agency or from an assisting agency(s). (3) The officer in charge of the overall management of the incident. He or she is responsible for building management organization based on a span of control and incident complexity. There is only one incident commander per incident. (NWCG)

Incident Communications Center (ICC) - The location of the communications unit and the message center.

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Incident Communications Manager (INCM) - An ICS position where the manager is responsible for providing incident dispatch services and for receiving and transmitting radio and telephone messages to and among incident assigned personnel and reports to the Communications Unit Leader. (See: Communications Unit)

Incident Communications Technician (COMT) - An ICS position where the technician is responsible for the programming, tracking, installation, and maintenance of radio and telephone electronic communication equipment and system design for an incident, and reports to the Communications Unit Leader. (See: Communications Unit)

Incident Management Team (IMT) - The incident commander and appropriate general or command staff personnel assigned to manage an incident. (USFS)

Incident Medical Specialist Assistant (IMSA) - The medical specialist assists the IMS manager in managing the IMS program and provides direct emergency medical and occupational health care to incident personnel according to the protocols of their IMS program. Frequently, the IMSA may manage a remote camp medical unit.

Incident Medical Specialist Manager (IMSM) - This medical specialist manages the IMS program on the incident and works for the medical unit leader (MEDL) if one is present. The IMS may also be a MEDL. This person must have successfully completed IMS assignments as an ISMT and IMSA, and the IMS training within their home region.

Incident Medical Specialist Program - An incident-based program to care for emergent and minor medical as well as common occupational health care problems of incident personnel. This program may be deployed to Type I and Type II incidents. Currently, this program is only available in three regions: Northwest (R6), Northern Rockies (R1) and Alaska (R10). In Alaska, the program is known as the Firemedic.

Incident Medical Specialist Technician (IMST) - This medical specialist provides direct emergency medical and occupational health care to incident personnel according to the protocols of their IMS program and works under the supervision of the IMS manager or IMS assistant.

Incident Meteorologist (IMET) - A specially trained meteorologist who provides site specific weather forecasts and information at an incident. The individual works under the direction of the fire behavior analyst and the planning section chief. (See: All Hazards Meteorological Response System; Micro-Remote Environmental Monitoring System)

Incident objectives - Statements of guidance and direction necessary for the selection of appropriate strategy(ies), and the tactical direction of resources. Incident objectives are based upon agency administrator's direction and constraints. Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed. (USFS) Education Note: In addition, incident

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objectives must be achievable and measurable, yet flexible enough to allow for strategic and tactical alternatives.

Incident organization - Resources, together with a complement of overhead personnel, calculated to be sufficient to provide fire efficient incident management.

Incident overhead - All supervisory positions described in the Incident Command System.

Incident qualifications card - A card issued to persons showing their incident management and trainee qualifications to fill specified fire management positions in an incident management organization.

Incident Support Organization (ISO) - Includes any off-incident support provided to an incident. Examples would be agency dispatch centers, airports, mobilization centers, etc.

Incident weather forecast - A special weather forecast for a specific incident prepared by a meteorologist on site at or near the incident area. (See: General fire weather forecast; Spot weather forecast)

Incident with potential - Wildland fire-related mishap that results in serious or non-serious injuries involving multiple personnel, near accident (which would have resulted in a serious injury or fatality), or substantial loss of property (less than \$250,000). Education Note: The mishap may be so complex and fraught with operational discrepancies that it has the potential to produce an accident, serious injury, or fatality given a similar environment or set of circumstances that existed at the time of the incident. (See: Near miss)

INCM - Incident Communications Manager.

Increaser - Increasing coupling used on hose, pump, or nozzles to permit connection of a larger size of hose.

Increment - Any resource or grouping of resources on which individual status is maintained.

Incremental drop - Air tanker drop in which tank doors are opened in sequence so that fire retardant cascades somewhat continuously.

Independent action - Fire suppression activities by other than regular fire suppression organizations or a fire cooperator.

Independent crown fire - A fire that advances in the tree crowns alone, not requiring any energy from the surface fire to sustain combustion or movement. Also called running crown fire.

Indian pump - Water vessel carried on a person's back, either a rigid can or collapsible bag, with a hose and telescoping squirt pump. Contains 5 US gal and is used on hot spots and during mop up. An Indian pump is also known as a bladder bag (if collapsible), piss pump, or Fedco.



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Indicated airspeed (IAS) - The speed of an aircraft as shown on its pitot static airspeed indicator. Calibrated to reflect standard atmosphere adiabatic compressible flow at sea level, uncorrected for airspeed system errors.

Indicator - Visual remains at a fire scene revealing the fire's progress and action.

Indicator categories - Classification of indicators into a variety of categories based on how they are formed and the types of material they are found on.

Indirect attack – (1) A method of attack in which the control line is located along a natural barrier, firebreak, creek, river, or paved road. This attack method may be used in conjunction with backfiring. (NWCG) (2) A method of suppression in which the control line is located some considerable distance away from the fire's active edge. Education Note: An indirect attack is generally done in the case of a fast-spreading or high-intensity fire and to utilize natural or constructed firebreaks or fuelbreaks and favorable breaks in the topography. The intervening fuel is usually backfired; but occasionally the main fire can burn to the line, depending on conditions.

Indirectly visible area - Ground, or the vegetation growing thereon, that is not directly visible to a fixed-point lookout but lies at not more than a specified depth (commonly 300 feet, 91 meters) below the lookout's line of sight.

Inductor - A control mechanism that allows a regulated quantity of foam concentrate to be introduced into the main hose line.

Industrial Fire Precaution Level (IFPL) - An application of fire danger rating to support regulation of contractors involved in land management activities for fire prevention purposes in the Pacific Northwest.

Industry crew - Fire crew composed of mill, forestry, or construction workers.

Infrared (IR) - A heat detection system used for fire detection, mapping, and hotspot identification. (See: Thermal Imagery)

Infrared detection – The use of heat sensing equipment, known as Infrared Scanners, for detection of heat sources that are not visually detectable by the normal surveillance methods of either ground or air patrols. (USFS)

Infrared Groundlink (IR) - A capability using a special mobile ground station to receive air-to-ground IR imagery at an incident.

Infrared (IR) detector - A heat detection system used for fire detection, mapping, and hotspot identification.

Inhibition - Process of extinguishing fire using an agent that interrupts the chemical reactions in the combustion process.



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Inhibitor - Any agent which retards a chemical reaction.

Initial action - The actions taken by the first resources to arrive at a wildfire or wildland fire use incident. Initial actions may be size up, patrolling, monitoring, holding action or aggressive initial attack.

Initial attack (IA) – (1) The actions taken by the first resources to arrive at a wildfire to protect lives and property and prevent further extension of the fire. The attack is usually done by trained and experienced crews and takes place immediately after size-up. (USFS) (2) A planned response to a wildfire given the wildfire’s potential fire behavior. The objective of initial attack is to stop the fire and put it out in a manner consistent with firefighter and public safety and values to be protected. (3) The first-alarm assignment (resources and personnel) dispatched to a wildland incident. (NWCG)

Initial attack crew - Specially trained and equipped fire crew for initial attack on a fire.

Initial attack fire (IAF) - Fire that is generally contained by the attack unit’s first dispatched, without a significant augmentation of reinforcements, within two hours after initial attack, and full control is expected within the first burning period.

Initial Attack Incident Commander (IAIC) - The incident commander at the time the first attack forces commence suppression work on a fire.

Initial response - Resources initially committed to an incident.

Inmate crew - Any fire crew composed of prison inmates or wards.

Inside diameter (ID) - The internal diameter of a tube, conductor, or coupling, as distinguished from its OD (Outside Diameter). Fire hose sizes are classified by a nominal internal diameter.

In-stand wind - Wind speed within a stand at about eye level.

Instrument Flight Rules Conditions (IFR) - Weather conditions below the minimum for flight under Visual Flight Rules and therefore requiring the observance of instruments inside the aircraft for controlling flight; generally considered to be less than 1000' AGL and 3 miles distant. (See: Visual Flight Rules Conditions)

Instrument landing system (ILS) - System for airplane landing in which the pilot is guided by radio beams.

Instrument shelter - Naturally or artificially ventilated structure, constructed to specifications and used to shield weather measuring instruments from direct sunshine and precipitation.

Interactive multimedia instruction (IMI) - A group of predominantly interactive, electronically delivered training. IMI products include instructional software and software management tools used in support of instructional programs. Education Note: IMI products are teaching and management tools and may be used in combination or individually. Used individually, not all IMI products can be considered interactive, multimedia,

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or instructional. However, IMI products, when used in combination with one another, are interactive, multimedia, and instructional. IMI technology is one of the primary technologies to be used in distance learning. (See: IMI Interactivity Levels)

Interagency Resources Representative (IARR) - An individual who may be assigned to or requested by an incident to serve as the sending unit's representative to oversee the care and treatment of crews, overhead, and equipment assigned to an incident.

Interchangeable course - A course developed by an interagency, all-hazard subject matter expert group containing the same learning objectives and content as an NWCG developed course. Education Note: Interchangeable course do not require equivalency determination by a using agency and may have multiple course codes and/or numbers. These courses will be incorporated into IQCS/IQS and credit will be given for the NWCG course.

Interface zone - Where urban firefighting meets wildland firefighting. Structures at the edges of wildlands are threatened and require skills and equipment of both disciplines.

Intermittent smoke - Smoke which becomes visible only at intervals.

Internal load - Load carried inside the fuselage structure of an aircraft.

Internal payload - Allowable aircraft cabin load, in pounds, with full fuel and pilot in calm air at standard atmosphere.

Into the black - Moving from outside the fire front to inside the burned area, which is sometimes the safest place to be in a flare-up, such as behind the fire, if possible, to traverse the flames.

Inventoried resources - Assigned resources which have checked in at the incident.

Inversion – (1) Atmospheric inversion. The departure from the usual increase or decrease with altitude of the value of an atmospheric property. In fire management usage, nearly always refers to an increase in temperature with increasing height. Also, the layer through which this departure occurs (also called inversion layer.) The lowest altitude at which the departure is found is called the base of the inversion. (2) A weather term used to describe when, in a given parcel of air, the air temperature increases with altitude. (NWCG) (See: Atmospheric inversion; Atmospheric stability; Stable layer of air)

INVF - Wildland Fire Investigator.

IPT - Iron pipe thread.

IR - Infrared.

IRGL - Infrared ground link.

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Iron pipe thread (IPT) - A tapered thread standard that is used for connecting various sizes of rigid pipe. This standard may be referred to as tapered iron pipe thread (TIPT), National pipe thread (NPT), iron pipe thread (IPT), or iron pipe standard thread (IPS). Education Note: With tapered thread, the threads and pipe sealant perform the seal at the connection. This is opposed to straight thread connectors which use a gasket to form the seal.

Island - An unburned area within a fire perimeter.

ISO - Insurance Service Office. A for profit organization that provides statistical information on insurance risk. For more information go to: <http://www.iso.com/> Education Note: For many years the "ISO Rating" had a large impact on most fire departments. The ISO (PPC) rating is from 10 - 1. With "1" being the best. At one time, almost, all insurance companies calculated rates based upon the ISO rating. For many years homeowner insurance premiums were calculated using something called the "ISO / PPC" System. (Insurance Service Office / Public Protection Classification) A few states had their own rating system, such as the "Key-Rate" system) but even this accomplished the same thing. Around 1990 the last remaining state adopted the ISO/PPC system. But just as the last remaining state was getting used to the ISO system and all its various inspection idiosyncrasies, State Farm and some other insurance companies tossed it out in some states.

Isobar - A line connecting points of equal atmospheric pressure on a weather map.

Isotherm - A line connecting points of equal temperature on a weather map.

Isothermal layer - Layer through which temperature remains constant with elevation.

I-Zone - An area that, in relation to wildland/urban fire, has a set of conditions that provides the opportunity for fire to burn from wildland vegetation to the home/structure ignition zone. (See: Urban interface; Wildland urban interface)



Jettison - Disposing of cargo, fuel, water or retardant overboard to lighten an aircraft or to improve its stability.

JIC - Joint Information Center.

JIS - Joint Information System.

Job hazard analysis (JHA) – (1) This is an analysis of a project, which is completed by staff to identify hazards to employees and the public. It identifies hazards, corrective actions, and the required safety equipment to ensure public and employee safety. (USFS) (2) A job hazard analysis identifies hazards associated with work projects and worksites and identifies protective equipment or modified work procedures needed.

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Joint information center (JIC) - A facility established as the central point of contact for news media and interest parties to coordinate incident information activities at the scene of the incident. Public information officials from all participating federal, state, and local agencies should collocate at the JIC.

Joint information system (JIS) - A system that integrates incident information and public affairs into a cohesive organization designed to provide consistent, coordinated, timely information during crisis or incident operations.

Jump spot - Selected landing area for smokejumpers. (USFS)

Jump suit - Approved protection suit worn for smokejumping.

Jurisdiction - The range or sphere of authority. Public agencies have jurisdiction at an incident related to their legal responsibilities and authority for incident mitigation. Jurisdictional authority at an incident can be political/geographical (e.g., city, county, state, or federal boundary lines), or functional (e.g., police department, health department, etc.). (See: Multijurisdictional incident)

Jurisdictional Agency - The agency having land and resource management responsibility for a specific geographical or functional area as provided by federal, state, or local law.



KBDI - Keetch-Byram Drought Index.

Keetch-Byram Drought Index (KBDI) - An estimate (0-800) of the amount of precipitation (in 100ths of inches) needed to bring the top 8 inches of soil back to saturation. Education Note: A value of 0 is complete saturation of the soil, a value of 800 means 8.00 inches of precipitation would be needed for saturation. In the 1988 version of NFDRS, outputs of KBDI are commonly used to adjust live and dead fuel loadings. (See: Drought Index)

Kindling point - Lowest temperature at which sustained combustion can be initiated for a specified substance. Also called ignition temperature.

Knock down (Knockdown) - To reduce the flame or heat on the more vigorously burning parts of a fire edge. (USFS) This usually done by cooling with dirt, water or other retardant.

Knot - Nautical miles per hour, equal to 1.15 mph.



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L/RMP - Land/Resource Management Plan.

LACES - Firefighter safety mnemonic for “Lookouts,” “Anchor points,” “Communications,” “Escape routes,” and “Safe zones.”

Ladder fuels - (1) Fuels which provide vertical continuity between strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease. Ladder fuels help initiate and assure the continuation of crowning. (USFS) (2) Flammable vegetation that helps a ground fire move into the canopy.

Ladder pipe - The process of pumping water to a nozzle mounted on an aerial ladder. This can be a ladder with plumbing built in or it can be the process of laying hose on the ladder and attaching it to a nozzle and the rungs.

LAL - Lightning Activity Level.

Land occupancy fire - Fire started because of land occupancy for agricultural purposes, industrial establishment, construction, maintenance and use of rights-of-way, and residences, except equipment use and smoking.

Land use plan - A set of decisions that establish management direction for land within an administrative area; an assimilation of land-use-plan-level decisions developed through the planning process regardless of the scale at which the decisions were developed.

Land/Resource Management Plan (L/RMP) - A document prepared with public participation and approved by an agency administrator that provides general guidance and direction for land and resource management activities for an administrative area. Education Note: The L/RMP identifies the need for fire’s role in an area and for a specific benefit. The objectives in the L/RMP provide the basis for the development of fire management objective and the fire management program in the designated area.

Lapse rate - Change of an atmospheric variable (temperature unless specified otherwise) with height.

Large aircraft - Aircraft in which maximum certified gross weight at take-off exceeds 12,500 pounds.

Large fire - (1) For statistical purposes, a fire burning more than a specified area of land, such as 300 acres. (USFS) (2) A fire burning with a size and intensity such that its behavior is determined by interaction between its own convection column and weather conditions above the surface. (USFS)



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Large fire-day - In FireFamily Plus, a day with both a weather observation and at least one large (as defined by the user) fire. (See: Fire-day; Multiple fire-day)

Lateral fire - Rate or spread and intensity of a fire usually falling somewhere in between advancing and backing with spread lateral to the main direction of fire travel. A lateral fire is also known as a “flanking fire”.
Synonym: Flank fire.

LC - Liquid concentrate.

LCES - Lookout(s), Communication(s), Escape Route(s), and Safety Zone(s).

LCMS - Learning Content Management System.

LDH - Large diameter hose. A hose that usually is 5 inches in diameter. Using this hose, large volumes of water may be transported, under relatively low pressure. Many departments have converted to LDH from 3 inch. Some may carry both on their apparatus to give them flexibility and options. You may hear this referred to, on the radio, as “LDH” or “5 inch.”

Leach - Removal of soluble constituents from ashes or soil by percolation of water.

Lead line - Line or set of lines made of rope, webbing, or cable and used in helicopter external load operations; usually placed between a swivel or the cargo hook and the load.

Lead plane - A piloted aircraft that makes trial runs over the target area to check wind, smoke conditions, topography and to lead air tankers to targets and supervise their drops.

Leader - The ICS title for an individual responsible for a task force, strike team, or functional unit.

Leader’s intent - A concise statement that outlines what individuals must know to be successful for a given assignment. The intent communicates three essential pieces of information: 1) Task – What is the goal or objective; 2) Purpose – Why it is to be done; 3) End state – How it should look when successfully completed.

Leadership - The art of providing purpose, direction, and motivation to a group of people to accomplish a mission and improve the organization. Leaders provide purpose by clearly communicating their intent and describing the desired end state of an assignment to their followers. Education Note: Leaders provide direction by maintaining standards of performance for their followers. Leaders provide motivation by setting the example for their followers.

Leapfrog method - 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.



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Learning content management system (LCMS) - Any system that keeps learner information, can launch, and communicate with SCOs, and can interpret instructions that tell it which SCO comes next. (See: Shareable content object)

Learning objective - A description of the intended outcome of a training class, program, or evolution. The learning objective identifies the condition, the task, and the standard to which the student must achieve. (See: Task)

Learning objects - Reusable learning objects represent an alternative approach to content development. In this approach, content is broken down into chunks. From a pedagogical perspective, each chunk might play a specific role within an instructional design methodology. Such chunks are called learning objects. There is no standard for the size (or granularity) of a learning object. Larger learning objects are typically harder to reuse, and smaller learner objects save less work for those who reuse them. Normally the happy medium has been estimated as between five and fifteen minutes of learning material. The requirements for each chunk are: 1) Each chunk must be able to communicate with learning systems using a standardized method that does not depend on the system; 2) What happens within a chunk is the chunk's business; 3) How a learner moves between chunks is controlled by the learning system; 4) Each chunk must have a description (metadata tag) that enables designers to search for and find the right chunk for the right job. (See: Shareable content object)

Legitimate smoke - Smoke from any authorized use of fire (e.g., locomotive, industrial operations, permitted debris burning).

Let-burn policy - Administrative decision to defer fire suppression, perhaps because of wilderness and long-term forest conservation considerations.

Level of service - Amount of fire prevention and fire suppression supplied; may be expressed several ways (e.g., percent of people or buildings protected, area protected, dollar value of property protected, firefighters per capita, water flow capability).

Liaison Officer (LOFR) - An ICS person who is responsible for serving as the incident's point of contact for coordinating with agency representatives from assisting and cooperating agencies. Reports to the Incident Commander and is a member of the Command Staff. LOFR may have one or more assistants assigned. (See: Agency representative)

Life-safety - Refers to the joint consideration of both the life and physical well-being of individuals.

Lifting processes - Any of the processes that lead to upward vertical motion in the atmosphere. These processes may include low level convergence, heating or thermal convection, orographic lifting over the mountains, and frontal lifting.



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Light 'em, fight 'em – A derogatory term for wildland crew having a reputation for igniting its prescribed burns carelessly.

Light (Fine) Fuels - Fast-drying fuels, generally with a comparatively high surface area-to-volume ratio, which are less than 1/4-inch in diameter and have a timelag of 1 hour or less. These fuels readily ignite and are rapidly consumed by fire when dry. (USFS)

Light wind - Wind speed less than 7 mph (6 knots) measured at 20 feet above ground. At eye level, light winds are less than 3 mph (3 knots).

Lightning activity level (LAL) - Part of the National Fire Danger Rating System (NFDRS). A number, on a scale of 1 to 6, which reflects frequency and character of cloud-to-ground lightning (forecasted or observed). Education Note: The scale for 1 to 5 is exponential, based on powers of 2 (i.e., LAL 3 indicates twice the lightning of LAL 2). LAL 6 is a special category for dry lightning and is closely equivalent to LAL 3 in strike frequency.

Lightning fire - Wildfire caused directly or indirectly by lightning.

Lightning Fire Occurrence Index - Part of the National Fire Danger Rating System (NFDRS). Numerical rating of the potential occurrence of lightning-caused fires.

Lightning Risk (LR) - Part of the National Fire Danger Rating System (NFDRS). A number related to the expected number of cloud-to-ground lightning strokes to which a protection unit is expected to be exposed during the rating period. Education Note: The LR value used in the occurrence index includes an adjustment for lightning activity experienced during the previous day to account for possible holdover fires.

Lightning Risk Scaling Factor - Part of the National Fire Danger Rating System (NFDRS). Factor derived from local thunderstorm and lightning-caused fire records that adjusts predictions of the basic lightning fire occurrence model to local experience, accounting for factors not addressed directly by the model (e.g., susceptibility of local fuels to ignition by lightning, fuel continuity, topography, regional characteristics of thunderstorms).

Lightning stroke counter - Electronic sensor used to record the number of lightning strokes within a predetermined range over a specified period.

Lightweight ignition source - Objects that tend to rest on the surface of the materials first ignited. i.e., matches, cigarette butts, flat metal fragments, etc.

Limbing - Removing branches from a felled or standing tree, or from brush.



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Limited containment - Halting of fire spread at the head, or that portion of the flanks of a prescribed fire that is threatening to exceed prescription criteria, and ensuring that this spread rate will not be encountered again; does not indicate mop-up.

Line cutter - Fire crew member in the progressive method of line construction who cuts and clears away brush, small saplings, vines, and other obstructions in the path of the fireline; usually equipped with ax or brush hook, or Pulaski.

Line firing - Activity related to burn out along a fireline, using drip torches, fuses, or other flammable materials.

Line Officer - Managing officer, or designee, of the agency, division thereof, or jurisdiction having statutory responsibility for incident mitigation and management. (See: Agency administrator)

Line Scout - A firefighter who determines the location of a fire line. (USFS)

Lined fire hose - Fire hose with a smooth inner coating of rubber or plastic to reduce friction loss.

Liquid concentrate (LC) - Liquid phosphate fertilizers used as fire retardants, usually diluted three to five times prior to application.

Litter (forest floor litter) - (1) Surface buildup of leaves and twigs. (2) The top layer of forest floor, composed of loose debris of dead sticks, branches, twigs, and recently fallen leaves or needles; little altered in structure by decomposition. (USFS) (See: Duff; Humus)

Little change - Insignificant change in wind speed, direction, and temperature (less than 5 degrees) and relative humidity (less than five percent), respectively. When used as a general statement in a long-range forecast, all four criteria apply.

Live fuel moisture (LFM) – A term describing moisture levels (expressed in percentage) found in brush and trees. (NWCG)

Live fuel moisture content - Ratio of the amount of water to the amount of dry plant material in living plants.

Live fuels - Living plants, such as trees, grasses, and shrubs, in which the seasonal moisture content cycle is controlled largely by internal physiological mechanisms, rather than by external weather influences. (USFS)

Live herbaceous moisture content - Ratio of the amount of water to the amount of dry plant material in herbaceous plants, such as grasses and forbs.

Live line - Hose line filled with water under pressure and ready to use. Synonym: Charged line. (See: Live reel)



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Live reel - Hose line or reel on a fire engine, carried preconnected to the pump, ready for use without making connections to pump or attaching nozzle.

Live run - Indicates that the air tanker has the target in sight and will make a retardant drop on this run over the target.

Live woody moisture content - Ratio of the amount of water to the amount of dry plant material in shrubs.

Living fuels - (See: Live fuels)

Load and Hold - An order given to the airtanker pilot to pick up another load of retardant or water and hold at the reload base. The tanker is still committed to the fire.

Load and Return - Order given to the air tanker pilot to pick up another load of fire retardant or water and return to the fire.

Load calculation form - An agency form used to calculate helicopter allowable payload.

Loading pad - Concrete pad at a retardant base on which aircraft stand when being loaded.

Loadmaster - Individual responsible to the Deck Coordinator for the manifesting, loading, and unloading of personnel, equipment, and cargo.

Local agency - Any agency having jurisdictional responsibility for all or part of an incident.

Local resource - Resources within a dispatch center's area of responsibility.

Local responsibility area - Lands on which neither the state nor the federal government has any legal responsibility for providing fire protection.

Local wind – A wind whose velocity and direction are determined by local heating and cooling (diurnal cycle). Local winds are low velocity, averaging less than 10 mph. (NWCG)

Local winds - Winds which are generated over a comparatively small area by local terrain and weather. They differ from those which would be appropriate to the general pressure pattern. (See: General winds; Slope winds)

LOFR - Liaison Officer.

Logging debris - Unwanted tree parts (crowns, logs, uprooted stumps) remaining after harvest. (See: Activity fuels)

Logging slash (Logging debris) - Tops, stumps, mill ends, limbs left by logging operations. May be beneficial to soil stability but can dry out and create heavy fuel load hazards.



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Logistics Section - The ICS section responsible for providing facilities, services, and supplies in support of an incident.

Logistics Section Chief (LSC1 or LSC2) - An ICS person who is responsible for supervising the Logistic Section. Education Note: Reports to the Incident Commander and is a member of the General Staff. This position may have one or more deputies assigned.

Longline - (1) Helicopter arrangement for lowering external loads (or removing loads) into areas not available for landing, using a long cable suspended from a hard point on the belly of the aircraft. (2) A line or set of lines, usually in 50' increments, used in external load operations that allow the helicopter to place loads in areas in which the helicopter could not safely land.

Long-range forecast - Fire weather forecast for a period greater than five days in advance.

Long-range spotting - Large glowing firebrands are carried high into the convection column and then fall out downwind beyond the main fire-starting new fires. Education Note: Such spotting can easily occur 1/4 mile or more from the firebrand's source.

Long-term fire danger - The results of those factors in fire danger affecting long-term planning; involves consideration of past records and conditions and probable future trends.

Long-term fire retardant - Chemical that inhibits combustion primarily through chemical reactions between products of combustion and the applied chemicals, even after the water component has evaporated. Education Note: Other chemical effects also may be achieved, such as film-forming and intumescence.

Lookout - (1) A person designated to detect and report fires from a vantage point. (2) A location from which fires can be detected and reported. (3) A fire crew member assigned to observe the fire and warn the crew when there is danger of becoming trapped.

Lookout dispatcher - Person combining the functions of lookout and dispatcher.

Lookout firefighter - A person combining the functions of lookout and firefighter.

Lookout patrol - A person who travels along ridges or other vantage points to discover, detect, report, and suppress fires.

Lookout point - Vantage point selected for fire detection or observation.

Lookout tower - Structure that elevates a person above nearby obstructions to sight for fires; generally capped by some sort of house or cupola.

Lookouts - (1) Safety person positioned to monitor the location and behavior of a fire, ready to signal a crew to escape. (2) #Fire lookout tower or fire tower, often on mountain-tops, for viewing the surrounding countryside



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and watching for signs of fire. (3) #Fire lookout, the person who works in the fire lookout tower. (4) 4. The “L” of #LCES safety mnemonic.

Lookout(s), Communication(s), Escape Route(s), and Safety Zone(s) (LCES) - Elements of a safety system used by fire fighters to routinely assess their current situation with respect to wildland firefighting hazards.

Lopping - After felling, cutting branches, tops, and unwanted boles into lengths such that resultant logging debris will lie close to the ground.

Lopping and scattering - Lopping logging debris and spreading it evenly over the ground.

Lost line - Any part of a fireline rendered useless by a breakover of the fire.

Low - An area of relatively low atmospheric pressure in which winds tend to move in a counterclockwise direction, spiraling in toward the low’s center.

Low expansion - Foam with an expansion between 1:1 and 20:1.

LR - Lightning risk.

LSC1/LSC2 - Logistics Section Chief.



MAC - Multi-Agency Coordination.

Macro scale indicators - Large single indicators or overall patterns of indicators that are readily visible from a distance.

Macroclimate - General large-scale climate of a large area or country as distinguished from smaller scale mesoclimate and microclimate.

MACS - Multi-Agency Coordination System.

MAFFS - Modular Airborne Firefighting System.

Main ridge - Prominent ridgeline separating river or creek drainages. Usually has numerous smaller ridges (spur) extending outward from both sides.



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Major disaster - Any natural catastrophe or regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance.

Major fire – Generally, a fire of the size or complexity that it requires a large force of fire resources and personnel and several days to control. (NWCG)

Major repair (aviation) - A repair (1) that, if improperly done, might appreciably affect weight, balance, structural strength, or other qualities affecting airworthiness or (2) that is not done according to accepted practices or cannot be done by elementary operations.

Male coupling - An externally threaded hose nipple which fits in the thread of a female (internally threaded) swivel coupling of the same pitch and diameter. Nozzles are attached to this type of coupling.

Management action points (MAPs) - Geographic points on the ground or specific points in time where an escalation or alternative of management actions is warranted. These points are defined and the management actions to be taken are clearly described in an approved Wildland Fire Implementation Plan (WFIP) or Prescribed Fire Plan. Education Note: Timely implementation of the actions when the fire reaches the action point is generally critical to successful accomplishment of the objectives. Management action points are also known as “trigger points.”

Management by objectives - In ICS, this is a top-down management activity which involves a three-step process to achieve the incident goal. The steps are establishing the incident objectives, selection of appropriate strategy(s) to achieve the objectives; and the tactical direction associated with the selected strategy. Tactical direction includes selection of tactics, selection of resources, resource assignments and performance monitoring.

Managers - Individuals within ICS organizational units that are assigned specific managerial responsibilities, such as staging area manager or camp manager.

Manual weather station - A non-telemetered weather station that provides one observation every 24 hours for manual entry into WIMS. (See: Automatic Weather Station)

Manually regulated - A proportioning method or device that requires a manual adjustment to maintain a desired mix ratio over a changing range of water flows and pressures.

Marine air - Air which has a high moisture content and the temperature characteristics of an ocean surface due to extensive exposure to that surface. An intrusion of marine air will moderate fire conditions. Absence of marine air in coastal areas may lead to more severe fire danger.

Marine climate - Regional climate under the predominant influence of the sea, that is, a climate characterized by marine air, the opposite of a continental climate.



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Maritime air - Air which has assumed high moisture content and the temperature characteristics of a water surface due to extensive exposure to that surface.

Mass arsonist - An offender who sets three or more fires at the same location during a limited period.

Mass fire - A fire resulting from many simultaneous ignitions that generates a high level of energy output.

Master fire chronology - Chronological listing of the dates of fires documented in a designated area, the dates being corrected by cross dating. Size of the area must be specified. The master fire chronology is also known as a “composite fire interval.”

Material first ignited - The fuel that is first set on fire by the heat of ignition; to be meaningful, both a type of material and form of material should be identified.

Mathematical model - A model that is a quantitative and mathematical representation or simulation which attempts to describe the characteristics or relationship of physical events. (See: Model)

Mattock - Hand tool with a narrow hoeing surface at one end of the blade and a pick or cutting blade at the other end; used for digging and grubbing.

Maximum certified gross weight - Absolute maximum allowable gross weight for an aircraft as established by the manufacturer and approved by the FAA.

Maximum computed gross weight - Computed gross weight for an aircraft, obtained from the appropriate performance chart, which is the maximum gross weight appropriate to the applicable circumstance of configuration and/or environmental conditions.

Maximum dry bulb temperature - The highest value for dry bulb temperature measured at the observation site during the preceding 24-hour period. (See: Minimum dry bulb temperature)

Maximum management area (MMA) - The maximum geographic limits of spread within which a wildland fire use fire can spread.

Maximum relative humidity - The highest value for relative humidity measured at the observation site during the preceding 24-hour period. (See: Minimum relative humidity)

May Day - An international distress signal/call. When repeated three times it indicates imminent and grave danger and that immediate assistance is required.

McLeod tool - (1) A hand tool used in fireline construction, consisting of a combination rake and hoe. (2) A combination hoe or cutting tool and rake, with or without removable blades.



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Mean fire return interval - Arithmetic average of all fire intervals in each area over a given time.

Mean sea level (MSL) - Average height of the surface of the sea for all stages of the tide over a 19-year period. NOTE: when the abbreviation MSL is used in conjunction with several feet, it implies altitude above sea level (e.g., 1000 feet MSL).

Measured woody fuel moisture - Moisture content of the small branch wood and foliage of live woody plants, expressed as a percentage of the oven dry weight of the sample, collected monthly and used to supplement NFDRS modeled outputs. (See: Woody fuel moisture)

Medical director - A physician who assumes the ultimate responsibility for the patient care aspects of the incident EMS program.

Medical Unit - Functional unit within the logistics section that is responsible for the emergency medical and occupational health care of incident personnel. Some incident management teams have placed this unit under safety.

Medical Unit Leader (MEDL) - An ICS person who responsible for supervising the Medical Unit. Reports to the Service Branch Director or Logistics Section Chief. (See: Medical Unit)

Medium expansion - Foam with an expansion between 21:1 and 200:1.

Medium-range Forecast - A forecast for a period extending from about two days to five days or a week in advance; there are no absolute limits to the period embraced by this definition.

Medivac - Mobile medical treatment and transportation.

MEDL - Medical Unit Leader.

MEL - Most efficient level.

Message center - The message center is part of the incident communications center and is collocated or placed adjacent to it. It receives, records, and routes information about resources reporting to the incident, resource status, and administrative and tactical traffic.

Methodology - A set of standardized procedures and practices that have been peer-reviewed and have received general acceptance by the profession.

Micro-REMS - Micro-Remote Environmental Monitoring System. Mobile weather monitoring station. A Micro-REMS usually accompanies an incident meteorologist and ATMU to an incident. (USFS)

Micro scale indicators - Small individual indicators and patterns that are not easily observable without close observation or magnification.



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Micro-Remote Environmental Monitoring System (Micro-REMS) - Mobile weather monitoring station. Each unit consists of a shipping container, solar panel, battery, temperature/relative humidity sensor, wind mast, wind direction/speed sensor, data logger and radio. A Micro-REMS usually accompanies an incident meteorologist and ATMU to an incident. (See: Incident Meteorologist)

Mid-flame windspeed - The speed of the wind measured at the midpoint of the flames, considered to be most representative of the speed of the wind that is affecting fire behavior.

Military operations area (MOA) - The “military operations area” found on aeronautical charts.

Military Time - The 24-hour clock system where midnight is 2400, one minute after midnight is 0001 and progresses to 2400 daily.

Millibar - A unit of pressure equal to a force of 1,000 dynes per square centimeter. (A dyne is the force that would give a free mass of one gram an acceleration of one centimeter per second per second.)

Mineral ash - The residue of mineral matter left after complete combustion of wood (wood ash) or other organic material; consists largely of oxides, carbonates, and phosphates of Ca, K and Mg, together with other compounds.

Mineral soil - Soil layers below the predominantly organic horizons; soil with little combustible material. (USFS)

Minimum cost suppression alternative - The alternative that achieves incident objectives, consistent with priority for firefighter and public safety, and is least expensive when considering expected costs for fire suppression and emergency stabilization and/or rehabilitation.

Minimum dry bulb temperature - The lowest value for dry bulb temperature measured at the observation site during the preceding 24-hour period. (See: Maximum dry bulb temperature)

Minimum impact suppression techniques (MIST) - The application of strategy and tactics that effectively meet suppression and resource objectives with the least environmental, cultural, and social impacts.

Minimum relative humidity - The lowest value for relative humidity measured at the observation site during the preceding 24-hour period. (See: Maximum relative humidity)

Miscellaneous fire - Fire of known cause that cannot be properly classified into any of the eight standard causes of fires.

MIST - Minimum impact suppression techniques.



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Mitigation - Those activities implemented prior to, during, or after an incident which are designed to reduce or eliminate risks to persons or property that lessen the actual or potential effects or consequences of an incident. Mitigation measures can include efforts to educate governments, businesses, and the general public on measures they can take to reduce loss and injury and are often informed by lessons learned from prior incidents.

Mitigation actions - On-the-ground actions that serve to increase the defensibility of the maximum manageable area (MMA); check, direct, or delay the spread of fire; and minimize threats to life, property, and resources. Mitigation actions may include mechanical and physical non-fire tasks, specific fire applications, and limited suppression actions. These actions will be used to construct firelines, reduce excessive fuel concentrations, reduce vertical fuel continuity, create fuel breaks or barriers around critical or sensitive sites or resources, create "black lines" through controlled burnouts, and to limit fire spread and behavior.

Mix ratio - The ratio of liquid foam concentrate to water, usually expressed as a percent.

Mixing - A random exchange of air parcels on any scale from the molecular to the largest eddy.

Mixing chamber - A tube, constructed with deflectors or baffles that mixes foam solution and air to produce tiny, uniform bubbles in a short distance (1 to 2 feet).

Mixing height - Measured from the surface upward, the height to which relatively vigorous mixing occurs due to convection. Mixing height is also known as "mixing depth".

Mixing layer - That portion of the atmosphere from the surface up to the mixing height. This is the layer of air, usually below a stable layer, within which pollutants are mixed by turbulence and diffusion. Mixing layer is also known as the "mixed layer." (See: Transport wind speed; Ventilation factor)

Mixmaster - The person in charge of fire-retardant mixing operations with responsibility for quantity and quality of the slurry and for the loading of aircraft.

MMA - Maximum Management Area.

MOA - Military Operations Area.

Mobile radio - A two-way radio unit on mobile apparatus (instead of base stations), usually semi-permanently attached to the apparatus.

Mobile weather unit forecast - A special fire weather forecast for a specific fire prepared by a meteorologist on site at or near the fire area.



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Mobilization - The process and procedures used by all organizations, federal, state, and local, for activating, assembling, and transporting all resources that have been requested to respond to or support an incident. (USFS)

Mobilization center - An off-incident location at which emergency service personnel and equipment are temporarily located pending assignment, release, or reassignment.

Mobilization guide - A written description of procedures used by federal, state, and local organizations for activating, assembling, and transporting resources that have been requested to respond to or support an incident.

Model - A simplified or generalized representation of reality; a description, analogy, picture, or hypothesis to help visualize something that cannot be directly observed. (See: Conceptual model; Mathematical model)

Model Arson Law - Model legislation, recommended by the Fire Marshals' Association of North America and adopted in most states, dealing with the subject of arson.

Model Fireworks Law - Model legislation recommended by the Fire Marshals' Association of North America and adopted by many states, regulating display of fireworks.

Modular Airborne Firefighting System (MAFFS) - A manufactured unit consisting of five interconnecting tanks, a control pallet, and a nozzle pallet, with a capacity of 3,000 gallons, designed to be rapidly mounted inside an unmodified C-130 (Hercules) cargo aircraft for use in cascading retardant chemicals on wildfires. (USFS)

Moist adiabatic lapse rate - Rate of decrease of temperature with increasing height of an air parcel lifted at saturation via adiabatic process through an atmosphere in hydrostatic equilibrium. Rate varies according to the amount of water vapor in the parcel and is usually between 2.0 - and 5.0 - degrees F per 1000 feet (3.6 and 9.2 degrees C per 1000 meters).

Moisture of extinction - The fuel moisture content, weighed over all the fuel classes, at which the fire will not spread. Also called extinction moisture content (EMC).

Monitor - A turret-type nozzle usually mounted on an engine.

Monitor, Multi-universal, Master-stream - A large ground or apparatus mounted nozzle through which large amounts of water can be flowed. This device can often be remotely operated, or it can be set up and allowed to run unattended.

Monitoring - The orderly collection, analysis, and interpretation of environmental data to evaluate management's progress toward meeting objectives, and to identify changes in natural systems. Monitoring is also conducted on wildland fires to observe fire effects, fire behavior, or both. For example, the work done by Fire Effects Monitor (FEMO) or Field Observer (FOBS) positions.



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Monsoon climate - A climate characterized by (a) a long winter-spring dry season which includes a “cold season” followed by a short “hot season” immediately preceding the rains, (b) a summer and early autumn rainy season which is usually very wet (but highly variable from year to year), and (c) a secondary maximum of temperature immediately after the rainy season.

Mop-up – (1) To make a fire safe or reduce residual smoke after the fire has been controlled by extinguishing or removing burning material along or near the control line, felling snags, or moving logs so they won't roll downhill. (USFS) (2) Extinguishing or removing burning material near control lines, felling snags, and trenching logs to prevent rolling after an area has burned, to make a fire safe, or to reduce residual smoke. (3) After the fire has been controlled, all actions required to make the fire “safe,” prior to being called out. This includes trenching, falling snags, and checking all control lines. (NWCG)

Mop-up crew - A portion of or the entire regular fire crew assigned to mop-up work after the fire or a portion of the fire has been contained or controlled.

Mop-up time - Elapsed time from containment or control of a fire until mop up is complete.

Mosaic - The intermingling of plant communities and their successional stages in such a manner as to give the impression of an interwoven design.

Most efficient level (MEL) - The fire management program budget level that results in the minimum cost-plus net value change.

Move-up - System of redistributing remaining personnel and equipment following dispatch of other forces among a network of fire stations to provide the best possible response within the fire department's direct protection area in the event of additional calls for emergency assistance.

Move-up method - Progressive method of fireline construction on a wildfire without changing relative positions in the line. Work is begun with a suitable space between workers; whenever one worker overtakes another, all of those ahead move one space forward and resume work on the uncompleted part of the line. The last worker does not move ahead until work is completed in his/her space. Forward progress of the crew is coordinated by a crew boss. Synonym: Bump-up Method.

MSL - Mean sea level.

Multi-agency coordination (MAC) - A generalized term which describes the functions and activities of representatives of involved agencies and/or jurisdictions who come together to make decisions regarding the prioritizing of incidents, and the sharing and use of critical resources. The MAC organization is not a part of the on-scene ICS and is not involved in developing incident strategy or tactics. (USFS)



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Multi-Agency Coordination System (MACS) - MACS provides the framework to support coordination for incident prioritization, critical resource allocation, communication systems integration, and information coordination. MACS components include facilities, equipment, emergency operating centers (EOCs), specified multi-agency coordination entities, personnel, procedures, and communications.

Multi-agency incident - An incident where one or more agencies assist a jurisdictional agency or agencies. May be single or unified command. (See: Jurisdiction)

Multicom - A VHF/AM aircraft radio frequency (122.9 MHz) assigned by the FAA for use in air-to-air communications.

Multijurisdiction incident - An incident requiring action from multiple agencies that have a statutory responsibility for incident mitigation. In ICS, these incidents will be managed under unified command. (See: Jurisdiction)

Multiple fire situation - High fire frequency over a short period of time in an administrative unit, usually overtaxing the normal initial attack capability of the unit.

Multiple fire-day - In FireFamily Plus, a day with both a weather observation and a number of fires equal to or greater than that determined by the user to be a significant workload. (See: Fire-day; Large fire-day)

Multiple points of origin - Two or more separate points of fire origins at a fire scene; strong indication of arson.

Mutual aid - (1) Cross-jurisdictional assistance with emergency services by pre-arranged agreement. (2) Assistance in firefighting or investigation by fire agencies, without regard for jurisdictional boundaries. Education Note: Mutual aid is an agreement between jurisdictions for the mutual assistance in the event of major events. Even the largest departments may need help from time to time. There is usually a pre-agreed upon procedure for implementing mutual aid. There can be pre-established automatic mutual aid. A city may agree to always take the runs for another in some remote location. Smaller departments depend upon mutual aid agreements.

Mutual aid agreement - Written agreement between agencies and/or jurisdictions in which they agree to assist one another upon request, by furnishing personnel and equipment. (USFS)

Mutual aid through the National Fire Protection Association (NFPA) - Fire and safety standards organization who issues various wildfire-oriented standards related to clothing, tactics, equipment, etc.

Mutual threat zone - A geographical area between two or more jurisdictions into which those agencies would respond on initial attack. Also called mutual response zone or initial action zone.



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NAAQS - National Ambient Air Quality Standards.

Napalm - An incendiary mixture with a jelling agent used in flamethrowers and bombs.

NARTC - National Advanced Resources Technology Center.

NASF - National Association of State Foresters.

National Advanced Resources Technology Center (NARTC) - Multi-agency training facility at Pinal Air Park, Marana, Arizona, which specializes in presentation of national-level fire management training courses.

National Ambient Air Quality Standards (NAAQS) - A legal limit on the level of atmospheric contamination. The level is established as the concentration limits needed to protect the public against adverse effects on public health and welfare, with an adequate safety margin. Primary standards are those related to health effects. Secondary standards are designed to protect the public welfare from effects such as visibility reduction, soiling, material damage and nuisances.

National Association of State Foresters (NASF) - An organization consisting of the State Forester from each state and territory which promotes cooperation in forestry matters between the states and territories, the federal government and private forestry groups. It promotes legislation, programs and activities which will advance the practice of forestry and use of forest products.

National Environmental Policy Act (NEPA) – NEPA is the basic national law for protection of the environment, passed by Congress in 1969. It sets policy and procedures for environmental protection and authorizes Environmental Impact Statements and Environmental Assessments to be used as analytical tools to help federal managers make decisions. (USFS)

National Environmental Satellite, Data, and Information Service (NESDIS) - A National Oceanic and Atmospheric Administration Agency.

National Fire Academy (NFA) - In 1974 Congress passed The Federal Fire Prevention and Control Act (PL 93-498). Among other things it established the United States Fire Administration (USFA) and its National Fire Academy (NFA). Both career and volunteer firefighters attend this school, in Emmitsburg, MD for advanced education in fire protection. It also offers courses for citizens in fire safety. For more information go to: <http://www.usfa.dhs.gov/about/>

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National Fire Codes (NFC) - The collected technical fire protection standards prepared by various committees of the National Fire Protection Association and published annually in 15 volumes.

National Fire Danger Rating System (NFDRS) - A uniform fire danger rating system that focuses on the environmental factors that control the moisture content of fuels. (USFS) (See: Fire Danger Rating System)

National Fire Protection Association (NFPA) - A private, non-profit organization dedicated to reducing fire hazards and improving fire service.

National Fire Protection Association Standards (NFPA) - Standards of the National Fire Protection Association are frequently adopted by insurance agencies such as the National Board of Fire Underwriters as a basis for their regulations and used as a guide for municipal, state, or provincial laws, ordinances, and regulations.

National Forest Lands - Public lands, generally forest, range, or other wildland, administered by the Forest Service, USDA.

National Forest System - Consists of all national forest lands, the national grasslands and land utilization projects administered under title III of the Bankhead-Jones Farm Tenant Act, and other interests as defined in Section 9 of the National Forest Management Act of 1976.

National hose (NH) - National Standard Thread (NST) design of threaded couplings used on fire hose in various diameters; incompatible with many types of wildfire hose threads, thus requiring adapters.

National Interagency Coordination Center (NICC) - Coordinates allocation of resources to one or more coordination centers or major fires within the nation. Located in Boise, Idaho.

National Interagency Fire Center (NIFC) - A facility located at Boise, Idaho, jointly operated by several federal agencies, dedicated to coordination, logistical support, and improved weather services in support of fire management operations throughout the United States. The current NIFC was formerly BIFC. For more information go to: <http://www.nifc.gov/>

National Interagency Fire Management Integrated Database (NIFMID) - The archive of daily weather observations from WIMS.

National Interagency Incident Management System (NIIMS) - An NWCG developed program consisting of five subsystems which collectively provide a total systems approach to all-risk incident management. The subsystems are: The Incident Command System, Training, Qualifications and Certification, Supporting Technologies, and Publications Management.



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National Park - A federal reservation administered by the National Park Service of the U.S. Department of the Interior in order to conserve unique scenery, flora and fauna, and any natural and historic objects within its boundaries for public enjoyment in perpetuity.

National Pipe Straight Hose Thread (NPSH) - Also known as National Pipe Straight Mechanical (NPSM) thread. This is a straight (non-tapered) thread standard with the same threads per inch as the appropriate size iron pipe thread. It requires a gasket to seal and is the thread standard used by most U.S. industry.

National Resource Lands (NRL) - Public lands administered by the Bureau of Land Management, U.S. Department of the Interior.

National Response Plan - A plan that integrates federal government domestic prevention, preparedness, response, and recovery plans into one all-discipline, all-hazard plan.

National Standard Thread (NH) - Abbreviated (NH) for national hose. Specifically, defined screw thread used on fire hose couplings.

National Wildfire Coordinating Group (NWCG) - A group formed under the direction of the Secretaries of the Interior and Agriculture to improve the coordination and effectiveness of wildland fire activities and provide a forum to discuss, recommend appropriate action, or resolve issues and problems of substantive nature. NWCG is the coordinating agency in Washington, D.C. which sets national standards for firefighter training and publishes training manuals. (USFS) (See: NWCG Standard)

National Wildfire Coordinating Group: One-hour fuel - Vegetation with large surface-to-mass ratio, a so-called “fine fuel” (along with 10-hour) that quickly reaches critical (inflammable) moisture levels (fine fuel moisture, FFM) when exposed to heat; compare with 100-hour or 1000-hour fuels (i.e., live fuel moisture, LFM), which take much more heat to ignite.

National Wildlife Refuge System - All lands, waters and interests therein administered by the Fish and Wildlife Service for the protection and conservation of fish and wildlife, including those that are threatened with extinction.

Native species - A species which is a part of the original fauna or flora of the area in question.

Natural barrier - Any area where lack of flammable material obstructs the spread of wildfires.

Natural fuels - Fuels resulting from natural processes and not directly generated or altered by land management practices. (See: Activity fuels)

NDVI - Normalized Difference Vegetation Index.



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Near miss - Any potential accident which, through prevention, education, hazard reduction, or luck, did not occur.

NESDIS - National Environmental Satellite, Data, and Information Service.

NESDIS ID - An 8-character identifier assigned by NESDIS that becomes the RAWS identification number for use with the GOES satellite.

Net value change (NVC) - The sum of the changes in the value of natural resources affected by a fire. The basis for computing NVC is each resource's fire-induced value change (pluses and minuses) as computed and expressed on a per unit basis.

Neutral atmosphere - Condition in which temperature decrease with increasing altitude is equal to the dry adiabatic lapse rate (i.e., the atmosphere neither aids nor hinders large-scale vertical motion).

NFC - National Fire Codes

NFDRS - National Fire Danger Rating System

NFPA - National Fire Protection Association; National Fire Protection Association Standards.

NH - National Standard Thread.

NICC - National Interagency Coordination Center.

NIFC - National Interagency Fire Center.

NIFMID - National Interagency Fire Management Integrated Database.

NIIMS - National Interagency Incident Management System.

Night (aviation) - The time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.

NIMS - The National Incident Management System. A federally mandated program for the standardizing of command terminology and procedures. This standardizes communications between fire departments and other agencies. It is based upon simple terms that will be used nationwide. Currently, U.S. federally required training programs, from DHS, NFA and FEMA, are in the process of standardizing many terms and procedures under NIMS.

Nitrogen dioxide (NO₂) - The result of nitric oxide combining with oxygen in the atmosphere. A major component of photochemical smog.



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Nitrogen oxide (NO) - Product of combustion from transportation and stationary sources and a major contributor to acid deposition and the formation of ground level ozone in the troposphere.

NO - Nitrogen oxide.

NO₂ - Nitrogen dioxide.

Nomex ® - (1) The brand of PPE approved, fire retardant, synthetic, aramid cloth and thread used in personal protective equipment for wildland firefighting, and jumpsuits. (2) The trade name for a fire-resistant synthetic material used in the manufacturing of flight suits and pants and shirts used by firefighters. (USFS) Aramid is the generic name.

Non-attainment area - An area identified by an air quality regulatory agency through ambient air monitoring (and designated by the Environmental Protection Agency), that presently exceeds federal ambient air standards.

Noncommercial forest land - Forest land incapable of yielding crops of commercially useful wood because of adverse site conditions, or productive forest land withdrawn from commercial timber use through statute or administrative regulation.

Nonflammable - Material unlikely to burn when exposed to flame under most conditions. (See: Flammable)

Nonprecision approach procedure - Standard aircraft instrument approach procedure in which no electronic glide slope is provided.

Nonstatistical fire - Any fire not posing a threat to resources or property of the jurisdictional agency, regardless of whether action was taken by the agency.

Normal fire season - (1) A season when weather, fire danger, and number and distribution of fires are about average. (2) Period of the year that normally comprises the fire season based on historical fire occurrence.

Normalized Difference Vegetation Index (NDVI) - A satellite observation-derived value that is sensitive to vegetative growth, measured at 1.1 km (0.6 mile) spatial and 1-week temporal scales.

NOTAM - Notice to airmen.

Notice to airmen (NOTAM) - Notice identified as either a NOTAM or Airmen Advisory containing information concerning the establishment, condition, or change in any component of, or hazard in, the National Airspace System, the timely knowledge of which is essential to personnel concerned with flight operations.

Nozzle aspirated foam system - A foam generating device that mixes air at atmospheric pressure with foam solution in a nozzle chamber.

Nozzle operator - A person assigned to operate a fire hose nozzle, usually on a hand line.

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NPSH - National Pipe Straight Hose Thread.

NRL - National Resource Lands.

NVC - Net value change.

NWCG - National Wildfire Coordinating Group.

NWCG Standard - A defined behavior, action, process, or equipment type, agreed upon by the National Wildfire Coordinating Group for wildland fire performance, and is necessary to meet consistent, interagency fire management activities. (See: National Wildfire Coordinating Group)



Objective - (1) A description of a desired condition; quantified and measured, and where possible, with established time frames for achievement. (2) Specific, achievable, measurable, time-limited results to be achieved through land management practices, either through a description of a desired condition or the degree of desired change in an attribute.

Observation time - Time of day required to record meteorological data at a fire danger station.

Obstruction to vision - Condition in which obscuring phenomenon restricts horizontal visibility to six statute miles (10 km.) or less.

OCC - Operations Coordination Center.

Occluded front or occlusion - The front that is formed when and where a cold front overtakes a warm front or a stationary front.

Occurrence index (OI) - A number in the National Fire Danger Rating System related to potential fire incidence within a protection unit.

OD - Outside diameter.

Officer - The ICS title for personnel responsible for the Command Staff positions of Safety, Liaison, and Information.

Off-road vehicle (ORV) - Any motorized vehicle designed for, or capable of, cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other terrain. Synonym: All-terrain vehicle.

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Offshore flow - Wind blowing from land to water.

OI - Occurrence Index.

On-call - Status of a federal casual or federal regular government employee used for timekeeping purposes. An employee is considered to be in on-call status (off shift-federal casuals and federal regular government employees) when he or she is allowed to leave a telephone number or to carry an electronic device for the purpose of being contacted, even though the employee is required to remain within a reasonable call-back radius and may include restrictions on alcohol consumption or use of certain medications. 5 CFR 551.431(b)(1)

One lick method - A progressive system of building a fireline on a wildfire without changing relative positions in the line. Each worker does one to several "licks", or strokes, with a given tool and then moves forward a specified distance to make room for the worker behind.

One-hour Timelag Fuel Moisture (1-h TL FM) - Moisture content of one-hour timelag fuels.

One-hour timelag fuels - Fuels consisting of dead herbaceous plants and roundwood less than about one-fourth inch (6.4 mm) in diameter. Also included is the uppermost layer of needles or leaves on the forest floor. (See: One-hour Timelag Fuel Moisture)

One-hundred-hour Timelag Fuel Moisture (100-h TL FM) - The moisture content of the 100-hour timelag fuels.

One-hundred hour timelag fuels - Dead fuels consisting of roundwood in the size range of 1 to 3 inches (2.5 to 7.6 cm) in diameter and very roughly the layer of litter extending from approximately three-fourths of an inch (1.9 cm) to 4 inches (10 cm) below the surface.

One-thousand-hour Timelag Fuel Moisture (1,000-h TL FM) - The moisture content of the 1,000-hour timelag fuels.

One-thousand-hour Timelag Fuels - Dead fuels consisting of roundwood 3-8 inches in diameter and the layer of the forest floor more than about 4 inches below the surface. (See: One-hour Timelag Fuel Moisture)

Onshore flow - Wind blowing from water to land.

OPBD - Operations Branch Director.

Open burning - Burning of any fuel outdoors without the use of mechanical combustion enhancements.

Open line - Refers to open fire front where no line has been constructed.

Operating weight - For helicopters, the equipped weight plus weight of the crew and fuel. (See: Allowable payload)



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Operational control - The exercise of authority over initiating, conducting, or terminating any operation. Often associated with aviation operations.

Operational period - The period of time scheduled for execution of a given set of tactical actions as specified in the Incident Action Plan. Operational Periods can be of various lengths, although usually not over 24 hours. (USFS) The period of time scheduled for execution of a given set of operation objectives as specified in the incident action plan. (NWCG)

Operational tempo - The speed and intensity of actions relative to the speed and intensity of the unfolding events in the operational environment.

Operations Branch Director (OPBD) – (1) Person under the direction of the operations section chief who is responsible for implementing that portion of the incident action plan appropriate to the branch. (USFS) (2) An ICS person who is responsible for implementing that portion of an incident action plan (IAP) appropriate to a designated operational branch and reports to the Operations Section Chief. (See: Operations section)

Operations Coordination Center (OCC) - Primary facility of the Multi-agency Coordination System (MACS); houses staff and equipment necessary to perform the MACS function.

Operations section - The section responsible for all tactical operations at the incident. Includes branches, divisions and/or groups, task forces, strike teams, single resources, and staging areas.

Operations Section Chief (OSC1 or OSC2) - An ICS person who is responsible for supervising the Operations Section. Reports to the Incident Commander and is a member of the General Staff. This position may have one or more deputies assigned. (See: Operations section)

Orbit - A circular holding pattern of an aircraft around a fixed location often related to a wildland fire. For example, the circular pattern of an air tanker in the vicinity of a wildland fire, waiting to make a retardant drop.

Ordering Manager (ORDM) - An ICS person who is responsible for ordering personnel, equipment, and supplies for the incident and reports to the Supply Unit Leader. (See: Supply unit)

ORDM - Ordering Manager.

ORV - Off-road vehicle.

Organic matter - That fraction of the soil that includes plant and animal residues at various stages of decomposition, cells and tissues of soil organisms, and substances synthesized by the soil population.

Organic soil - Any soil or soil horizon containing at least 30% organic matter (e.g., muck, peat).

Orographic - Pertaining to or caused by mountains.



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Orthophoto - Photograph obtained from the orthogonal (horizontal) projection of a correctly oriented stereoscopic model formed by two overlapping aerial photographs; an orthophoto is free of tilt and relief displacements.

Orthophoto maps - Aerial photographs corrected to scale such that geographic measurements may be taken directly from prints. They may contain graphically emphasized geographic features and may be provided with overlays of such features as: water systems, facility location, etc.

Osborne firefinder - A sighting device used by lookouts to determine the horizontal bearing and sometimes the vertical angle of a fire from a lookout. Synonym: Alidade. (See: Firefinder map)

OSC1/OSC2 - Operations Section Chief.

Out-of-service resources - Resources assigned to an incident but unable to respond for mechanical, rest, or personal reasons.

Outside aid - Firefighting assistance given to adjacent areas and nearby communities by contract or other agreement that covers conditions and payment for assistance rendered and services performed. Contrasted to mutual aid, in which neighboring firefighting organizations assist each other without charge.

Outside diameter (OD) - External diameter of a cylinder or tube, conductor, or coupling as distinguished from the internal diameter.

Overhaul - Fire department procedure of inspecting premises after extinguishment of fire, to ensure that fire is completely out and unable to rekindle before returning control to owner or occupants.

Overhaul - The systematic search for hidden fires or for fire extension. It is generally a damaging process. Education Note: If the fire impinges upon a wall, that wall will probably be opened to ensure that the heat and fire had not communicated through to the inside.

Overhead - Personnel assigned to supervisory positions, including incident commander, command staff, general staff, branch directors, supervisors, unit leaders, managers, and staff. (USFS; NWCG) Also, supervisors and managers may be organized according to qualifications and experience, as “Type I Overhead Team,” and the like. Many positions, functions and interactions of wildfire overhead organizations provided the model for today's Incident Command Systems in the United States.

Overload - (1) Gross vehicle weight (GVW) more than the gross vehicle weight rating (GVWR) specified by the chassis manufacturer. Also, an excess of weight over the gross vehicle axle weight rating (GAWR) specified by the chassis manufacture. (2) A situation that taxes an operational system to the limit of its functional capabilities. Such as too many fires for an individual unit to handle (fire overload), or too many orders for an individual dispatch center to process (dispatch overload).



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Overwintering fire - A fire that persists through the winter months until the beginning of fire season.

Oxidation - Process during which oxygen combines with another substance.

Oxidizer - The portion of a chemical mixture or compound which furnishes oxygen for burning a fuel or propellant, creating an oxide.



PAC - Personnel accountability check. (See: PAR)

Pack test - Used to determine the aerobic capacity of fire suppression support personnel and assign physical fitness scores. The test consists of walking a specified distance, with or without a weighted pack, in a predetermined time, with altitude corrections.

Packing ratio - The fraction of a fuel bed occupied by fuels, or the fuel volume divided by bed volume.

PAL - Project Activity Level.

Palmer drought severity index (PDI) - A technique for measuring impact of soil moisture changes on vegetation, for predicting fire danger and fire behavior.

Panoramic photograph - Photographs from a lookout point, bearing azimuth and vertical angle scales, to assist in locating fires with a firefinder.

Panoramic profile map - A panoramic sketch drawn around the circumference of a firefinder map to show the profiles of the topography as it appears from the lookout.

PAR - Precision approach radar.

PAR - Personnel accountability report. At various points during an operation command, they will call for a PAR; sometimes called a “roll call.” Education Note: For example, company officers will report that they have their crew in sight or physical contact. They will respond with “Engine 3 has PAR;” or “Truck 9, PAR.” An accountability report happens at timed intervals or when the situation has changed. Situations include partial structure collapse, fire under control, change in tactics, report of lost or injured firefighter.

Paracargo - Anything intentionally dropped, or intended for dropping, from any aircraft by parachute, by other retarding devices, or by free fall. (USFS)



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Parallel attack - A method of fire suppression in which fireline is constructed approximately parallel to, and just far enough from the fire edge to enable workers and equipment to work effectively, though the fireline may be shortened by cutting across unburned fingers. Education Note #1: The intervening strip of unburned fuel is normally burned out as the control line proceeds but may be allowed to burn out unassisted where this occurs without undue delay or threat to the fireline. Education Note #2: A parallel attack is a fire containment method where crews construct a fireline at some distance from the edge of the fire (e.g., 100 yards) and then burn out the fuel in the buffer as the fireline is completed.

Parallel attack of perennial grasses - An extremely volatile fuel, after curing, in May, June, July, which can lead to large, fast fires that may reach larger fuels.

Parallel firing method – A method where hand-tool crews operate 100 yards parallel to the fire's edge and burn out as they complete the fire line. (NWCG)

Parallel pumping - Procedure by which the flow from two fire pumps is combined into one hose line.

Parallel tandem pumping - Procedure by which the flow from two fire pumps is combined into a third pump.

Parameter - A variable which can be measured quantitatively; sometimes, an arbitrary constant; associated with populations. One of the unknown values that determine a model. (See: Statistic)

Parking tender - Person responsible to the deck coordinator for take-offs and landings of helicopters at an assigned touchdown pad. There is one parking tender for each touchdown pad.

Partial risk - Part of the National Fire Danger Rating System (NFDRS). Contribution of a specific source to human-caused risk, derived from the daily activity level assigned a risk source and its risk source ratio.

Partial risk factor - Part of the National Fire Danger Rating System (NFDRS). Contribution to human-caused risk made by a specific risk source; a function of the daily activity level assigned that risk source and the appropriate risk source ratio.

Partial-thickness burn - A burn where the outer layer of skin is burned through and the second layer of skin (dermis) is damaged and is typically, a painful injury. Burns of this type cause reddening, blistering, and a mottled appearance; also known as “second degree burn.” (See: Full-thickness burn; Superficial burn)

Particle size - The size of a piece of fuel, often expressed in terms of size classes.

Particulate matter - Any liquid or solid particles. “Total suspended particulates,” as used in air quality, are those particles suspended in or falling through the atmosphere. They generally range in size (diameter) from 0.1 to 100 micrometers.

Partners - All agencies and organizations that engage in joint decision making with federal agencies in planning and conducting fire management projects and activities.

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Patrol truck - A small vehicles, designed for fighting grass or brush fires can be called anything. Education Note: In some communities, a small water tank (around 200 gals) mounted on a pick-up, with a one-inch line and a 200 GPM auxiliary pump, is called a patrol truck. A patrol truck is used to patrol small to large grass fires. The truck will also usually carry tools like shovels and axes, etc. Patrol trucks appear to be most common in California, but they can be found in other regions as well. (See: A-wagon, Brush truck, Grass wagon)

Parts of a fire - Different areas of the fire usually determined by the predominant direction of fire spread and delineated from the fastest moving area (head) to the slowest moving area (base or tail). The most rapidly moving portion is designated the head of the fire, the adjoining portions of the perimeter at right angles to the head are known as the flanks, and the slowest moving portion is known as the rear or the base of the fire.

Passive crown fire - A fire in the crowns of trees in which trees or groups of trees torch, ignited by the passing front of the fire. The torching trees reinforce the spread rate, but these fires are not basically different from surface fires.

Pass device - The safety device all firefighters wear for locating firefighters in trouble. Education Note #1: This device senses if a firefighter has remained motionless for a short period of time. It may also sense if the firefighter has been exposed to a rapid rise in temperature as may occur with a collapse. A piercing alarm is sounded under any of the conditions for which it is designed to detect. They are usually attached to the SCBA. A responder is expected to hear this device sounding because a firefighter has laid down his SCBA. Education Note #2: These devices often do not have a simple way to turn them off and they will become active when the firefighter simply removes the SCBA from the apparatus or turns on his air supply. This solved the problem with earlier versions where the firefighter had to remember to turn it on.

Passport - One type, of many, personnel accountability systems in use today. Education Note: In the past, command would just try to keep track on the personnel in a hazardous environment or situation by just writing down vehicle numbers. But that was not fully accurate at times. Today each company has some type of object with each person's name on it. The names can be written on or they can have a name tag that is affixed by a clip or Velcro. The officer gives this object to command or the sector officer prior to entering a hazard zone. This way someone can always tell exactly who is where. If it becomes necessary to divide up companies, this can be done by moving names around and attaching them to other boards. In the example above the four people on this engine could be divided into two crews. This is the purpose of the third, empty, passport.

Patch burning - Burning in patches to prepare sites for group planting or sowing or to form a barrier to subsequent fires.

Patrol - (1) One or more qualified individuals who: 1) Travel over a given route to prevent, detect, and suppress fires. Includes interaction with the public for wildland fire prevention and educational purposes; 2) Go back and forth vigilantly over a length of control line during and/or after construction to prevent breakovers, suppress spot fires, and extinguish overlooked hot spots. (2) A person or group of persons who carry out patrol actions.

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Patrol time - Elapsed time from completion of original mopping up until the fire is declared to be extinguished.

Patrol unit - Any light, mobile unit with limited pumping and water capacity.

Pattern - The distribution of an aerially delivered retardant drop on the target area in terms of its length, width, and momentum (velocity x mass) as it approaches the ground. The latter determines the relative coverage level of the fire retardant on fuel within the pattern. Synonym: Drop pattern.

Pattern clusters - A group of indicators in a “close proximity,” of the same or different categories, that exhibit consistent directional values.

Payload - Weight of passengers and/or cargo being carried by an aircraft.

Peak fire season - That period of the fire season during which fires are expected to ignite most readily, to burn with greater than average intensity, and to create damages at an unacceptable level. (USFS)

Peak monthly average - Highest monthly average of human-caused fires calculated for a protection unit.

Peak wind - The greatest 5-second average wind speed during the previous hour that exceeded 25 knots.

Peak wind direction - Direction at peak wind speed.

Peak wind speed - Maximum wind speed during the previous 60 minutes.

Percolation - Passage of liquid through a porous body, as movement of water through soil.

Perennial plant - A plant that lives for more than two growing seasons. For fire danger rating purposes, biennial plants are classed with perennial plants. (See: Annual; Annual plant)

Performance chart - A chart, table, or graph provided by the manufacturer for use in determining an aspect of helicopter and fixed-wing aircraft performance.

Performance oriented objectives - On-the-job performance enhancement is a result of online training. Performance oriented objectives or learning objectives for this training is developed, agreed to, and tested to ensure skill transfer. The purpose of learning objectives is to define the type of learning or performance outcomes that will occur at the conclusion of instruction and how learning will be assessed. Both objectives and performance outcomes should be written as precisely as possible to best determine whether they have been achieved.

Perimeter access - Any road, trail, or route that will allow firefighting forces to reach the perimeter of a wildland fire.

Period of alert – The period of time when suppression crews, equipment, and aircraft are kept ready for deployment on short notice; usually employed when fire danger reaches a predetermined severity index.

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Permafrost - A short term for “permanently frozen ground,” any part of the earth’s crust, bedrock, or soil mantle that remains below 32°F (0°C) continuously for several years.

Personal protective equipment (PPE) – (1) All firefighting personnel must be equipped with proper equipment and clothing to mitigate the risk of injury from, or exposure to, hazardous conditions encountered while working. PPE includes, but is not limited to 8-inch high-laced leather boots with lug soles, fire shelter, hard hat with chin strap, goggles, ear plugs, aramid shirts and trousers, leather gloves and individual first aid kits. (USFS) (2) That equipment and clothing required to mitigate the risk of injury from or exposure to hazardous conditions encountered during the performance of duty. PPE includes but is not limited to fire resistant clothing, hard hat, flight helmets, shroud, goggles, gloves, respirators, hearing protection, chainsaw chaps, and shelter.

Personnel accountability - The ability to account for the location and welfare of personnel, accomplished when supervisors ensure that the ICS principles and processes are functional, and personnel are working within these guidelines.

Personnel pool – Firefighting personnel who report to the incident without an assignment (i.e., they are not assigned to an increment, strike team, or organizational unit).

Personnel time recorder – A person responsible to the time unit leader for daily recording of the time of all personnel at the incident, posting commissary charges to the time reports, closing out all records prior to personnel leaving the incident, and distributing completed time documents according to each agency's policy.

Physics of fire spread - A spreading fire which can be examined at many scales. Education Note: For example, an incident commander working to contain a large fire observes the behavior of the fire at a level of spatial resolution that is no more detailed than a single watershed. A firefighter working on the same fire has less of an understanding of how the fire is moving through the various watersheds in the area and instead focuses only on the behavior of that portion of the fire front that is most nearby and (potentially) threatening. It is impractical to discuss the physics of fire spread from either of these scales. Instead, an idealized description of the fire and fuel bed is helpful. (Physics Department, UCSB)

PIBAL - Pilot Balloon Operation.

PIO1, PIO2, PIOF - Public Information Officer.

Pike pole - Any number of designs for a piece of equipment used for overhaul in fire-damaged buildings. Most often it is use for the opening of ceilings. Education Note: Of all the tools of the fire service, the pike pole is probably among the most often used. It is often the practice to have one carried in by a firefighter at all structure fires. The most common design is a hook with a point. The pike pole is the "mouse trap" of the fire service. It seems that almost everyone believes that they can create a better one. The Dallas Fire Department is famous for one that looks like a harpoon that has a hammer type of handle. If you have ever seen a dent puller with a slide hammer type of handle, you can get the picture. A few designs are pictured.

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Piling and Burning - Piling slash resulting from logging or fuel management activities and subsequently burning the individual piles.

Pilot balloon operation (PIBAL) - A method of determining winds aloft by periodically reading the elevation and azimuth angles of a theodolite, usually at one-minute intervals, while tracking the ascent of a small free-lift balloon. A PIBAL is commonly used for constructing a wind profile.

Pilotage - Navigation of aircraft by visual reference to landmarks.

Pilot-in-Command (aviation) - The pilot responsible for the operation and safety of an aircraft during flight time.

Pin lug coupling - A hose coupling with one or more cylindrical studs on its outside rim. The studs allow the use of a spanner wrench to tighten the coupling.

Pincer action - Direct attack around a fire in opposite directions by two or more attack units. Usually conducted from the fire's tail to head.

Ping-pong ball system - Mechanized method of dispensing DAIDs (Delayed Aerial Ignition Devices) at a selected rate. The DAIDs are polystyrene balls, 1.25 inches in diameter, containing potassium permanganate. The balls are fed into a dispenser, generally mounted in a helicopter, where they are injected with a water-glycol solution and then drop through a chute leading out of the helicopter. The chemicals react thermally and ignite in 25-30 seconds. The space between ignition points on the ground is primarily a function of helicopter speed, gear ratio of the dispenser, and the number of chutes used (up to four). (See: Aerial ignition device; Delayed aerial ignition devices; Helitorch; Plastic Sphere Dispenser)

Plan of attack - The selected course of action and organization of personnel and equipment in fire suppression, as applied to a particular fire or to all fires of a specific type.

Planetary boundary layer - That part of the earth's lower atmosphere that is directly influenced by the presence of the earth's surface and responds to surface forcing's such as fronts, friction, evapotranspiration, and convective mixing.

Planning interval - Period of time between scheduled planning meetings.

Planning meeting - A meeting held regularly throughout the duration of an incident, to select specific strategies and tactics for incident control operations and to plan for needed service and support. On larger incidents, the planning meeting is a major element in the development of the Incident Action Plan.

Planning section – The section that is responsible for the collection, evaluation, and dissemination of tactical information related to the incident, and for the preparation and documentation of incident action plans. The section also maintains information on the current and forecasted situation, and on the status of resources



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assigned to the incident. Includes the situation, resource, documentation, and demobilization units, as well as technical specialists.

Planning Section Chief (PSC1 or PSC2) - An ICS person who is responsible for supervising the Planning Section. Reports to the Incident Commander and is a member of the General Staff. This position may have one or more deputies assigned. (See: Planning section)

Plastic sphere dispenser (PSD) - Device installed, but jettisonable, in a helicopter, which injects glycol into a plastic sphere containing potassium permanganate, which is then expelled from the machine and aircraft. This produces an exothermic reaction resulting in ignition of fuels on the ground for prescribed or wildland fire applications. (See: Aerial ignition device; Delayed aerial ignition devices; Helitorch; Ping-pong ball system)

Plow line - Fireline constructed by a fire plow, usually drawn by a tractor or other motorized equipment. (See: Dozer; Dozer line; Tractor; Tractor plow)

Plug - A slang term for a fire hydrant. Education Note: The term “plug” survives from the days when water mains had holes in the tops that were plugged. Many firefighters would like to keep this word while many others think it should be replaced with the accurate term “hydrant.”

Plume - A convection column generated by combustion (of wildland fuel). (See: Convection column)

Plume rise - How high above the level of release an emission plume rises.

Plume-dominated wildland fire - A wildland fire whose activity is determined by the convection column.

PM10 (PM₁₀) - Particulate matter of mass median aerodynamic diameter (MMAD) less than or equal to 10 micrometers.

PM2.5 (PM_{2.5}) - Particulate matter of mass median aerodynamic diameter (MMAD) less than or equal to 2.5 micrometers.

Pockets of a fire - Unburned indentations in the fire edge formed by fingers or slow burning areas.

Point of attack - That part of the fire on which work is started when suppression crews arrive.

Point of origin - (1) An element of fire behavior, indicating where a fire began, supporting further analysis of where the fire went or will go; evidence of specific origin is often obscured or destroyed by suppression tactics. (2) The location where a competent ignition source met the material first ignited and sustained combustion occurred.

Point source - A permanent source of air pollution that can be distinctly identified such as a smokestack.



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Point source fire predictions - Predictions that apply to an initiating fire burning during a time when conditions have been relatively constant, or where it can be assumed that the fire will maintain a basically elliptical shape.

Poise - Unit of fluid viscosity in fire retardant, defined as tangential force per unit area (dynes/square centimeter) required to maintain unit difference in velocity (1 centimeter/second) between two parallel planes separated by 1 cm of fluid (1 poise=1 dyne-second/cubic centimeter).

Portable pump - Small gasoline-driven pump that can be carried to a water source by one or two firefighters or other conveyance over difficult terrain.

Portatank - Container, either with rigid frame or self-supporting, which can be filled with water or fire chemical mixture from which fire suppression resources can be filled. It can also be a source for charging hose lays from portable pumps or stationary engines.

Position currency requirement - The requirement to perform satisfactorily in a specified position within the last five years (three years for aviation and expanded dispatch positions) to maintain qualification for the position.

Position performance assignment - An assignment in which an individual is being evaluated for tasks found in the position task book. (See: Position task book)

Position task book (PTB) - A document listing the performance requirements (competencies and behaviors) for a position in a format that allows for the evaluation of individual (trainee) performance to determine if an individual is qualified in the position. Successful performance of PTB tasks, as observed and recorded by a qualified evaluator, will result in a recommendation to the trainee's home unit that the individual be certified in the position. (See: Agency certification; Behavior; Competency; Evaluator; Home unit; Trainee)

Positive displacement pump - A pump which moves a specified quantity of water through the pump chamber with each stroke or cycle; it is capable of pumping air, and therefore is self-priming, but must have pressure relief provisions if plumbing or hoses have shut-off nozzles or valves. Gear pumps and piston pumps are common examples of this type.

Potato roll - Quick method of rolling hose for pick up; hose is rolled as a ball of string.

Pounds per square inch (PSI) – The measurement of pressure (e.g., pump pressure, nozzle pressure, friction loss in hose, pressure loss or gain due to elevation).

PPE - Personal protective equipment.



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Preattack - A planned, systematic procedure for collecting, recording, and evaluating prefire and fire management intelligence data for a given planning unit or preattack block. The planning phase is usually followed by a construction and development program integrated with other resources and activities.

Preattack block - Unit of wildland delineated by logical and strategic topographic features for preattack planning.

Preattack planning - Within designated blocks of land, planning the locations of firelines, fire camps, water sources, and helispots; planning transportation systems, probable rates of travel, and constraints of travel on various types of attack units; and determining what types of attack units likely would be needed to construct particular firelines, their probable rate of fireline construction, and topographic constraints on fireline construction.

Precautionary landing - A landing necessitated by apparent impending failure of engines, systems, or components which makes continued flight unadvisable.

Precipitation - Any or all forms of water particles, liquid or solid, that fall from the atmosphere and reach the ground.

Precipitation amount - The total amount of precipitation that occurred within the preceding 24-hour period.

Precipitation duration - Time, in hours and fraction of hours, that a precipitation event lasts. More precisely, for fire danger rating purposes, the length of time that fuels are subjected to liquid water.

Precipitation gauge - Device commonly used to collect and permit measurement of any form of rain and snow sufficiently heavy to have fallen to the earth's surface. Also called rain gauge.

Precision approach procedure - A standard instrument approach procedure for fixed-wing aircraft in which an electronic glide slope is provided, such as ILS and PAR.

Precision approach radar (PAR) - Blind landing in which the aircraft is observed from the ground by means of radar and directed along a suitable glide path by instructions radioed to the pilot.

Preconnected - Hard suction hose or discharge hose carried connected to pump, eliminating delay occasioned when hose and nozzles must be connected and attached at fire.

Predictive services - Those Geographic Area and National-level fire weather or fire danger services and products produced by wildland fire agency meteorologists and intelligence staffs in support of resource allocation and prioritization.

Pre-green - In the 1978 version of NFDRS, the herbaceous stage approximately 30 days prior to green-up.



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Preignition combustion phase - Thermal or chemical decomposition of fuel at an elevated temperature. This is the pre-combustion stage of burning during which distillation and pyrolysis predominate. Education Note: Heat energy is absorbed by the fuel which, in turn, gives off water vapor and flammable tars, pitches, and gases. These ignite when mixed with oxygen to initiate the flaming combustion phase.

Preignition phase - Preliminary phase of combustion in which fuel elements ahead of the fire are heated, causing fuels to dry. Heat induces decomposition of some components of the wood, causing release of combustible organic gases and vapors.

Preparedness - (1) Condition or degree of being ready to cope with a potential fire situation. (USFS) (2) Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination. (3) Mental readiness to recognize changes in fire danger and act promptly when action is appropriate. (4) The range of deliberate, critical tasks, and activities necessary to build, sustain, and improve the capability to protect against, respond to, and recover from domestic incidents. (See: Readiness)

Preparedness level - Increments of planning and organization readiness commensurate with increasing fire danger.

Preparedness plan - A written plan providing for timely recognition of approaching critical fire situations, priority setting, the deployment of forces, and other actions to respond to those situations.

Prescribed burn - Deliberately ignited fire for the purpose of forest or prairie management, often to remove heavy fuel buildup or simulate natural cycles of fire in an ecosystem. A prescribed burn is also known as a “controlled burn,” even if it becomes uncontrollable.

Prescribed burning - Application of prescribed fire.

Prescribed fire - Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements (where applicable) must be met, prior to ignition. (USFS) (See: Wildland fire)

Prescribed Fire (Burn Plan) – (1) This document provides the prescribed fire burn boss information needed to implement an individual prescribed fire project. (USFS) (2) A plan required for each fire application ignited by management. Plans are documents prepared by qualified personnel, approved by the agency administrator, and include criteria for the conditions under which the fire will be conducted (a prescription). Plan content varies among the agencies. (See: Implementation Plan)

Prescription - Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may



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include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations. (USFS)

Pressure gradient - The difference in atmospheric pressure between two points on a weather map. That is, the magnitude of pressure difference between two points at sea level, or at constant elevation above sea level. Wind speed is related to pressure gradient. Education Note: If distance between constant pressure lines is reduced by one-half, wind speed will be doubled. Conversely, if distance between lines is doubled, wind speed will be reduced by one-half.

Pressure loss - Reduction in water pressure between a pump or hydrant and a nozzle due to expenditure of pressure energy required to move water through a hose; includes losses due to back pressure, friction loss, elevation loss, and/or losses in fittings.

Pressure pattern - The distribution of surface atmospheric pressure features over an area of the earth as shown on a weather map. Surface pressure features include lines of constant pressure (isobars), highs, lows, and pressure gradient. The pressure pattern is directly related to wind speeds and directions at specific locations.

Presuppression - Activities in advance of fire occurrence to ensure effective suppression action. Includes planning the organization, recruiting, and training, procuring equipment and supplies, maintaining fire equipment and fire control improvements, and negotiating cooperative and/or mutual aid agreements.

Pretreat - The use of water, foam, or retardant along a control line in advance of the fire. Often used where ground cover or terrain is considered best for control action.

Prevention - (1) Activities directed at reducing the incidence of fires, including public education, law enforcement, personal contact, and reduction of fuel hazards (fuels management). (2) Actions to avoid an incident, to intervene for the purpose of stopping an incident from occurring, or to mitigate an incident's effect to protect life and property. Includes measures designed to mitigate damage by reducing or eliminating risks to persons or property, lessening the potential effects or consequences of an incident. (See: Fire education)

Prevention of Significant Deterioration (PSD) - A program identified by the Clean Air Act to prevent air quality and visibility degradation and to remedy existing visibility problems. Areas of the country are grouped into 3 classes which are allowed certain degrees of pollution depending on their uses. National Parks and Wilderness Areas meeting certain criteria are "Class I" or "clean area" in that they have the smallest allowable increment of degradation.

Primary lookout - A lookout point that must be staffed to meet planned minimum seen area coverage in each locality. For that reason, continuous service is necessary during the normal fire season and the lookout (person) is not sent to fires.



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Primary search - A quick search of all compartments in a structure for victims. Education Note: Early in any fire or hazardous environment search or rescue command, incident command will call for a “primary search.”

Priming - Filling pump with water when pump is taking water not under a pressure head. Priming is necessary for centrifugal pumps.

Probability - A number representing the chance that a given event will occur. The range is from 0% for an impossible event, to 100% for an inevitable event.

Probability forecast - A forecast of the probability of occurrence of one or more of a mutually exclusive set of weather contingencies as distinguished from a series of categorical statements.

Probability of ignition - The chance that a firebrand will cause an ignition when it lands on receptive fuels.

PROC - Procurement Unit Leader.

Procurement Unit - Functional unit within the Finance/Administration Section responsible for managing all financial matters pertaining to vendor contracts.

Procurement Unit Leader (PROC) - An ICS person who responsible for supervising the Procurement Unit. Reports to the Finance/Administration Section Chief. (See: Procurement Unit)

Progressive hose lay - (1) A method of deploying hoses along firelines during suppression and as they are built and reinforced, typically using 1½-inch supply lines, gated wyes and 1-inch lateral lines with nozzles (or at least spigot valves) every 100 feet or so. As the line progresses, more hoses and valves are added. (2) A hose lay in which double shutoff wye (Y) valves are inserted in the main line at intervals and lateral lines are run from the wyes to the fire edge, thus permitting continuous application of water during extension of the lay. (3) A hose lay used on a wildland fire, usually on the flanks, to follow up a hand line made by crews or as a means of making a "wet line" along the fire's edge. Major components of this lay include 1 1/2-inch hose as a main feeder line with 1-inch hose branched off it, usually every 100 to 150 feet. (NWCG)

Progressive method of line construction - A system of organizing workers to build fireline in which they advance without changing relative positions in line.

Project activity level (PAL) - An application of fire danger rating to support regulation of contractors involved in land management activities for fire prevention purposes in California.

Project fire – (1) A fire of such size or complexity that a large organization and prolonged activity is required to suppress it. (USFS) (2) Any large fire requiring extensive management and the establishment of a temporary infrastructure to support firefighting efforts, such as fire camps.

Project fires – Fires that require a large amount of logistical and service support to suppress. Fires that need a supervisor in each of the five major functions of ICS.

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Project objectives - The specific results expected from completing a project.

Proportioner - A device that adds a predetermined amount of foam concentrate to water to form foam solution.

Protecting agency - Agency responsible for providing direct incident management within a specific geographical area pursuant to its jurisdictional responsibility or as specified and provide by contract, cooperative agreement, etc. (See: Fire agency; Responsible fire agency)

Protection - The actions taken to limit the adverse environmental, social, political, and economical effects of fire.

Protection area - That area for which a particular fire protection organization has the primary responsibility for attacking an uncontrolled fire and for directing the suppression action. Such responsibility may develop through law, contract, or personal interest of the firefighting agent (e.g., a lumber operator). Several agencies or entities may have some basic responsibilities (e.g., private owner) without being known as the fire organization having direct protection responsibility. Synonym: Direct Protection Area.

Protection boundary - The exterior perimeter of an area within which a specified fire agency has assumed a degree of responsibility for wildland fire control. It may include land in addition to that for which the agency has jurisdiction or contractual responsibility.

Protection indicators - Fuels that are unburned or exhibit a less damaged appearance on the non-origin side of the fuel itself or other objects.

Protection unit - A geographical area, which is administratively defined, and which is the smallest area for which organized fire suppression activities are formally planned.

PSC1/PSC2 - Planning Section Chief.

PSD - Plastic sphere dispenser; Prevention of significant deterioration.

PSI - Pounds per square inch.

Psychrometer - General name for instruments designed to determine the moisture content of air. A psychrometer consists of dry- and wet-bulb thermometers that give the “dry” and the “wet-bulb” temperatures, which in turn are used to determine relative humidity and dew point.

PTB - Position Task Book.

Public aircraft - Aircraft used only in the service of a government or a political subdivision. It does not include any government-owned aircraft engaged in carrying persons for commercial purposes.



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Public Information Officer (PIO1, PIO2, PIOF) - An ICS position which is responsible for developing and releasing information about the incident to the news media, incident personnel, and to other appropriate agencies and organizations. The PIO reports to the Incident Commander and is a member of the Command Staff. This position may have one or more assistants assigned.

Pulaski (P-tool) - (1) A combination axe and grub hoe tool with a straight handle, used for building handline. (2) A combination chopping, and trenching tool widely used in fireline construction, which combines a single-bitted axe blade with a narrow adze-like trenching blade fitted to a straight handle. Education Note: The Pulaski tool is well-balanced for chopping. Pulaski is also referred to as a “P-tool.”

Pumper - Another term for an “Engine.” Education Note: The term “pumper” is more common in some parts of the country than others, but you can find this term in some use in almost any region.

Punky (Punkie) Material - Partly decayed material, such as old wood, in which fire can smolder unless it is carefully mopped up and extinguished. Punky materials are good receptors for firebrands when dry.

Pyrolysis - The thermal or chemical decomposition of fuel at an elevated temperature. This is the preignition combustion phase of burning during which heat energy is absorbed by the fuel which, in turn, gives off flammable tars, pitches, and gases.

Pyrotechnic - A mixture of chemicals designed to produce heat, light, gas, smoke, or noise.



Quad - An apparatus that has four capabilities. While not as common as a "Quint" some departments do use such vehicles.

Quadrangle – A mapping unit which defines an area in terms of longitude and latitude distance. Two common scales are 1:24,000 quadrangles, which are 7.5' longitude x 7.5' latitude, and 1:62,500 quadrangles, which are 15' longitude x 15' latitude.

Qualification sheet - A written resume of an expert witness used to show that expert’s sufficient special expertise in the field.

Qualifications and Certification - This subsystem of NIIMS provides recommended qualification and certification for those personnel responding to an incident regionally or nationally, allowing for the development of local minimum standards to meet local needs. Standards typically include training, experience, and physical fitness. (See: National Interagency Incident Management System)

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Quint - A piece of firefighting apparatus that can perform five of the major functions of fire apparatus. These include: Carry hose. Carry water. Pump water. Aerial ladder/water tower operations. Education Note: The apparatus should also carry large amounts of ladders of to be considered a truck.



R&R, Rest and Recovery (or Recuperation) - This a location or procedure allowing emergency workers to take breaks and recover. Education Note: It might be as simple as getting a drink and a fresh air cylinder or it may involve food or even medical checks. It depends upon the extent of the operation. The time of year, summer v. winter, can also play a part in what is offered in R&R. It might be a place to cool off or warm up. Some departments have vehicles designed just for R&R. They might have cook tops and bathrooms. These are somewhat rare. Most departments will set up an area under a tree or awning, etc.

RACM - Reasonably available control measures.

RAWS - Remote Automatic Weather Station.

Radial - A magnetic bearing extending from a ground-based navigational system, providing airborne navigation information.

Radiant burn – (1) A burn received from a radiant heat source. (USFS) (2) A thermal trauma that maybe a superficial, partial thickness or full thickness burn.

Radiant heat flux - The amount of heat flowing through a given area in each time, usually expressed as calories/square centimeter/second. (USFS)

Radiation - (1) Propagation of energy in free space by virtue of joint, undulatory variations in the electric or magnetic fields in space, (i.e., by electromagnetic waves). (2) Transfer of heat in straight lines through a gas or vacuum other than by heating of the intervening space.

Radio cache - A cache may consist of a number of portable radios, base station, and, in some caches, a radio repeater that is stored in a predetermined location for dispatch to incidents.

Radio fix - Determination of position by one or more radio navigational aids.

Radiosonde - A device carried aloft by a balloon equipped with measuring instruments that automatically convert temperature, pressure, and humidity data into electrical impulses and transmit this information to a ground recorder. (See: Sounding: Upper air sounding)



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Railroad fire - A fire resulting from any operation or activity of a railroad, except smoking.

Range fire - Any wildfire on rangeland.

Ranger District - An administrative subdivision of a national forest (under a district ranger) or other tract of public land.

Rapeller - The crew of specialist firefighters who are trained to access a fire area by sliding down ropes suspended from a hovering helicopter. Also used for delivering wilderness first aid if a rapeller is an EMT.

Rappelling - Technique of landing specifically trained and certified firefighters from hovering helicopters; involves sliding down ropes with the aid of friction-producing devices. (USFS)

Rate of Spread – (1) The relative activity of a fire in extending its horizontal dimensions. It is expressed as rate of increase of the total perimeter of the fire, as rate of forward spread of the fire front, or as rate of increase in area, depending on the intended use of the information. Usually it is expressed in chains or acres per hour for a specific period in the fire's history. (USFS) (2) A factor usually on a scale of 1 to 100 which represents a relative rate of forward spread for a specific fuel condition and fixed weather conditions (or fuel model). (See: Forward rate of spread)

Rate of Spread Factor - A fire behavior term used to express relative horizontal growth of a wildland fire. Expressed in total perimeter growth in chains per hour. One chain equals 66 feet. Education Note: Factors can be used as multipliers, arguments for entering tables, or provide a ratio of values between two fuels.

Rate of spread meter - A device that computes the probable rate of spread of a fire for different combinations of fuel moisture, wind speed, and other selected factors.

Rating period - Part of the National Fire Danger Rating System (NFDRS). The period of time during which a fire danger rating value is considered valid or representative for administrative or other purposes. Normally it is 24 hours extending from midnight to midnight.

Rawinsonde - Method of upper-air observation consisting of an evaluation of the wind speed and wind direction, temperature, pressure, and relative humidity aloft by means of a balloon-borne radiosonde tracked by a radar or radio direction-finder.

RCDM - Receiving and Distribution Manager.

Reaction intensity - The rate of heat release, per unit area of the flaming fire front, expressed as heat energy/area/time, such as Btu/square foot/minute, or Kcal/square meter/second. (See: Combustion rate)

Readiness - (1) A condition or degree of being completely ready to cope with a potential fire situation. (2) Mental readiness to recognize changes in fire danger and act promptly when action is appropriate. (See: Preparedness)

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Rear (of a fire) - 1) That portion of a fire spreading directly into the wind or down slope; 2) That portion of a fire edge opposite the head; 3) Slowest spreading portion of a fire edge; also called the heel of a fire.

Reasonably Available Control Measures (RACM) - Control measures developed by EPA which apply to residential wood combustion, fugitive dust, and prescribed and silvicultural burning in and around “moderate” PM-10 non-attainment areas. RACM is designed to bring an area back into attainment and uses a smoke management program which relies on weather forecasts for burn/no-burn days. (See: Best available control measures)

Reburn - (1) An area that has reburned. (2) The burning of an area that has been previously burned but that contains flammable fuel that ignites when burning conditions are more favorable. (USFS) (3) Repeat burning of an area over which a fire has previously passed, but left fuel that later ignites when burning conditions are more favorable.

Receiving and Distribution Manager (RCDM) - An ICS position which is responsible for receiving and distributing supplies and equipment ordered for the incident and reports to the Supply Unit Leader. (See: Supply unit)

Re-certification - Confirmation through the re-issuance of an incident qualification card that an individual has regained qualifications for a specified position that was lost through a lack of current experience. Education Note: A key component in the certification or re-certification process is the subjective evaluation by the appropriate agency official of an individual’s capability to perform in a position.

RECON - Reconnaissance.

Reconnaissance (RECON) - To examine a fire area to obtain information about current and probable fire behavior and other related fire suppression information.

Recorders - Individuals within ICS organizational units who are responsible for recording information. Recorders may be found in planning, logistics and finance/administration units.

Recovery - (1) The increase in fuel moisture because of increased relative humidity, usually occurring overnight. (2) The general term used to describe the maximum overnight value of atmospheric relative humidity.

Recreation fire - A fire resulting from recreational use, except smoking.

Recurrent training - Training scheduled at established intervals that has been identified as required training to maintain position currency.

Red card – (1) Fire qualification card issued to fire rated persons showing their training needs and their qualifications to fill specified fire suppression and support positions in a large fire suppression or incident



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organization. (USFS) (2) Credentials issued to qualified wildland firefighters, listing their qualifications and specialties.

Red-flag day - Weather conditions creating a critical fire hazard, may require closing the forest to non-emergency activities to minimize the risk of accidental wildland fires.

Red flag warning – A term used by fire weather forecasters to alert forecast users to an ongoing or imminent critical fire weather pattern. (USFS) (See: Fire weather watch)

Reel - A frame on which hose is wound, now chiefly used for “booster” or small hose (3/4- or 1-inch hose) (19 or 25 mm) supplied by a water tank on the apparatus; also, a hand-drawn 2-wheel frame for 2-1/2 inch (64 mm) hose used in industrial plants.

Regional haze - Visibility impairment caused by the cumulative air pollutant emissions from numerous sources over a wide geographic area. (See: Haze)

Rehabilitation – (1) The activities necessary to repair damage or disturbance caused by wildland fires or the fire suppression activity. (USFS) (2) Efforts undertaken within three years of a wildland fire to repair or improve fire damaged lands unlikely to recover to a management approved conditions or to repair or replace minor facilities damaged by fire.

Rekindle - Reignition due to latent heat, sparks, or embers or due to presence of smoke or steam.

Relative greenness (RG) - An NDVI-derived image of vegetation greenness compared to how green it has been historically. (See: Greenness factor)

Relative humidity (Rh) – (1) The ratio of the amount of moisture in the air, to the maximum amount of moisture that air would contain if it were saturated. The ratio of the actual vapor pressure to the saturated vapor pressure. (USFS) (2) The amount of moisture in a given parcel of air expressed as a percentage of the maximum amount that parcel of air could hold at the same air temperature. (NWCG)

Relay - Use of two or more fire pumps to move water a distance which would require excessive pressures to overcome friction loss if only one pump were employed at the source.

Relay tank - A tank, usually collapsible, used as a reservoir in the relay of water from one fire pump to another.

Release order - The order that defines when personnel and/or equipment will be ready for release from an incident.

Relief valve - A pressure-controlled device which bypasses water at a fire pump to prevent excessive pressures when a nozzle is shut down.

Reload base - An airfield where air tankers are reloaded but not permanently stationed. (See: Air attack base)

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Remote Automatic Weather Station (RAWS) - A weather station that transmits weather observations via GOES satellite to the Wildland Fire Management Information System. (USFS)

Repeater - A radio signal station that automatically relays a radio transmission, sometimes over a different frequency, thereby increasing the range of transmission. Repeaters are often named for the mountaintops or peaks where they are installed.

Report time - Elapsed time from fire discovery until the first personnel charged with initiating action for fire suppression are notified of its existence and location.

Reportable fire - Any wildfire that requires fire suppression to protect natural resources or values associated with natural resources or is destructive to natural resources.

Reporting locations - Location or facilities where incoming resources can check-in at the incident. Check-in locations include incident command post (resources unit), incident base, camps, staging areas, helibases, helispots, and direct to the line. Check-in at one location only. (See: Check-in)

Required experience - Documented, satisfactory performance in a specified position needed to qualify for another (generally higher level) position. Required experience cannot be challenged.

Required training - A course or courses that must be completed prior to initiating a position task book. Training which has been identified as required cannot be challenged; an agency equivalent course may be used as a substitute when the course meets or exceeds a required course's learning and performance objectives.

Rescue - Saving a life from fire or accident; removing a victim from an untenable or unhealthy atmosphere.

Rescue medical - Any staffed ground vehicle capable of providing medical services.

Rescue medical vehicle - Any staffed ground vehicle capable of providing emergency medical care and staffed with appropriate number of trained personnel and equipment for that incident.

Reserve - Resources of equipment and manpower not assigned to a specific task, but available for assignment.

Residence time - The time, in seconds, required for the flaming front of a fire to pass a stationary point at the surface of the fuel. The total length of time that the flaming front of the fire occupies one point.

Residual combustion stage - The smoldering zone behind the zone of an advancing fire front.

Residual smoke - Smoke produced by smoldering material. The flux of smoke originating well after the active flaming combustion period with little or no vertical buoyancy and, therefore, most susceptible to subsidence inversions and down-valley flows.



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Resistance to control - The relative difficulty of constructing and holding a control line as affected by resistance to line construction and by fire behavior. Resistance to control is also known as “difficulty of control.”

Resistance to line construction - The relative difficulty of constructing control line as determined by the fuel, topography, and soil.

RESL - Resources Unit Leader.

Resource capability - The ability of the wildland fire program to respond to current and anticipated workload needs for the area of concern.

Resource Management Plan (RMP) – A document prepared by field office staff with public participation and approved by field office managers that provides general guidance and direction for land management activities at a field office. The RMP identifies the need for fire in a particular area and for a specific benefit. (USFS)

Resource order – (1) An order placed for firefighting or support resources. (USFS) (2) The form used by dispatchers, service personnel, and logistics coordinators to document the request, ordering or release of resources, and the tracking of those resources on an incident.

Resource Ordering and Status System (ROSS) - A national system that provides automated support to interagency and agency dispatch and coordination offices. The system will provide current status of resources available to support all risk activities; enable dispatch offices to exchange and track resource ordering information electronically; enable dispatch offices to rapidly and reliably exchange mission-critical emergency electronic messages.

Resource Status Board - Visual aid containing pertinent information regarding fire organization, current operational period resources, previous operational period resources, and next operational period resources being prepared; placed at a convenient location in fire camp for review by fireline overhead personnel on large fires.

Resource Use Specialist - The person responsible to the planning section chief for determining capabilities and limitations of resources at an incident.

Resource value-at-risk - Fire suppression planning tool providing a relative expression (in five classes) of fire effects on all resources (not the value of the resources themselves).

Resources - (1) Personnel, equipment, services and supplies available, or potentially available, for assignment to incidents. Personnel and equipment are described by kind and type, e.g., ground, water, air, etc., and may be used in tactical, support or overhead capacities at an incident. (2) The natural resources of an area, such as timber, grass, watershed values, recreation values, and wildlife habitat. (USFS) (See: Active resources; Allocated resources; Assigned resources; Available resources; Values to be protected; Values-at-risk)

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Resources Unit - Functional unit within the planning section responsible for recording the status of resources committed to the incident. The unit also evaluates resources currently committed to the incident, the impact that additional responding resources will have on the incident, and anticipated resource needs.

Resources Unit Leader (RESL) - The ICS responsible for supervising the Resources Unit. Reports to the Planning Section Chief. (See: Resources Unit)

Respirator - A simple filter mask for individual protection against smoke and fumes, recommended for use in fire suppression on wildfires only; not recommended for use on structure fires or fires involving most hazardous materials. (See: Air pack; Self-contained breathing apparatus)

Response - (1) Movement of an individual firefighting resource from its assigned standby location to another location or to an incident in reaction to dispatch orders or to a reported alarm. (2) Activities that address the short-term, direct effect of an incident, including immediate actions to save lives, protect property, and meet basic human needs. Also includes the execution of emergency operations plans as well as mitigation activities designed to limit the loss of life, personal injury, property damage, and other unfavorable outcomes.

Responsible Fire Agency - Agency with primary responsibility for fire suppression on any land area. (See: Fire agency)

Restoration - The continuation of rehabilitation beyond the initial three years or the repair or replacement of major facilities damaged by the fire.

Restricted airspace - Airspace of defined dimensions identified by an area on the surface of the earth within the flight of an aircraft, which is subject to restrictions (but not wholly prohibited).

Restricted category - Aircraft that is generally used for cargo, retardant dropping, agricultural operations, survey work and other specific projects, and may not transport passengers.

Restrictions - Measures taken by jurisdictional agencies to impose bans and standards of use on certain human activities that could lead to the cause of wildland fire. Education Note: Restrictions may be applied to smoking in designated areas; open flame; mechanical operations in high-risk areas; and off-road use. (See: Closure)

Retardant - A substance or chemical agent which reduces the flammability of combustibles. (USFS)

Retardant base - Ground facilities for mixing, storing, and loading fire retardant into air tankers.

Retardant coverage - Area of fuel covered and degree of coverage on the fuel by a fire retardant, usually expressed in terms of gallons per hundred square feet (liters per square meter).

Retardant drop - Fire retardant cascaded from an air tanker or helitanker.



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Return and Hold - An order to an air tanker pilot to return to the retardant base and await further instructions; mission completed, further loads not required.

Reversible Siamese (SIMWYE) - Hose fitting that performs the functions of a Siamese or a wye (i.e., to combine the flow from two lines into a single line or to permit two lines to be taken from a single line). (See: Siamese; Wye)

RFD - Rural Fire District.

RG - Relative greenness.

RH - Relative humidity. (See: Relative humidity)

Rheologic properties - Flow characteristics of liquid fire retardants, especially their cohesiveness or ability to hold together while falling through the air.

Rheology - Science of deformation and flow of fire retardants and other liquids, especially of the cohesiveness bodies and stress-strain relationship of their particles.

RIC - Rapid intervention crew. This is a crew who will establish strictly for the purpose of rescuing emergency personnel. Some form of RIC is required by NFPA 1500 and CFR 291910. They will assemble a collection of rescue tools and spare breathing apparatus. Education Note #1: RIC personnel cannot be used for firefighting unless a new crew is detailed to take their place. These people can be rotated as relief to the fire if another crew is detailed as the RIC. Education Note #2: In some areas this may be a "Rapid Intervention Group" (RIG) but this can be confused with the fact that some regions refer to apparatus as "Rigs." A call on the radio for a "rig to the north side" might confuse a mutual aid company.

Rich tool - A long-handled combination rake and cutting tool, the blade of which is constructed of a single row of mowing machine cutter teeth fastened to a piece of angle iron. Also called fire rake or council rake. (See: Council tool)

Ridge - An elongated area of relatively high atmospheric pressure extending from the center of a high-pressure region. (See: Surface high)

Ring fire - A fire started by igniting the full perimeter of the intended burn area so that the ensuing fire fronts converge toward the center of the burn. Set around the outer perimeter of a resource to establish a protective black-line-buffer.

Risk - (1) The chance of fire starting as determined by the presence and activity of causative agents. (2) A chance of suffering harm or loss. (3) A causative agent. (4) (NFDRS) A number related to the potential of firebrands to which a given area will be exposed during the rating day.

Risk index (RI) - 1 A number related to the probability of a firebrand igniting a fire.

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Risk management (RM) - A continuous, five-step process that provides a systematic method for identifying and managing the risks associated with any operation.

Risk source - Identifiable human activity that historically has been a major cause of wildfires on a protection unit; one of the eight general causes listed on the standard fire report.

Risk source ratio - Portion of human-caused fires that have occurred on a protection unit chargeable to a specific risk source; calculated for each day of the week for each risk source.

RIT - Rapid intervention team. (See: RIC)

RM - Risk management.

Rocker lug coupling - Hose coupling in which the lugs used for tightening or loosening are semicircular in shape and designed to pass over obstructions.

Roll cloud - A turbulent altocumulus-type cloud formation found in the lee of some large mountain barriers. Education Note: The air in the cloud rotates around an axis parallel to the range. Also sometimes refers to part of the cloud base along the leading edge of a cumulonimbus cloud; it is formed by rolling action in the wind shear region between cool downdrafts within the cloud and warm updrafts outside the cloud. A roll cloud is also known as a “rotor cloud”.

ROSS - Resource Ordering and Status System.

Rotor - Assembly of airfoils (rotor blades), together with a hub and attachments, that rotates about an axis to provide lift and/or thrust on a helicopter.

Rotor blast - Air turbulence occurring under and around the main rotor of an operating helicopter. A rotor blast is also known as a “rotor downwash.”

Rotor diameter - The main rotor arc in feet and inches (meters). The rotor diameter is used for planning helispot clearance.

Rotorcraft - An aircraft that depends principally on the lift generated by one or more rotors for its support in flight. Also called rotary wing. Synonym: Helicopter.

Rough - The accumulation of living and dead ground and understory vegetation, especially grasses, forest litter, and draped dead needles, sometimes with addition of underbrush such as palmetto, gallberry, and wax myrtle. Most often used for southern pine types.

Rough reduction - Reduction of fire hazard in rough, usually by prescribed burning.

Route card - Index card used by a dispatcher and frequently carried on fire apparatus which lists specific directions for responding to individual rural properties. Education Note: The route card frequently includes a

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description of the property, water sources available, and any special information pertinent to fire suppression and rescue operations. A route card is also known as a “running card.”

Run (of a fire) – The rapid advance of the head of a fire, characterized by a marked transition in fireline intensity and rate of spread with respect to that noted before and after the advance. (USFS)

Running fire - (1) A rapidly advancing surface fire with a well-defined head and with a marked increase in fireline intensity and rate of spread. (2) Behavior of a fire spreading rapidly with a well-defined head.

Rural - Any area wherein residences and other developments are scattered and intermingled with forest, range, or farmland and native vegetation or cultivated crops.

Rural Fire District (RFD) - An organization established to provide fire protection to a designated geographic area outside of areas under municipal fire protection. Usually has some taxing authority and officials may be appointed or elected.

Rural fire protection - Fire protection and firefighting problems that are outside of areas under municipal fire prevention and building regulations and that are usually remote from public water supplies.



S-130/S-190 - The basic wildland fire training course given to all U.S. firefighters before they can work on the fire lines.

SA - Situation awareness; Situational awareness.

Saddle - Depression or pass in a ridgeline.

Safenet (SAFENET) - A form and process, used by wildland firefighting agencies, for reporting and resolving incidents relating to firefighter safety. Education Note: The information collected in SAFENET is used to determine long-term trends and problem areas within the wildland fire industry.

Safety advisory - A safety alert addressing wildland fire safety information that isn't related to imminent or potential threats of injury. (See: Safety alert)

Safety alert - A warning or alert concerning critical information relating to firefighter safety that is distributed via email through an NWCG mail server. There are three types of alerts: 1) Safety Warning; 2) Safety Advisory; and 3) Safety Bulletin. (See: Safety advisory; Safety bulletin; Safety warning)

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Safety briefing - A safety briefing emphasizes key safety concerns on the incident and is presented at each briefing session. The safety briefing should contain information to alert incident personnel of potential risk/hazard considered to be most critical.

Safety bulletin - A safety alert containing a factual confirmation of a serious wildland fire accident, incident, or fatality. (See: Safety alert)

Safety circle - An obstruction-free circle around the (helicopter) landing pad.

Safety officer - A member of the command staff responsible to the incident commander for monitoring and assessing hazardous and unsafe situations and developing measures for assessing personnel safety.

Safety warning - A safety alert addressing wildland fire safety hazards that pose an imminent threat, or have potential to pose a threat, to life or property. (See: Safety alert)

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 line to render the line unsafe. Education Note: In firing operations, crews progress to maintain a safety zone close at hand allowing the fuels inside the control line to be consumed before going ahead. Safety zones may also be constructed as integral parts of fuelbreaks; they are greatly enlarged areas which can be used with relative safety by firefighters and their equipment in the event of blowup in the vicinity. (USFS) (See: Deployment zone)

SAIT - Serious Accident Investigation Team.

Salvo - Dropping by an air tanker of its entire load of fire retardant at one time.

Salvo drop - Total retardant or water load dropped all at once. Education Note: A Salvo drop is usually done to knock down a hot spot.

Sample - Part of a population; that portion of the population that is measured.

Sample size - The number of items or observations in a sample; usually denoted by lower case letter n.

Sand Table Exercise (STEX) - A tactical decision game that employs a three-dimensional terrain model made from sand and various props to provide a visual representation of the situation described in the tactical decision game.

Sawyer - A chainsaw crew, which may also include faller or feller who is qualified to cut down trees or snags, perhaps while the tree or snag is burning.

SCBA - Self Contained Breathing Apparatus. The type of breathing apparatus firefighters wear. Education Note: A common mistake is to think that there is only oxygen in the cylinder. There is not. The cylinder the firefighter wears is filled with the same air everyone breathes. Imagine the amount of air in a box measuring



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four feet in every direction. That is about how much air each firefighter has. Each cylinder is rated for a specific amount of time, usually 30 - 60 minutes, but that is based upon little or no exertion. A 30-minute SCBA may only last 10 minutes under some conditions.

SCKN - Status/Check-In Recorder.

SCO - Shareable content object.

Scope of practice - The set of responsibilities and ethical considerations that define the extent or limits of the care provider within the current standards of practice.

Scorch height - Average heights of foliage browning or bole blackening caused by a fire.

SCORM - Shareable Content Object Reusable Model.

Scratch line - An unfinished preliminary control line hastily established or constructed as an emergency measure to check the spread of fire. (USFS)

Scrubbing - The process of agitating foam solution and air within a confined space (usually a hose) that produces tiny, uniform bubbles - the length and type of hose determine the amount of scrubbing and, therefore, foam quality.

Sea breeze - A breeze (wind) blowing inland from the sea generally during daytime hours.

Sea-level pressure - Pressure value obtained by the theoretical reduction or increase of station pressure to sea level. The average atmospheric pressure at sea level is 14.7 psi.

Season Code - One of four designations of seasonal plant development used in the 1988 version of NFDRS.

Seasonal monthly average - Historically, the average number of human-caused fires occurring on a protection unit per month during the established fire season.

Seasonal risk class - Objective ranking of protection units within an administrative group based on the number of human-caused fires for at least the past five years.

SEAT - An acronym for single engine airtanker. A small agricultural aircraft converted for use on fires, predominantly during the initial attack phase.

SECM - Security Manager.

Second Alarm - (Third alarm etc.) In short, this is the number of times that companies are requested or dispatched to a fire. A full first alarm or "box" is a predetermined number of companies. The "second alarm" is the incident commander requesting another predetermined group of resources.



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Second Order Fire Effects (SOFE) - The secondary effects of fire such as tree regeneration, plant succession, and changes in site productivity. Although second order fire effects are dependent, in part, on first order fire effects, they also involve interaction with many other non-fire variables. (See: First order fire effects)

Secondary line - Any fireline constructed at a distance from the fire perimeter concurrently with or after a line already constructed on or near to the perimeter of the fire. Generally constructed as an insurance measure in case the fire escapes control by the primary line.

Secondary lookout - (1) A lookout point intermittently used to supplement the visible area coverage of the primary lookout system when required by fire danger, poor visibility, or other factors. (2) The person who occupies such a station.

Secondary weather station - Station at which minimum weather measurements are taken to compute ratings of burning conditions; provides supplementary information on weather experience.

Second-in-Command (aviation) - Pilot who is designated to be second-in-command of an aircraft during flight time.

Section - That organizational level with responsibility for a major functional area of the incident, such as operations, planning, logistics, finance/administration. The section is organizationally between branch and incident commander.

Sector Officer, Sector, Sector Command - Often various operations subdivisions must be established.

Education Note: This can be fire area sectors or other divisions. For high rise fires each floor of operations will likely be a sector. In some incidents there may be an EMS or triage sector. The officer in charge of each sector will direct operations within his or her sector without giving specifics to Incident Command. If a fire structure is divided into sectors they will often be set up by sides. They may be referred to as “A” or “B” sector etc. Some departments may set up “North” or “South” sectors for some incidents.

Security Manager (SECM) - An ICS person who is responsible for providing security safeguards to protect incident personnel and prevent the loss or damage of incident equipment, supplies, and property and reports to the Facility Unit Leader. (See: Facilities unit)

Security Weather Watch - Observers are posted at one or more strategic locations in the proximity of a fire to detect and warn fire personnel of pending critical weather changes that might significantly affect the fire.

Seen area - Ground, or vegetation growing thereon, that is directly visible under specified atmospheric conditions from an established or proposed lookout point or aerial detection flight route. (See: Visible area map)

Segment - A geographical area in which a task force/strike team leader or supervisor of a single resource is assigned authority and responsibility for the coordination of resources and implementation of planned tactics. A



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segment may be a portion of a division or an area inside or outside the perimeter of an incident. Segments are identified with Arabic numbers, such as “A-1,” etc. and are not to be used as radio designers.

Self-contained breathing apparatus (SCBA) - Portable air (not oxygen) tanks with regulators which allow firefighters to breathe while in toxic smoke conditions. Education Note: SCBA is usually rated for 30 minutes of service. Used primarily on fires involving structures or hazardous materials. Synonym: Air pack. (See: Respirator)

Separation - (1) Spacing of aircraft while landing and taking off at airports to achieve safe and orderly movement in flight. (2) The horizontal and vertical spacing of aircraft working over or near a wildfire or other incident. (3) Spacing of personnel while performing line construction activities.

Serious Accident Investigation Team (SAIT) - A formal investigation team that is organized with the purpose of conducting an accident investigation for an occurred serious accident. The team is given full authorization to conduct the investigation from involved agencies through letter of delegation.

Serious aircraft incident - An incident or malfunction that could adversely affect the safety of flight. (See: Aircraft incident)

Service Branch - A branch within the logistics section responsible for service activities at the incident. Includes the communications, medical and food units.

Service Branch Director (SVBD) - An ICS person who responsible for supervising the Service Branch. Reports to the Logistics Section Chief.

Service Center - Point of support for items not ordered through dispatch.

Set (setting a fire) - (1) An individual incendiary fire. (2) The point or points of origin of an incendiary fire. (3) Material left to ignite an incendiary fire at a later time. (4) Individual lightning or railroad fires, especially when several are started within a short time. (5) Burning material at the points deliberately ignited for backfiring, slash burning, prescribed burning, and other purposes.

Severity - (See: Fire severity)

Severity funding – (1) Funds provided to increase wildland fire suppression response capability necessitated by abnormal weather patterns, extended drought, or other events causing abnormal increase in the fire potential and/or danger. (USFS) (2) Suppression funds used to increase the level of presuppression capability and fire preparedness when predicted or actual burning conditions exceed those normally expected, due to severe weather conditions.

Severity index - A number that indicates the relative net effects of daily fire danger on the fire load for an area during a specified period, such as a fire season.

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Shaded fuelbreak - Fuelbreaks built in timbered areas where the trees on the break are thinned and pruned to reduce the fire potential yet retain enough crown canopy to make a less favorable microclimate for surface fires.

Shareable content object (SCO) - Self-contained units of learning. They can be used as building blocks (or legos) to create packages (lessons) of SCOs, but they cannot be broken down into smaller units. (See: Learning content management system; Learning objects)

Shareable Content Object Reusable Model (SCORM) - A specification for standardizing the reusability and interoperability of learning content. SCORM has been developed by the Advanced Distributed Learning initiative (ADL). Education Note: SCORM focuses on two critical pieces of learning content interoperability: 1) It defines an aggregation model for packaging learning content; and 2) It defines an API for enabling communications between learning content and the system that launches it. (See: Learning content management system)

SHEF - Standard Hydrologic Exchange Format code.

Shock wave - The leading edge of an expanding air mass.

Short takeoff or Landing (STOL) aircraft - An aircraft which has the capability of operating from a STOL runway in accordance with applicable airworthiness and operating regulations.

Short takeoff or Landing (STOL) airstrip - Developed or undeveloped area that has been tested and will accommodate STOL aircraft.

Short-range spotting - Firebrands, flaming sparks, or embers are carried by surface winds, starting new fires beyond the zone of direct ignition by the main fire. The range of such spotting is usually less than 1/4 mile.

Short-term - Persons or work for which employment is less than 12 months (excluding firefighters hired for a particular fire).

Short-term fire retardant - Fire retardant that inhibits combustion primarily by the cooling and smothering action of water. Chemicals may be added to the water to alter its viscosity or retard its evaporation, thereby increasing its effectiveness.

Shoulder carry - Method of carrying hose on the shoulders.

Shrub - A woody perennial plant differing from a perennial herb by its persistent and woody stem; and from a tree by its low stature and habit of branching from the base.

Shrub type - The two-category (evergreen, deciduous) classification of shrubs vegetation in the 1988 version of NFDRS.



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Shutoff nozzle - Common type of fire hose nozzle permitting stream flow to be controlled by the firefighter at the nozzle rather than only at the source of supply.

Shutoff pressure - Maximum pressure a centrifugal pump will attain when water flow is clamped or shut off.

Siamese - (1) Hose fitting (preferably gated) for combining flow from two or more lines of hose into a single stream; one male coupling to two female couplings. (2) A device which is used to combine two lines into one. (Not to be confused with a “wye” which splits one line into two.) (See: Reversible Siamese; Wye)

SIG - Special Interest Group.

Significant fire event - An event measured by the occurrence of fire(s) that requires mobilization of additional resources from outside the fire event area.

Significant fire potential - The likelihood a wildland fire event will require mobilization of additional resources from outside the area in which the fire situation originates.

Significant weather trigger - A weather phenomenon resulting in an environment that has a significant impact on fire spread, intensity, or occurrence. Example: strong wind, unstable air mass, etc.

Simms bucket - Self-leveling helibucket slung under a helicopter which can be filled by hovering over a water source.

Simple hose lay - A hoselay consisting of consecutively coupled lengths of hose without laterals. Education Note: The lay is extended by inserting additional lengths of hose in the line between pumps and nozzle. A simple hose lay is also known as a single hose lay.

Simulation - (1) A realistic portrayal of a task or operation that enables the operator/trainee to experience, under artificial conditions, situations likely to occur in actual performance of duty. Simulations are highly effective when dealing with hazardous or extremely expensive conditions. (2) An activity that imitates something real, but it is not real itself and it can be altered by users for the specific purpose of providing an experiential learning environment. Education Note: Examples: Sand Table Exercise or CBT/WBT Forest Service Wildland Fire Simulation Scenario Editor.

SIMWYE - Reversible Siamese.

Single arsonist - An offender who intentionally sets one fire.

Single door drop - Technique whereby fire retardant is released from only one compartment of an air tanker.

Single resource - An individual, a piece of equipment and its personnel complement, or a crew or team of individuals with an identified work supervisor that can be used on an incident. (USFS)

Single stage pump - Centrifugal pump with a single impeller.

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SIP - State Implementation Plan.

Site preparation - Removal or killing of unwanted vegetation, residue, etc. by use of fire, herbicides, or mechanical treatment in preparation for reforestation and future management.

Site preparation burning - Fire ignited to expose adequate mineral soil and control competing vegetation until seedlings of the desired species become established.

SITL - Situation Unit Leader.

Situation analysis - Analysis of factors which influence suppression of an escaped fire from which a plan of attack will be developed; includes development of alternative strategies of fire suppression and net effect of each.

Situation awareness (SA) - An on-going process of gathering information by observation and by communication with others. This information is integrated to create an individual's perception of a given situation. Synonym: Situational awareness.

Situation Unit - Functional unit within the planning section responsible for the collection, organization, and analysis of incident status information, and for analysis of the situation as it progresses. Reports to the planning section chief.

Situation Unit Leader (SITL) - An ICS person who responsible for supervising the Situation Unit. Reports to the Planning Section Chief. (See: Situation Unit)

Situational Awareness (SA) - An on-going process of gathering information by observation and by communication with others. This information is integrated to create an individual's perception of a given situation. Synonym: Situation awareness.

Six Minutes for Safety - (See: 6 Minutes for Safety)

Size Class of Fire - As to size of wildfire: Class A - one-fourth acre or less; Class B - more than one-fourth acre, but less than 10 acres; Class C - 10 acres or more, but less than 100 acres; Class D - 100 acres or more, but less than 300 acres; Class E - 300 acres or more, but less than 1,000 acres; Class F - 1,000 acres or more, but less than 5,000 acres; and Class G - 5,000 acres or more. (See: Class of fire)

Size-up – (1) Initial assessment of fire including (among other things) fuel load, fire weather, topography, fire behavior, hazards, and exposures of valuable properties. The initial assessment quickly detects need for additional resources and sets operational priorities. (2) To evaluate a fire to determine a course of action for suppression. (USFS)

Skid hose load - Load of hose specially arranged on top of a standard hose load to permit dropping the working line at the fire.

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Skid trail - Any road or trail formed by the process of skidding logs from stump to landing.

Skidder unit - (1) Pre-configured tank, pump, hose for attachment to a logging skidder (large 4-wheel-drive tractor with a dozer blade, winch, or grapple) to be carried to a fireline. (2) A self-contained unit consisting of a water tank, fire pump, and hose specially designed to be carried on a logging skidder for use in forest fire suppression.

Skimmer - Any aircraft equipped to pick up water while moving on or over water.

Sky cover - Amount of clouds and/or other obscuring phenomena that are detectable from the point of observation.

Slash – (1) Debris left after logging, pruning, thinning or brush cutting; includes logs, chips, bark, branches, stumps and broken understory trees or brush. (USFS) (2) Debris resulting from such natural events as wind, fire, or snow breakage; or such human activities as road construction, logging, pruning, thinning, or brush cutting. It includes logs, chunks, bark, branches, stumps, and broken understory trees or brush. (See: Logging slash)

Slash disposal - Treatment of slash to reduce fire hazard or for other purposes. Depending on the community and conditions, slash disposal is preferred over brush disposal.

Sling - A net attached by a lanyard to a helicopter cargo hook and used to haul supplies.

Sling load - (1) A cargo net containing supplies or equipment delivered by longline below a helicopter. (2) Any cargo carried beneath a helicopter and attached by a lead line and swivel. (USFS)

Sling psychrometer - A hand operated instrument for obtaining wet and dry bulb temperature readings and, subsequently, relative humidity.

Slip-on tanker - A tank, a live hose reel or tray, an auxiliary pump, and an engine combined into a single one-piece assembly which can be slipped onto a truck bed or trailer.

Slope class - One of five categories used to describe the topography of a fire danger rating area.

Slope percent - The ratio between the amount of vertical rise of a slope and horizontal distance as expressed in a percent. One hundred feet of rise to 100 feet of horizontal distance equals 100 percent.

Slope winds - Small scale convective winds that occur due to local heating and cooling of a natural incline of the ground. (See: General winds; Local winds)

Slop-over - A fire edge that crosses a control line or natural barrier intended to confine the fire. (USFS)

Synonym: Breakover.



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Slug - Humorous pejorative term for those believed to be doing less work than you. Education Note: “Heli-slug” for helislack; “camp slug” for fire camp support personnel; “engine slug” for engine crew member; etc. For example, if you are not a hotshot or smokejumper, you are most likely a slug.

Slug flow - The discharge of distinct pockets of water and air due to the insufficient mixing of foam concentrate, water, and air in a compressed air foam system.

Slurry bomber - (See: Airtanker)

Small aircraft - An aircraft of 12,500 pounds (5,669 kg) or less, maximum certificated takeoff weight.

Smog - Generally considered only photochemical air pollution. Originally meant a combination of smoke and fog.

Smoke - Small particles of carbon, tarry and water vapor resulting from the incomplete combustion of carbonaceous materials such as wood, coal, or oil.

Smokechaser - Colloquial term for a wildland firefighter. Now mostly archaic, except in Minnesota where state Department of Natural Resources firefighters are officially known by that name.

Smoke concentration - The amount of combustion products found in a specified volume of air, commonly expressed as micrograms of emission per cubic meter of air.

Smoke intrusion - Smoke from prescribed fire entering a designated area at unacceptable levels.

Smokejumper - A specifically trained and certified firefighter who travels to remote wildfires by fixed-wing aircraft and parachutes into a jump spot - that may include trees - close to the fire.

Smoke management – (1) Application of fire intensities and meteorological processes to minimize degradation of air quality during prescribed fires. (USFS) (2) The policies and practices implemented by air and natural resource managers directed at minimizing the amount of smoke entering populated areas or impacting sensitive sites, avoiding significant deterioration of air quality and violations of National Ambient Air Quality Standards, and mitigating human-caused visibility impacts in Class I areas.

Smoke pall - Extensive, thick blanket of smoke spreading more or less “horizontally” from a fire.

Smoke plume - The gases, smoke, and debris that rise slowly from a fire while being carried along the ground because the buoyant forces are exceeded by those of the ambient surface wind. (See: Convection column)

Smoke-sensitive area (SSA) - Area in which smoke from outside sources is intolerable, for reasons such as heavy population, existing air pollution, or intensive recreation or tourist use.



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Smoke target - An area that may be adversely affected by smoke from a prescribed burn. Also called smoke sensitive area.

Smoke vent height - Level, in the vicinity of the fire, at which the smoke ceases to rise and moves horizontally with the wind at that level.

Smokejumper – (1) A firefighter who travels to fires by aircraft and parachute. (USFS) (2) A specially trained and certified firefighter who travels to wildland fires by aircraft and parachutes to the fire.

Smokey Bear (not Smokey the Bear) - The symbol of the Cooperative Forest Fire Prevention Program since 1945. Smokey's image is protected by US Federal Law and is administered by the USDA Forest Service, the National Association of State Foresters, and the Ad Council.

Smoking (as a fire cause) - Wildfires caused by smokers from matches, lighters, tobacco, or other smoking material.

Smoldering combustion - Combined processes of dehydration, pyrolysis, solid oxidation, and scattered flaming combustion and glowing combustion, which occur after the flaming combustion phase of a fire; often characterized by large amounts of smoke consisting mainly of tars.

Smoldering combustion phase - Phase of combustion immediately following flaming combustion. Emissions are at twice that of the flaming combustion phase. (See: Smoldering combustion)

Smoldering fire - (1) A fire burning without flame and barely spreading. (USFS) (2) A fire burning without flame and barely spreading.

Snag - A standing dead tree or part of a dead tree from which at least the leaves and smaller branches have fallen. (USFS) Education Note: Snag is sometimes called a stub if part of the dead tree is less than 20 feet tall.

Snorkel tank - A fixed tank attached to the belly of the helicopter that has a pump-driven snorkel attached. The helicopter hovers over the water source with the end of the snorkel immersed, the pump then fills the tank.

SOFE - Second order fire effects.

Soft suction - Commonly accepted term for short length of large diameter soft hose used to connect a structural or wildland engine with a hydrant. Education Note: No vacuum is involved because the hose is useful only when the engine receives water at a rate of flow more than the demand of the pump.

Solar radiation - The amount of sunlight exposed to the fuels.

Soot - Carbon dust formed by incomplete combustion.

Sooting indicators - The black, carbon-based soot deposited on objects in the fire's path. Education Note: Sooting indicators are found on the side of objects towards the origin.

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SOP - Standard operating procedure; Standard operational procedures.

Sortie - Single round trip made by an air tanker from a tanker base to a fire and return.

Sound warbler - A signaling device mounted on retardant aircraft which generates a tremulous siren sound to warn firefighters on the ground that a plane is approaching to drop retardant.

Sounding: Upper air sounding - A sampling of upper air conditions made by means of instruments and a small radio transmitter on a free balloon. Education Note: Automatic radio signals originated by action of weather instruments are sent to a ground receiver. These signals are interpreted for use in analyzing and predicting upper air conditions over a wide area of the earth. Weather elements determined at several “altitude points” as the balloon rises include temperature, atmospheric moisture, pressure, wind direction and speed. Similar soundings may be made using fixed balloons or tether sondes. (See: Radiosonde)

Source - A point, line, or area, at which mass or energy is added to a system, either instantaneously or continuously. Education Note: Examples of sources in the context of air pollution are as follows: a smokestack is a point source; a freeway is a line source; field or slash burning are area sources.

Spalling - Chipping or pitting of concrete, masonry, or stone surfaces.

Spalling indicators - Craters or chips in the surface of rocks which indicate direction of fire spread.

Span - Distance equal to the wingspread of the air tanker being used; used for corrections right or left of the flight path.

Span of control - The supervisory ratio of from three-to-seven individuals, with five-to-one being established as optimum.

Spanner - Metal wrench used to tighten and free hose connections.

Spark arrester - A device installed in a chimney, flue, or exhaust pipe to stop the emission of sparks and burning fragments. (USFS)

Special interest group (SIG) - In WIMS, a group of weather stations.

Special Visual Flight Rules (VFR) - Aircraft operating in accordance with clearances within control zones in weather conditions less than the basic Visual Flight Rules weather minima.

Specific heat - The heat required to raise a unit mass of a substance one-degree kelvin. It is the heat capacity of a system per unit mass, such as the ratio of the heat absorbed (or released) to the corresponding temperature rise (or fall).

Specific origin area - The smaller area, within the general origin, that first shows the influence of wind, fuel and/or slope.

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Speed of attack - Elapsed time from origin of fire to arrival of the first suppression force.

Spike camp - Remote camp usually near a fireline and lacking the logistical support that a larger fire camp would have.

Spike-out - Standby crew in an area of expected high fire occurrence, generally on a day of critical fire weather.

Split drop - Retardant drop made from one compartment at a time from an air tanker with a multi-compartment tank.

Split flow - A divergent wind field. Storms moving into a split field tend to lose strength. Winds are generally light in such a flow field.

Spontaneous combustion - Combustion of a thermally isolated material initiated by an internal chemical or biological reaction producing enough heat to cause ignition.

Spot burning - A modified form of broadcast slash burning in which the greater accumulations of slash are fired and the fire is confined to these spots. Sometimes called “jackpot burning” or “jackpotting.”

Spot fire - (1) A fire ignited beyond the zone of direct ignition from the main fire, caused by windborne sparks or embers. (USFS) (2) Fire ignited outside the perimeter of the main fire by a firebrand.

Spot fire technique - A method of lighting prescribed fires where ignition points are set individually at a predetermined spacing and with predetermined timing throughout the area to be burned.

Spot weather forecast - A special forecast issued to fit the time, topography, and weather of a specific incident. These forecasts are issued upon request of the user agency and are more detailed, timely, and specific than zone forecasts. (USFS) Education Note: Usually, on-site weather observations or a close, representative observation is required for a forecast to be issued. (See: General fire weather forecast; Incident weather forecast; Spot forecast)

Spotter - In smokejumping, rappelling, and paracargo operations, the individual responsible for selecting drop target and supervising all aspects of dropping smokejumpers, rappellers, or cargo.

Spotting - Behavior of a fire producing sparks or embers that are carried by the wind and which start new fires beyond the zone of direct ignition by the main fire. (USFS) Education Note: A cascade of spot fires can cause a blowup.

Spray - Water applied through an orifice in finely divided particles to absorb heat and smother fire, to protect exposures from radiated heat, and to carry water toward otherwise inaccessible fire.



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Spread Component - Part of the National Fire Danger Rating System (NFDRS). A rating of the forward rate of spread of the head of a fire.

Spread index - A number used to indicate relative (not actual) rate of spread.

Spread index meter - Device for combining measured ratings of various fire danger factors into numerical classes or rates of spread.

SPUL - Supply Unit Leader.

Spur ridge - A small ridge which extends finger-like from a main ridge.

Squall - Sudden increase in wind speed to at least 17 mph (15 knots) that is sustained for at least 1 minute but not more than 5 minutes.

Squall line - Any non-frontal line or narrow band of active thunderstorms extending across the horizon. It is of importance to fire behavior due to accompanying strong gusty winds and the possibility of such a line passing between regular weather observation stations without being reported. A squall line is also known as a “line squall.”

SSA - Smoke-sensitive area.

Stable atmosphere - Condition of the atmosphere in which the temperature decrease with increasing altitude is less than the dry adiabatic lapse rate. In this condition, the atmosphere tends to suppress large-scale vertical motion. A stable atmosphere is also known as “stable air.”

Stable layer of air - A layer of air having a temperature change (lapse rate) of less than dry adiabatic (approximately -5.4 degrees F per 1,000 feet) thereby retarding either upward or downward mixing of smoke. (See: Atmospheric inversion; Atmospheric stability; Inversion)

Stack - Aircraft orbiting the rendezvous area; usually refers to vertical deployment at 500-foot (150 m) altitudinal separation between aircraft.

Staff ride - A case study of a previous incident that is conducted on the actual physical site where the incident occurred. A staff ride is an experiential learning method that involves three distinct parts: a preliminary study, a site visit, and a post-visit integration session.

Staffing index - A NFDRS component, index or related indicator (ignition component, spread component, energy release component, burning index, Keetch-Byram drought index) whose outputs are correlated to the local fire problem, used to determine staffing levels.

Staffing level - The basis for decision support for daily staffing of initial attack resources and other activities. A level of readiness and an indicator of daily preparedness.

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Staging area - Locations set up at an incident where resources can be placed while awaiting a tactical assignment on a three (3) minute available basis. Staging areas are managed by the operations section. (USFS)

Staging Area Manager (STAM) - An ICS person who responsible for supervising a staging area. Reports to a Branch Director or Operations Section Chief. (See: Staging area)

Stagnant conditions - Atmospheric conditions under which pollutants build up faster than the atmosphere can disperse them.

Staining indicators - Glossy, varnish-like stain, usually light yellow to orange to dark brown in color, which is deposited on the origin side of objects.

STAM - Staging Area Manager.

Stand replacing fire - Fire which kills all or most of the living overstory trees in a forest and initiates forest succession or regrowth. Also explicitly describes the nature of fire in grasslands and some shrublands.

Standard coupling - Fire hose coupling with American National Standard (NH) threads.

Standard drying day - Part of the National Fire Danger Rating System (NFDRS). Education Note: A standard drying day which produces the same net drying as experienced during a 24-hour period under laboratory conditions in which dry-bulb temperature is maintained at 80°F and relative humidity is maintained at and relative humidity is maintained at 20%.

Standard Hydrologic Exchange Format code (SHEF) - A two-character code to describe each measurement taken at a weather station.

Standard operating procedure (SOP) - Specific instructions clearly spelling out what is expected of an individual every time they perform a given task. Education Note: A standard operating procedure can be used as a performance standard for tasks that are routinely done in the operational environment. Synonym: Standard Operational Procedure.

Standard operational procedure (SOP) - Specific instructions clearly spelling out what is expected of an individual every time they perform a given task. Education Note: A standard operational procedure can be used as a performance standard for tasks that are routinely done in the operational environment. Synonym: Standard Operating Procedure.

Stand-by crew - A group of trained firefighters stationed at a dispatch point for quick, rapid deployment.

Strategy – The science and art of command as applied to the overall planning and conduct of an incident. (USFS)

State Forest - Forests owned and administered by a state, and not by a federal government.

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State Implementation Plan (SIP) - A plan required by the Clean Air Act and prepared by an Air Quality Regulatory Agency, which describes how the state will attain and maintain air quality so as to not violate National Ambient Air Quality Standards.

State of weather - A code which expresses the amount of cloud cover, kind of precipitation, and/or restrictions to visibility being observed at the fire danger station at basic observation time.

State Park - An area established by the government of a state primarily for public recreation or for the preservation of unique natural or historic resources, administrative details varying widely. Education Note: Such parks may also be established by lesser administrative units, e.g. counties, municipalities, and by large private owners.

Static pressure - Water pressure head available at a specific location when no water is being used so that no friction loss is being encountered. Education Note: Static pressure is that pressure observed on the engine inlet gauge before any water is taken from the hydrant.

Static water supply - Supply of water at rest which does not provide a pressure head for fire suppression but which may be employed as a suction source for fire pumps (e.g., water in a reservoir, pond, or cistern).

Station catalog - A WIMS file that contains all the information defined for a weather station.

Station ID - A six-digit number assigned to a specific weather station by the servicing National Weather Service Fire Weather Office.

Station pressure - Pressure of the atmosphere at an assigned station location and elevation.

Statistic - The number that results from manipulating raw data according to a specified procedure; associated with samples. (See: Parameter)

Statistical fire - In general, an actionable fire, on which any fire agency reports and maintains specified information (e.g., cause, date and point of origin, size, and fire damage).

Statistics - A branch of mathematics dealing with the collection, analysis, and interpretation of numerical data.

Status/Check-In Recorder (SCKN) - An ICS person who is responsible for checking in and maintaining the current status for incident assigned resources and reports to the Resources Unit Leader. Each incident check-in location will have at least one Check-In Recorder assigned. (See: Resources Unit)

STCR - Strike Team leader Crew.

STCR, STDZ, STEN or STPL - Strike Team Leader.

STDZ - Strike Team Leader Dozer.



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STEN - Strike Team Leader Engine.

Step test - Five-minute test used to predict a person's ability to take in, transport, and use oxygen (aerobic capacity), the most important factor limiting the ability to perform arduous work.

STEX - Sand Table Exercise.

Storm center - The central point or area of a weather system associated with increased winds, clouds, or precipitation (or any combination thereof).

STPL - Strike Team Leader Tractor/Plow.

STPS - Structure Protection Specialist.

Straight stream - Water or fire retardant projected directly from the nozzle (as contrasted with a fog or spray cone), provided by a solid stream orifice or by adjusting a fog jet into a straight stream pattern.

Straight stream nozzle - A hose tip spout designed to provide the maximum reach of water without feathering.

Strainer - A wire or metal guard used to keep debris from clogging pipe or other openings made for removing water; used in pumps and on suction hose to keep foreign material from clogging or damaging pumps.

Strategy - The general plan or direction selected to accomplish incident objectives.

Strength of attack - Number of resources used to attack a fire.

Strength of force - Total firefighting resources available, during a specified period, to conduct and support firefighting operations.

Strike team – (1) Specified combinations of the same kind and type of resources, with common communications, and a leader. (USFS) (2) Specified combinations of the same kind and type of resources, with common radio communications and leader. (NWCG)

Strike Team Leader (STCR, STDZ, STEN or STPL) – (1) The person responsible to a division/group supervisor for performing tactical assignments given to the strike team. (USFS) (2) An ICS person who responsible for supervising a strike team. Reports to a Division/Group Supervisor or Operations Section Chief.
Education Note: This position may supervise a strike team of engines (STEN), crews (STCR), dozers (STDZ), or tractor/plows (STPL). (See: Strike team)

Strike Team leader Crew (STCR) - An ICS person who is responsible for the direct supervision of a crew strike team. (See: Strike team)

Strike Team Leader Dozer (STDZ) - An ICS person who is responsible for the direct supervision of a dozer strike team. (See: Strike team)

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Strike Team Leader Engine (STEN) - An ICS person who is responsible for the direct supervision of an engine strike team. (See: Strike team)

Strike Team Leader Tractor/Plow (STPL) - An ICS person who is responsible for the direct supervision of a tractor/plow strike team. (See: Strike team)

Stringer - A narrow finger or band of fuel that connects two or more patches or areas of wildland fuel.

Strip burning - (1) Burning by means of strip firing. (2) In hazard reduction, burning narrow strips of fuel and leaving the rest of the area untreated by fire.

Strip firing - Setting fire to more than one strip of fuel and providing for the strips to burn together. Frequently done in burning out against a wind where inner strips are fired first to create drafts which pull flames and sparks away from the control line.

Strip-head fire - A series of lines of fire ignited near and up wind (or downslope) of a firebreak or backing fire so they burn with the wind (or upslope) toward the firebreak or backing fire.

Structural fire protection - The protection of homes or other structures from wildland fire.

Structure - A constructed object, usually a free-standing building above ground.

Structure (vegetative) - The arrangement of vegetation in terms of density, basal area, cover, and vertical arrangement.

Structure fire - Fire originating in and burning in any part or the entire building, shelter, or other structure. (USFS)

Structure Protection Plan - A plan developed by the Structure Protection Specialist that provides operational guidelines to suppression resources responsible for providing wildland fire structure protection. (See: Structure Protection Specialist)

Structure Protection Specialist (STPS) - An individual responsible for developing an incident's structure protection plan, providing tactical direction and recommendations to incident planning and operations on efficient and safe utilization of resources assigned to provide wildland fire structure protection. (See: Structure Protection Plan)

SUBD - Support Branch Director.

Subsidence - Downward or sinking motion of air in the atmosphere. Subsiding air warms due to compression. Increasing temperature and decreasing humidity's are present in subsiding air. Education Note: Subsidence results in a stable atmosphere inhibiting dispersion. Subsidence is generally associated with high atmospheric pressure.



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Subsidence inversion - An inversion caused by subsiding air, often resulting in decreased atmospheric mixing conditions.

Succession - The process of vegetational development whereby an area becomes successively occupied by different plant communities of higher ecological order.

Suction lift - In fire service, the number of feet (meters) of vertical lift from the surface of the water to the center of the pump impeller. In testing, such as fire department pumpers, they are required to discharge their rated capacity at 150 pounds (1034 kPa) net pump pressure at a 10-foot (3 meter) lift. The suction gauge would indicate the vertical suction lift in inches of mercury when the pump was primed with no appreciable water flowing.

Sunny - The adjective classification of the sky when 5/10 or less of the sky is obscured by clouds. Part of the National Fire Danger Rating System (NFDRS).

Sunset and Sunrise - The mean solar times of sunset and sunrise as published in the Nautical Almanac, converted to local standard time for the locality concerned.

Superficial burn - A minor thermal burn involving the outer layer of skin, i.e. "a sunburn". It is characterized by reddening of the skin and perhaps some swelling without blisters. Superficial burn is also known as a first-degree burn. (See: Full-thickness burn; Partial-thickness burn)

Supervisor - The ICS title for individuals responsible for command of a division or group.

Supplemental fire department resources - Overhead tied to a local fire department, generally by agreement, who are mobilized primarily for response to incidents or wildland fires outside their district or mutual aid zone. Supplemental fire department resources are not a permanent part of the local fire organization and are not required to attend scheduled training, meetings, etc. of the department staff.

Supplies - Minor items of equipment and all expendable items assigned to an incident.

Supply Unit - Functional unit within the support branch of the logistics section responsible for ordering equipment and supplies required for incident operations.

Supply Unit Leader (SPUL) - An ICS person who responsible for supervising the Supply Unit. Reports to the Support Branch Director or Logistics Section Chief.

Support Branch - A branch within the logistics section responsible for providing personnel, equipment and supplies to support incident operations. Includes the supply, facilities, and ground support units.



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Support Branch Director (SUBD) - An ICS person who responsible for supervising the Support Branch. Reports to the Logistics Section Chief.

Support costs - On-incident costs and off-incident costs. On-incident costs include caterer, shower units, mobile commissary, cache supplies, and materials, etc. Education Note: Off-incident costs include expanded dispatch, buying teams, administrative payment teams, cache personnel, area command, transportation to/from incident, etc.

Support resources - Non-tactical resources under the supervision of the logistics, planning, finance/administration sections or the command staff.

Supporting agency - An agency providing suppression or other support and resource assistance to a protecting agency. (See: Agency; Assisting agency; Cooperating agency)

Supporting technologies - Any technology which may be used to support NIIMS. Examples of these technologies include GIS mapping, infrared technology, NFDRS, communications, dispatch coordination, and national cache system. (See: National Interagency Incident Management System)

Suppress a fire - (See: Suppression)

Suppressant - An agent that extinguishes the flaming and glowing phases of combustion by direct application to the burning fuel. (USFS)

Suppression - All the work of extinguishing or confining a fire beginning with its discovery. (USFS)

Suppression crew (Soup crew) - Two or more firefighters stationed at a strategic location for initial action on fires. Education Note: Duties are essentially the same as those of individual firefighters; often organized into 20-person crews, including supervisors, for simplified logistics and operations.

Suppression firing - Intentional application of fire to speed up or strengthen fire suppression action on wildfires. Types of suppression firing include burning out, counter firing, and strip burning.

Surface area-to-volume ratio - The ratio between the surface areas of an object, such as a fuel particle, to its volume. The smaller the particle, the more quickly it can become wet, dry out, or become heated to combustion temperature during a fire.

Surface fire - Fire that burns loose debris on the surface, which includes dead branches, leaves, and low vegetation.

Surface fuels – (1) Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branch wood, downed logs, and stumps interspersed with



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or partially replacing the litter. (USFS) (2) Fuels lying on or near the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low stature living plants.

Surface high - An area on the earth's surface where atmospheric pressure is at a relative maximum. Education Note: Winds blow clockwise around highs in the Northern Hemisphere but, due to friction with the earth's face, tend to cross constant pressure lines away from the high center. Air is usually subsiding above a surface high. This causes warming due to air compression. This results in stable atmospheric conditions and light surface winds. (See: Ridge)

Surface low - An area on the earth's surface where atmospheric pressure is at a relative minimum. Education Note: Winds blow counterclockwise around lows in the Northern Hemisphere but, due to friction with the earth's surface, tend to cross constant pressure lines toward the low center. Upon converging into the low's center, air currents are forced to rise. As air rises it cools due to expansion. Cooling reduces its capacity to hold moisture; so, cloudiness and precipitation are common in lows. When a low center intensifies sufficiently it will take on the characteristics of a storm center with precipitation and strong winds.

Surface tension - The elastic-like force at the surface of a liquid, tending to minimize the surface area and causing drops to form. Expressed as Newton's per meter or dynes per centimeter (1 Newton/m=1,000 dynes/cm).

Surface wind - Wind measured at a surface observing station, customarily at some distance (usually 20 feet) above the average vegetative surface to minimize the distorting effects of local obstacles and terrain.

Surfactant - A surface active agent; any wetting agent. A formulation which, when added to water in proper amounts, will materially reduce the surface tension of the water and increase penetration and spreading abilities of the water.

Surge - Rapid increase in water flow which may result in a corresponding pressure rise.

Surplus property - Any excess personal property not required for the needs and the discharge of the responsibilities of all federal agencies as determined by the General Services Administration (GSA).

Survival zone - A natural or cleared area of sufficient size and location to protect fire personnel from known hazards while inside a fire shelter. Examples include rockslides, roadbeds, clearings, knobs, wide ridges, benches, dozer lines, wet areas, cleared areas in light fuels, and previously burned areas. These are all areas where you expect no flame contact or prolonged heat and smoke. (See: Deployment zone; Safety zone)

Sustained attack - Continuing fire suppression action until fire is under control.

SVBD - Service Branch Director.



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Swamper - (1) A worker who assists fallers and/or sawyers by clearing away brush, limbs, and small trees. (USFS) (2) A worker who carries fuel, oil and tools and watches for dangerous situations. (USFS) (3) A worker on a dozer crew who pulls winch line, helps maintain equipment, etc., to speed suppression work on a fire. (USFS)

Swampout - Act of clearing brush and other material from around the base of trees and where trees are to be bucked, prior to falling or bucking, as protection against saw kickback and to provide safe footing.

Swivel - An accessory used between the helicopter cargo hook and sling load to allow free turning of the load.

Synoptic - Literally, at one time. Thus, in meteorological usage, the weather conditions over a large area at a given point in time.

Synoptic chart (meteorology) - Any chart or map on which data and analyses are presented that describe the state of the atmosphere over a large area at a given moment in time.



Tactical decision game (TDGS) - A simple role-play simulation technique that challenges participants to make decisions and communicate those decisions to others. A tactical decision game is an experiential learning method that is tactical in nature and has time and information constraints to put participants under some level of stress. <http://www.fireleadership.gov>

Tactical direction - Direction given by the operations section chief which includes the tactics appropriate for the selected strategy, the selection and assignment of resources, tactics implementation, and performance monitoring for each operational period.

Tactics - Deploying and directing resources on an incident to accomplish the objectives designated by strategy.

Tag-on - Connecting a (airtanker) drop to the forward part of a previous drop.

Tail rotor - A small rotor, mounted on the tail of a conventional helicopter, which counteracts torque of the main rotor and provides a measure of directional control.

Tailboard - Back step of a wildland or structural fire engine.

Tailgate safety session - Brief meetings held at the beginning, during, or end of an operational period to discuss new work assignments, new work methods, changes in plans, use of tools and equipment, and recognition and protection against work hazards that may be encountered.



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Take-off and Landing Coordinator (TOLC) - An ICS person who is responsible for coordinating take-offs and landings of helicopters at a helibase and any helicopter movement around the helibase and reports to the Helibase Manager. (See: Helibase)

Tandem - Two or more units of any one type working one in front of the other to accomplish a specific fire suppression job; the term can be used in connection with crews of firefighters, power pumps, bulldozers, etc.

Tank and gating system - Tanks, doors, and release mechanism installed in aircraft for cascading fire retardants.

Tank trailer - Specialized trailer on which is mounted a tank, fire pump, hose, and ancillary equipment.

Target - Specific portion of the fire on which fire retardant or water is to be dropped by air tankers or helitankers. (See: Drop zone)

Target hazard - Facilities in which there is great likelihood of loss of life or property.

Task - A unit of work activity that is a logical and necessary action in the performance of a behavior; how the behavior is demonstrated or performed in a particular context. (See: Behavior)

Task force – (1) Any combination of single resources assembled for a particular tactical need, with common communications and a leader. A task force may be pre-established and sent to an incident or formed at an incident. (2) A set of resources with a common leader and communications temporarily assembled for a specific mission. Task forces are generally used for firing operations and structural protection. (NWCG)

Task Force Leader (TFLD) - The ICS person responsible for supervising a task force. Reports to a Division/Group Supervisor or Operations Section Chief. (See: Task Force)

Tactics – Deploying and directing resources on an incident to accomplish the objectives designated by strategy. (USFS)

T-Card - Cards filled out with essential information for each resource they represent. The cards are color-coded to represent different types of resources.

TDGS - Tactical Decision Game.

Technical Advisory Unit - This unit consists of advisors with special skills who are activated only when needed. Advisors may be needed in the areas of water resources, environmental concerns, resource use, and training.

Technical Specialist (THSP) - An individual with specialized job skills requiring no established minimum qualifications standards by the wildland fire community. THSP may perform the same duties during an incident that are performed in their regular job assignment with supplemental training in the Incident Command System

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and/or adaptations of their specialized skills for the incident environment that they are assigned. These specialized individuals whose skills may be gained through educational degree programs or industrial training required by established standards may be utilized anywhere within an incident organization.

Temperature coefficient - The relative change of some measurable quantity with change of temperature, like burning time per unit length, mostly expressed as mean change per degree in percentage of mean temperature within a certain range.

Temporary flight restriction (TFR) - A restriction requested by an agency and put into effect by the Federal Aviation Administration in the vicinity of an incident which restricts the operation of nonessential aircraft in the airspace around that incident. (USFS)

Ten-hour Timelag Fuel Moisture (10-h TL FM) - The moisture content of the 10-hour timelag roundwood fuels.

Ten-hour Timelag Fuels - Dead fuels consisting of roundwood 1/4 to 1-inch (0.6 to 2.5 cm) in diameter and, very roughly, the layer of litter extending from immediately below the surface to 3/4 inch (1.9 cm) below the surface.

Terra Torch® - Device for throwing a stream of flaming liquid, used to facilitate rapid ignition during burn out operations on a wildfire or during a prescribed fire operation. (USFS) Synonym: Flame thrower.

Terrorism - Any premeditated, unlawful act dangerous to human life or public welfare that is intended to intimidate or coerce civilian populations or governments.

Test fire – (1) A small fire ignited within the planned burn unit to determine the characteristic of the prescribed fire, such as fire behavior, detection performance and control measures. (USFS) (2) A prescribed fire set to evaluate such things as fire behavior, fire effects, detection performance, or control measures.

TFLD - Task Force Leader.

TFR - Temporary Flight Restriction.

Thermal belt – (1) An area of mountainous slope (characteristically the middle third), where the top of the radiation inversion intersects the slope. It typically experiences the least variation in diurnal temperatures and has the highest average temperatures and, thus, the lowest relative humidity. Its presence is most evident during clear weather with light wind. (2) In mountainous regions, the middle third of the slopes that remain active with fire during evening hours. This is due to down-canyon “falling” winds that pool cooler air in canyon bottoms but leave the middle part of the slope active. (NWCG)



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Thermal degradation (Thermal decomposition) - The molecular deterioration of materials (usually organics) because of overheat.

Thermal imagery - The display or printout of an infrared scanner operating over a fire. Also called infrared imagery. (See: Infrared)

Thermal Imaging Camera (TIC) - A camera that seeks-out hidden fires or see through smoke. It uses thermal imaging technology to detect the heat given off by objects. Education Note: A TIC can detect a difference in temperature of 1/10th of a degree. Some cameras can transmit the image back to command where it can be viewed or even recorded. The camera can also tell you the temperature of the object in the cross hairs. Some versions are helmet mounted. This device is so sensitive that it could help us find a victim who is completely under many layers of bed covers.

Thin layer - Layer of clouds whose ratio of dense sky cover to total sky cover is 1/2 or less.

Thin sky cover - Sky cover through which higher clouds or the sky can be detected.

Threat fire - Any uncontrolled fire near to or heading toward an area under organized fire protection.

Throw out - Soil pushed over the edge of a fireline by a tractor plow or dozer. (See: Berm)

THSP - Technical Specialist.

Thunderstorm - Localized storm characterized by one or more electrical discharge(s).

Tie-in - Act of connecting a control line to another fireline or an intended firebreak.

Tiller (Tillerman) - The name given to the driver who sits at the very back of those long ladder truck you used to see in the movies. Education Note: This person steers the rear wheels. Only a few departments still have these kinds of vehicles.

TIME - Time Unit Leader.

Time delay device - A device employed to allow a fire setter the opportunity to leave the scene prior to the ignition of the fire.

Time in service - With respect to maintenance time records, the time from the moment an aircraft leaves the surface of the earth until it touches at the next point of landing.

Time Unit - Functional unit within the Finance/Administration Section responsible for recording personnel time and managing the commissary.

Time Unit Leader (TIME) - An ICS person who responsible for supervising the Time Unit. Reports to the Finance/Administration Section Chief.

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Timelag (TL) - Time needed under specified conditions for a fuel particle to lose about 63 percent of the difference between its initial moisture content and its equilibrium moisture content. Education Note: When conditions remain unchanged, a fuel will reach 95 percent of its equilibrium moisture content after 4 timelag periods.

Time-temperature curve - Graph showing the increase in temperature at a specified point in a fire as a function of time, beginning with ignition and ending with burnout.

Tinder - Burnable organic material (duff, peat, rotten wood, etc.) with a high surface to volume ratio.

Tips - Nozzle tips used to change orifice size of a hose stream.

TL - Timelag.

TNSP - Training Specialist.

TOLC - Take-off and Landing Coordinator.

Tool and Equipment Specialist - Person responsible to the receiving/distribution manager for sharpening, servicing, and repairing hand tools.

Topography – An accurate and detailed description of a place, including land surface configuration, both man-made and natural. Topography can be described in terms like “level,” “steep,” “broken,” or “rolling.”

Torch - (1) Ignition and subsequent envelopment in flames, usually from bottom to top, of a tree or small group of trees. (2) To set fire to property deliberately and maliciously. (3) A professional firesetter-for-hire.

Torching - (1) The ignition and flare-up of a tree or small group of trees, usually from bottom to top. (USFS) (2) A condition when a single or small group of trees “torch” or go up in flames. Torching and group torching are more of a nuisance whereas crown fire is of much greater concern. (3) The burning of the foliage of a single tree or a small group of trees, from the bottom up. Torching is not to be confused with crowning. Synonym: Candlering.

Total fuel - All plant material both living and dead that can burn in a worst-case situation.

Total mobility - The capability to move, position, and utilize established forces to meet existing and anticipated fire protection needs nationwide.

Total risk - Part of the National Fire Danger Rating System (NFDRS). Education Note: Sum of lightning and human-caused risk values; cannot exceed a value of 100.

Total suspended particulate (TSP) matter - Particles emitted from a pollution source regardless of size. Federal and state ambient and emission standards exist for TSP.



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Touchdown pad - That portion of a heliport or helispot where the helicopter lands.

Toxic - Relating to a harmful effect by a poisonous substance on the human body by physical contact, ingestion, or inhalation.

Toxic substance - A chemical or mixture that may present an unreasonable risk of injury to health or the environment.

Tractor - A rubber tired or tracked rider-controlled automotive vehicle, used in wildland fire management for pulling a disk or a plow to construct fireline by exposing mineral soil. (See: Dozer; Plow line; Tractor plow)

Tractor plow - Any tractor with a plow for constructing fireline by exposing mineral soil. Education Note: Also, as a resource for typing purposes, a tractor plow includes the transportation and personnel for its operation. (See: Dozer; Plow line; Tractor)

Traffic pattern - Traffic flow that is prescribed for aircraft landing at, taxiing on, and taking off from, an airport. Education Note: Usual components of a traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach.

Trail drop - An unbroken line of retardant used for constructing a retardant line.

Trailer - Combustible material, such as rolled rag, blankets and newspapers, or flammable liquid, used to spread fire from one area to others; usually used in conjunction with an incendiary device.

Trainee - An individual who has met all required training and position experience for a specified position and is approved by their home unit's certifying official, to initiate a performance based training assignment in order to become qualified in the position.

Trainer/Coach - A position-qualified individual who provides instruction to a trainee in the classroom, on-the-job, or on an incident. Education Note: While many of the requirements of the trainer/coach are like the evaluator, it is important that the roles of training and evaluation remain separate.

Training Officer - The chief or other officer under the agency or department responsible for organizing and conducting a complete training program for the suppression agency.

Training Specialist (TNSP) – The person responsible to the planning section chief for coordinating the use of trainees on the incident and for assuring that the trainees meet their training objectives and receive performance evaluation reports.

Transfer of Command - The ICS management process in which the on-scene incident commander at a specified time hands off command responsibility to the incident commander that will be taking over incident command.



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Transition - In the 1978 version of NFDRS, the herbaceous stage when herbaceous fuel moisture is between 120% and 30%.

Transition zone - Areas where the fire progress transitions from one direction to another which are characterized by change in the appearance of the indicators.

Translational lift - Lift that is gained when a helicopter translates from a hover into forward flight; additional lift increases with increasing airspeed and is derived by the rotor system moving into undisturbed air.

Transport wind speed - A measure of the average rate of the horizontal transport of air within the Mixing Layer. May also be the wind speed at the final height of plume rise. Generally, refers to the rate at which emissions will be transported from one area to another. (See: Mixing layer; Ventilation factor)

Transportation map - Base map of the planning unit showing all roads, trails, heliports, and airfields existing and programmed for construction.

Travel time - Compensable time en route to or from an emergency incident.

Travel time map - Map showing the time required for the initial attack crew to reach various parts of a protection unit from specified positions.

Tree jump - A smokejumper that can sometimes parachute into the tree canopy if a clearing is not available or suitable.

Trench - A small ditch often constructed below a fire on sloping ground (undercut or underslung line) to catch rolling material.

Trenching – The action of digging trenches on a side slope to catch any material that might roll across the control lines. (NWCG)

Triage - A method of determining priority of treatment. Education Note: Triage involves a quick treatment of those life-threatening conditions that can be corrected in seconds. The actual requirements placed upon triage can vary depending upon the situation. In the worst of situations, with multiple patients, CPR is not performed. In situations where there is adequate manpower, CPR may have been considered in a similar patient. Often an officer who is an EMS supervisor is placed in the position of the “Triage Officer.” However, any qualified EMS person may be given this task.

Trigger points - (See: Management action points)

Trough - An elongated area of relatively low atmospheric pressure, usually extending from the center of a low-pressure system.



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Truck trail - Substantial transportation route for fire suppression motor vehicles, built prior to a fire. Truck trail is also known as a “fire road.”

True Airspeed (aviation) - Velocity of an aircraft in its flight path relative to the air through which it is moving.

True Bearing - Bearing by true north rather than magnetic north.

TSP - Total suspended particulate matter.

Turbulence - Irregular motion of the atmosphere usually produced when air flows over a comparatively uneven surface such as the surface of the earth; or when two currents of air flow past or over each other in different directions or at different speeds.

Turn the Corner (Turning the corner) - Contain a fire along a flank of the fire and begin containing it across the head. Turning the corner refers to both ground and air attack.

Turnaround - A widened part of a fire break used for turning vehicles around, also used as a safe area during entrapment.

Turnaround time (TAT) (aviation) - Time used by an air tanker or helitanker to reload and return to the fire.

Turnout coat - A coat with a fire-resistant outer shell and a thermal and moisture barrier liner. Used primarily by structure firefighters. A turnout coat is also known as a “fire coat.”

Two-way radio - Radio equipment with transmitters in mobile units on the same frequency as the base station, permitting conversation in two directions using the same frequency in turn. (USFS)

Type (resource capability) – (1) The capability of a firefighting resource in comparison to another type. Type 1 usually means a greater capability due to power, size, or capacity. (USFS) (2) A Type 1 resource provides a greater overall capability due to power, size, capacity, etc., than would be found in a Type 2 resource. Education Note: Resource typing provides managers with additional information in selecting the best resource for the task.

Type I Engine - A fire engine designed primarily for fighting fires in structures accessible from roads.

Type II Engine (Tender; Water tender) - A fire engine designed to carry and pump water for use in fire suppression.

Type III Engine - A fire engine designed primarily for fighting wildland fires. These engines are able to traverse more rugged terrain than Type I and Type II engines.



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UHF-FM - Ultra high frequency-FM.

Ultra-high frequency (UHF) FM - Radio frequencies from 300 Megahertz (MHz) to 3,000 MHz with a normal range of less than 50 miles. Radio frequency common to military aircraft and used in the logistics radio system. The most common frequencies used by fire and public safety are from 406 MHz to 512 MHz.

Unacceptable risk - Level of risk as determined by the risk management process which cannot be mitigated to an acceptable safe level.

Uncontrolled airport - Airport not having an approved agency with radio communications to direct aircraft take-offs and landings.

Uncontrolled fire - Any fire which threatens to destroy life, property, or natural resources, and (a) is not burning within the confines of firebreaks, or (b) is burning with such intensity that it could not be readily extinguished with ordinary tools commonly available. (USFS) (See: Wildfire)

Underburn – (1) A fire that consumes surface fuels but not trees or shrubs. (USFS) (2) A fire that consume surface fuels but not the overstory canopy. (See: Understory burning)

Undercut line – (1) A fireline below a fire on a slope. It can be a trenched to catch rolling material. (2) A control line constructed below a fire on a slope. (NWCG) Also called underslung line. (See: Cup trench)

Understory burn - A controlled burn of fuels below the forest canopy, intended to remove fuels from on-coming or potential fires.

Understory burning - Prescribed burning under a forest canopy. (See: Underburn)

Unicom - VHF/AM aircraft radio frequencies assigned by the FAA for use in air-to-ground communications at uncontrolled airfields. The frequencies most used are 122.8 MHz and 122.85 MHz.

Unified Area Command - A unified area command is established when incidents under an area command are multijurisdictional.

Unified Command - In ICS, unified command is a unified team effort which allows all agencies with jurisdictional responsibility for the incident, either geographical or functional, to manage an incident by establishing a common set of incident objectives and strategies. This is accomplished without losing or abdicating authority, responsibility, or accountability.

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Unit - The organizational element of an incident having functional responsibility for a specific activity in the planning, logistics, or finance/administration activity.

Unity of command - The concept by which each person within an organization reports to one and only one designated person.

Unity of effort - A command philosophy that encourages leaders to work together to find common ground and act in the best interest of those responding to the incident, the public, and the resources that are threatened.

Unlined fire hose - Hose commonly of cotton, linen, or synthetic fiber construction without rubber tube or lining, often used for wildfires because of its light weight and self-protecting (weeping) characteristics; such hose is attached to first-aid standpipes in buildings. At a specified flow, friction loss in unlined hose of a stated diameter is about twice that of lined fire hose.

Upper level (cold) low (Upper level disturbance; Cold low aloft) - A circulation feature of the upper atmosphere where pressure, at a constant altitude, is lowest. Education Note: Winds blow counterclockwise around the center in an approximately circular pattern. Upper level lows are usually quite small. The mechanics of these upper lows is such that a pool of cool moist air always accompanies their development. There is often no evidence of low pressure at the earth's surface. An upper low may exist above a surface high pressure system.

Upper level (cold) trough - An elongated area of relatively low pressure, at constant altitude, in the atmosphere. The opposite of an upper level ridge. Education Note: Upper level troughs are usually oriented north-south with the north end open. That is, air currents moving from west to east around the earth flow around three sides of the trough then turn eastward rather than toward the west, as in the case of a closed circulation. A large upper level trough may have one or more small upper level closed low circulation systems within it.

Upper level high - A circulation feature of the upper atmosphere where pressure, at a constant altitude, is higher than in the surrounding region. Education Note: Winds blow clockwise around an upper level high. Air in an upper level high is usually subsiding. This results in comparatively warm dry air with light winds over a large area. An upper level high may exist without there being high pressure at the earth's surface.

Upper level ridge - An elongated area of relatively high pressure, at a constant altitude, in the atmosphere. The opposite of an upper level trough. Education Note: Upper level ridges are often oriented north-south, alternating between upper level troughs, however, during summer they may assume random orientations and vast dimensions.

Urban interface - The Interface zone where man-made structures inter-mingle with wildlands, creating risk of structural involvement in a wildland fire incident and wildland fire involvement in structure fires, each of which requires different equipment, training, and tactics. (See: Wildland Urban Interface)



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Use level - The appropriate ratio of liquid foam concentrate to water recommended by the chemical manufacturer for each class of fire, usually expressed as a percent (such as 0.5%).

Useful load - Maximum computed gross weight minus equipped weight of a helicopter.



V Pattern - Characteristics fire cone-shaped pattern left by a fire on a wall, at or near its point of origin.

V Pattern indicators - The overall “V” or “U” shape of the exterior perimeter of a fire.

Values to be protected - Include property, structures, physical improvements, natural and culture resources, community infrastructure, and economic, environmental, and social values.

Values-at-risk - (See: Values to be protected)

Vapor suppression - Creating a seal with foam which prevents a release of flammable vapors from fuels.

Variable - Any changing characteristic; in statistics, a measurable characteristic of an experimental unit.

Variable ceiling - A ceiling of less than 3,000 feet (900 m) which rapidly increases or decreases in height by one or more reportable values during the period of observation.

Variable danger - Resultant of all fire danger factors that vary from day to day, month to month, or year to year (e.g., fire weather, fuel moisture content, condition of vegetation, variable risk)

Variable sky condition - A sky condition that varies between reportable values of sky cover amounts during the period of observation.

Variable visibility - A condition when the prevailing visibility is less than 3 miles (5 km) and rapidly increases and decreases by one or more reportable values during the period of observation.

Variable wind direction - Wind direction which varies by 60 degrees or more during the period the wind direction is being determined.

Vectors - Directions of fire spread as related to rate of spread calculations (in degrees from upslope). (USFS)

Vegetative regeneration - Development of new aboveground plants from surviving plant parts, such as by sprouting from a root crown or rhizomes. Even if plants form their own root system, they are still genetically the same as the parent plant.



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Vegetative reproduction - Establishment of a new plant from a seed that is a genetically distinct individual.

Vehicle fire - Fire originating in or on a vehicle or mobile equipment.

Vent - The release of enclosed smoke and heat from a structure by creating openings in it, as by hacking a hole in the roof, to allow free passage of air.

Ventilation factor - A numerical value relating the potential of the atmosphere to disperse airborne pollutants from a stationary source, calculated by multiplying the mixing height by the transport wind speed. (See: Mixing layer; Transport wind speed)

Ventilation index - A measure of the volume rate of horizontal transport of air within the mixing layer, per unit distance, normal to the wind. Units are measured in square meters per second or knot-feet.

Vertical fuel arrangement - Fuels above ground and their vertical continuity, which influences fire reaching various levels or vegetation strata.

Vertical temperature profile - Plot of the actual dry-bulb temperature against height above the earth's surface, most determined by a RAWINSONDE observation.

Very high frequency (VHF) AM - Radio frequency range from 30 MHz to 299 MHz. The sub-bands most commonly used by fire are: 1) VHF-FM Lo band: Frequency Modulation 30 MHz - 80 MHz, of which fire frequencies are between 30 MHz and 50 MHz; 2) VHF-FM Hi band: Frequency Modulation 150 MHz - 174 MHz. This is the most widely used band by fire agencies; 3) VHF-AM: Amplitude Modulation. This band is commonly referred to as the "Victor or VHF" band. The frequency range is from 118 MHz to 136 MHz. The only authorized use of this band is for aviation. The FAA controls and assigns all frequencies within this sub-band.

VFD - Volunteer Fire Department.

VFR - Visual Flight Rules Conditions.

VG - Visual greenness.

VHF omnidirectional radio range (VOR) - System of radio navigation in which any magnetic bearing relative to a special radio transmitter on the ground may be chosen and flown by an aircraft pilot.

VHF-AM - Very high frequency-AM.

Vigor - A subjective assessment of the health of individual plants in similar site and growing conditions; or a more specific measure based upon a specific facet of growth, such as seed stalk or tiller production per plant or per unit area.



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Virga – (1) A weather term describing moisture falling from clouds but not reaching the earth’s surface. (NWCG) (2) Precipitation falling out of a cloud but evaporating before reaching the ground.

Viscosity - Thickness of a liquid, the degree to which it resists flow.

Viscous water - Water that contains a thickening agent to reduce surface runoff; tends to cling to burning fuels and spread in layers that are several times thicker than plain water, thereby having an increased capacity to absorb heat, cool fuel, and exclude oxygen. Education Note: Viscous water is also known as “thickened water.”

Visibility - The greatest horizontal distance at which selected objects can be seen and identified, or its equivalent derived from instrumental measurements.

Visible area map - Map showing the different classes of visible area covered by a lookout point or points; may differentiate between seen areas, indirectly visible areas, and blind areas, or only between seen areas and blind areas. Also called seen area map. (See: Seen area)

Visual flight rules conditions (VFR) - Basic weather conditions prescribed for flight under Visual Flight Rules: ceiling above 1,000 feet (300 m) and flight visibility more than 3 miles (5 km). (See: Instrument Flight Rules Conditions)

Visual greenness (VG) - An NDVI-derived image of vegetation greenness compared to a very green reference such as a golf course. (See: Greenness factor)

Visual range - Maximum distance at which a given object can just be seen by an observer with normal vision.

Visual resource management (VRM) - The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Visual resources - The visible physical features on a landscape (e.g., land, water, vegetation, animals, structures, and other features).

Volatile - Readily changeable into vapor at low temperatures.

Volatiles - Readily vaporized organic materials which, when mixed with oxygen, are easily ignited.

Volunteer Fire Company - A fire department company or a response unit, the members of which are not paid.

Volunteer Fire Department (VFD) - A fire department of which some or all members are unpaid. (USFS)

Volunteer Firefighter - Legally enrolled firefighter under the fire department organization laws who devotes time and energy to community fire service without compensation other than Worker's Compensation or other similar death and injury benefits.



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VOR - VHF omnidirectional radio range.

Vortex turbulence - Miniature whirlwinds trailing from the wingtips of any aircraft in flight. Vortex will be in the form of a horizontal whirlwind with velocities up to 25 mph (40 km) per hour or more. Education Note: Vortex turbulence is also created by action of rotor blades on helicopters; these whirlwinds tend to move downward toward the ground. If an aircraft flies low over a fire, vortices may reach the ground and suddenly cause violent and erratic fire behavior.

VRM - Visual Resource Management.



Walk test - The walk test is designed to determine the ability to carry out light duties. It consists of a one-mile test with no load that approximates an aerobic fitness score of 35. A time of 16 minutes is the passing score for this test, ensures the ability to meet emergency and evacuate to a safety zone. (See: Work capacity test)

Warm front - The leading edge of a relatively warm air mass which moves in such a way that warm air replaces colder air that moves away from a region. Education Note: Winds associated with warm frontal activity are usually light and mixing is limited. The atmosphere is relatively stable when compared to cold front activity.

Watch out situations - A list of 18 situations for firefighters to be aware of, which signal potential hazards on the fire line; originated from analysis of generations of similar incidents.

Water bar - A shallow channel or raised barrier, such as a ridge of packed earth or a thin pole laid diagonally across the surface of a road or trail to lead off water, particularly storm water. Education Note: A water bar is frequently installed in firelines on steep slopes to prevent erosion.

Water expansion pumping system (WEPS) - Apparatus utilizing an air compressor and positive displacement pump coupled to the same engine, plumbed to a non-pressurized tank, for producing foam. The operation involves injecting compressed air into a liquid stream containing a suitable foaming agent.

Water expansion system (WES) - Apparatus utilizing a pressurized tank, hose, and nozzle for producing foam by injection of compressed air or gas into a liquid stream downstream from the pumping source. The liquid stream must contain a suitable foaming agent.

Water hammer - A force created by the rapid acceleration or deceleration of water, commonly created by opening or closing a valve too quickly. Pressures developed in a water hammer, proportional to the mass multiplied by the square of the velocity, can damage a pipe or hose.

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Water Resources Specialist - The person responsible to the planning section chief for collecting information of water resources in and adjacent to the incident area, determining water use requirements of firefighting resources, and providing input to the Incident Action Plan about available water resources and/or anticipated shortages.

Water source - Any strategically located supply of water that is readily available for pumps, tanks, trucks, helicopters, or fire camp use.

Water supply map - A map showing location of supplies of water readily available for pumps, tanks, trucks, camp use, etc.

Water tender - Any ground vehicle capable of transporting specified quantities of water. (USFS)

Water thief - A type of bleeder valve designed for installation at convenient points in hose lines to permit drawing off water for filling backpack pumps or other use without interfering with pump or nozzle operation.

Education Note: A gated wye with (usually) a 2 1/2-inch inlet, two 1 1/2 outlets and a 2 1/2 outlet. This allows you “steal” water from a supply that is going elsewhere.

Wave - A disturbance that transfers energy from one point to another point and may take the form of a deformation of pressure or temperature. In the atmosphere such disturbances may result in major storms or merely result in changes in cloud, wind, and temperature conditions. Development of a wave on a front usually slows the advance of the front due to transfer of energy to the wave development and movement.

WCT - Work capacity test.

Weather advisory - In aviation forecasting, an expression of hazardous weather conditions not predicted in the zone weather forecast, as they affect the operation of air traffic.

Weather Information Management System (WIMS) – (1) An interactive computer system designed to accommodate the weather information needs of all federal and state natural resource management agencies. Provides timely access to weather forecasts, current and historical weather data, the National Fire Danger Rating System (NFDRS), and the National Interagency Fire Management Integrated Database (NIFMID). (USFS) (2) A centralized weather data processing system at which daily fire danger ratings are produced.

Weather Observer - The person responsible to the situation unit leader for collecting current weather data and information at the incident and providing them to an assigned meteorologist, fire behavior specialist, or the Situation Unit Leader.

Weighted monthly occurrence - A calculation that is part of the National Fire Danger Rating System (NFDRS). It is a number used to determine seasonal risk class for a protection unit, calculated by multiplying peak monthly average by two and adding seasonal monthly average.



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WEPS - Water expansion pumping system.

WES - Water expansion system.

Western Regional Climate Center (WRCC) - One of six NOAA regional climate centers in the United States at which all hourly observations from all RAWS and many AWS are archived.

Wet foam - A low expansion foam type with few and varied bubbles and rapid drain time which is used for rapid penetration and fire extinguishment.

Wet line - (1) Temporary control line using water or other fire-retardant liquid to prevent a low-intensity fire from spreading in surface fuels or to knock down a more intense fire. (2) A line of water, or water and chemical retardant, sprayed along the ground, and which serves as a temporary control line from which to ignite or stop a low-intensity fire. (USFS) Control line put in by means of a progressive hose lay using 1 1/2-inch feeder line with 1-inch branch lines every 100 to 150 feet. (NWCG)

Wet storage - Fire retardants mixed with water and stored in tanks at air attack bases for immediate use by air tankers. (See: Dry storage)

Wet water - Water with added chemicals, called wetting agents that increase water's spreading and penetrating properties due to a reduction in surface tension.

Wet-bulb depression - The difference between the wet and dry-bulb temperatures recorded by a psychrometer; used in conjunction with the dry-bulb temperature as a measure of the relative humidity of the air.

Wet-bulb temperature - The lowest temperature to which air can be cooled by evaporating water into it at a constant pressure when the heat required for evaporation is supplied by the cooling of the air. It is measured by the wet bulb thermometer, which usually employs wetted wicking on the bulb as a cooling (through evaporation) device.

Wet-bulb thermometer - In a psychrometer, the thermometer with its bulb covered with a jacket of clean muslin which is saturated with distilled water before an observation.

Wetting agent - A chemical that when added to water reduces the surface tension of the solution and causes it to spread and penetrate exposed objects more effectively than the untreated water.

Wetting rain - A widespread rain that over an extended time which significantly reduces fire danger. One-tenth of an inch may be sufficient to reduce fire danger in grass fuel models. One half inch may be necessary for timber fuels under closed canopies.

WFAS - Wildland Fire Assessment System.

WFIP - Wildland Fire Implementation Plan.

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WFMI - Wildland Fire Management Information.

WFSA - Wildland Fire Situation Analysis.

Wheelbase - The distance from the centerline of the front axle to the centerline of the rear axle. For a tandem rear axle vehicle, the center line is midpoint between the centers of the two rear axles.

Widow-maker (Widowmaker) - (1) A loose limb or top or piece of bark lodged in a tree, which may fall on anyone working beneath it. (2) Any branch or treetop that is poorly or no longer attached to a tree, but still tangled overhead. A Widowmaker does not discriminate among potential victims by gender or marital status.

Wildfire - An unplanned, unwanted wildland fire including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out. (See: Uncontrolled fire; Wildland fire)

Wildfire suppression - An appropriate management response to wildfire, escaped wildland fire use or prescribed fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire.

Wildland - An area in which development is essentially non-existent, except for roads, railroads, powerlines, and similar transportation facilities. Structures, if any, are widely scattered.

Wildland fire - Any non-structure fire that occurs in the wildland. Three distinct types of wildland fire have been defined and include wildfire, wildland fire use, and prescribed fire. (USFS) (See: Prescribed fire; Wildfire; Wildland fire use)

Wildland Fire Assessment System (WFAS) - An internet-based information system, providing national views of weather and fire potential, including national fire danger and weather maps and satellite-derived greenness maps.

Wildland fire engine - A type of fire apparatus specialized for accessing wildland fires with water, equipment, and small crew. Size and agility of these units may also be useful for other urban missions.

Wildland Fire Implementation Plan (WFIP) - A progressively developed assessment and operational management plan that documents the analysis and describes the appropriate management response for a wildland fire being managed for resource benefits. (USFS) (See: Implementation plan)

Wildland Fire Investigator (INVF) - An individual responsible for identifying and securing a wildfire's origin and determining the probable cause and documenting causal factors in a case report. INVF may not be directly assigned to an incident, working in conjunction with incident management as not to interfere with incident operations, while ensuring that an incident does not impede the on-scene investigation.



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Wildland fire leadership principles - Eleven principles describing tangible behaviors that reflect and demonstrate the wildland fire leadership values. The eleven principles are: 1) Be proficient in your job; 2) Make sound and timely decisions; 3) Ensure tasks are understood, supervised, and accomplished; 4) Develop your subordinates for the future; 5) Know your subordinates and look out for their well-being; 6) Keep your subordinates informed; 7) Build the team; 8) Employ your subordinates in accordance with their capabilities; 9) Know yourself and seek improvement; 10) Seek responsibility and accept responsibility for your actions; and 11) Set the example.

Wildland fire leadership values - Three guiding values that should be the basis for the decisions that leaders make. The three values are: 1) Duty – How a leader values their job. Duty begins with everything required by law and policy but is much more than that. A leader commits to excellence in all aspects of their professional responsibility so that when the job is done they can look back and say, “I couldn't have given any more.” 2) Respect – How a leader values their co-workers. Respect for the individual forms the very basis for the rule of law in America. This value reminds leaders that those who follow are their greatest resource. Not all followers will succeed equally, but they all deserve respect. 3) Integrity – How a leader values himself or herself. An individual cannot be in charge of others unless they are in charge of their own actions. People of integrity separate what is right from what is wrong and act according to what they know is right, even at personal cost.

Wildland Fire Management Information (WFMI) - A Web site providing current weather and lightning data, as well as historic fire occurrence data. NWCG Unit Identifiers are also maintained on the site.

Wildland fire serious accident - Any accident where one or more fatalities occur and/or three or more personnel are inpatient hospitalized as a direct result, or in support of wildland fire suppression or prescribed fire operations. Accident may result in substantial property or equipment damage of \$250,000 or more.

Wildland fire situation analysis (WFSA) - A decision-making process that evaluates alternative wildfire suppression strategies against selected environmental, social, political, and economic criteria, and provides a record of those decisions.

Wildland fire use - The application of the appropriate management response to naturally ignited wildland fires to accomplish specific resource management objectives in pre-defined designated areas outlined in Fire Management Plans. (USFS) Education Note: Operational management is described in the Wildland Fire Implementation Plan (WFIP). (See: Prescribed fire; Wildland fire)

Wildland fire use fires (WFU fires) - Naturally-ignited wildland-controlled burn that are managed for purposes of achieving specific previously defined resource management objectives.

Wildland firefighting - The act of attempting to control brush, grass, or forest fires. Some of these operations will last for days or weeks. These efforts will often include airdrops of water or fire retardant as well as special crews and special apparatus.



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Wildland urban interface (WUI) - The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. (USFS)

WIMS - Weather Information Management System.

Wind - The horizontal movement of air relative to the surface of the earth.

Wind direction - Compass direction from which wind is blowing.

Wind profile - A chart of wind speed in relation to height, most determined by a pilot balloon observation.

Wind shear - A variation in wind speed and/or direction in a layer of the atmosphere or between layers. The variation may be in the horizontal or vertical dimensions and may result in significant turbulence depending upon the magnitude of the wind speed/direction differences. A strong wind shear may act like an inversion and inhibit plume rise. It may also fracture the smoke plume, not allowing smoke to rise much above terrain levels. A strong horizontal anticyclonic shear results in downward motion and may bring smoke aloft to the surface.

Wind shift - (1) For aviation purposes, a change in the average wind direction of 45 degrees or more which takes place in less than 15 minutes if the wind speed during this period is 6 knots (3 m/s) or greater. (2) For ground observation purposes, a change of at least 45 degrees in the direction of a significant wind, which occurs in a relatively short time frame.

Wind speed - (1) Wind, in miles per hour, measured at 20 feet above open, level ground or as adjusted to meet this standard to compensate for height of ground cover, uneven ground, and nearby obstructions. (2) (NFDRS) Wind, in mph, measured at 20 feet above ground, or above the average height of vegetation, and averaged over at least a 10-minute period. Wind speed is also known as “wind velocity.”

Wind vectors - Wind directions used to calculate fire behavior. (USFS)

Wind-driven wildland fire - A wildland fire that is controlled by a strong consistent wind.

Windfall - Tree knocked-over, uprooted or broken off by wind, increasing fuel loading and hampers building fireline. A windfall is also known as blowdown, which involves large, unmanaged areas of dense blowdown that can create serious fire hazards once the larger fuels become dry.

Windrow burning - Burning slash that has been piled into long continuous rows. Also includes wildfire in vegetation planted to protect improvements or agriculture.

Winds aloft - Generally, wind speeds and wind directions at various levels in the atmosphere above the domain of surface weather observations.

Windspeed meter - A handheld device which indicates wind speed, usually in miles per hour.



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Woody fuel moisture - In NFDRS, a calculated value representing the approximate moisture content of the live woody vegetation in the rating area expressed as a percentage of the oven dry weight of the sample. (See: Herbaceous fuel moisture; Measured woody fuel moisture; Woody vegetation condition)

Woody vegetation condition - Part of the National Fire Danger Rating System (NFDRS). A code reflecting the moisture content of the foliage and small twigs [less than 1/4 inch (0.6 cm)] of living woody plants.

Work capacity test (WCT) - A family of tests to determine firefighter physical capabilities. Work capacity tests are used to ensure that persons assigned to fire activities are physically capable of performing the duties of wildland firefighting and to meet National Wildfire Coordinating Group (NWCG) standards for wildland firefighters (Wildland Fire Qualification Subsystem Guide 310-1, NWCG, 1993). Education Note #1: The WCT is a family of tests to determine firefighter physical capabilities at three levels: – “Arduous Duties” involve field work requiring physical performance calling for above-average endurance and superior conditioning. These duties may include an occasional demand for extraordinarily strenuous activities in emergencies under adverse environmental conditions and over extended periods. Requirements include running, walking, climbing, jumping, twisting, bending, and lifting more than 50 pounds; the pace of work typically is set by the emergency condition. – “Moderate Duties” involve field work requiring complete control of all physical faculties and may include considerable walking over irregular ground, standing for long periods, lifting 25 to 50 pounds, climbing, bending, stooping, squatting, twisting, and reaching. Occasional demands may be required for moderately strenuous activities in emergencies over long periods. Education Note #2: Individuals usually set their own work pace. – “Light Duties” mainly involve office-type work with occasional field activity characterized by light physical exertion requiring basic good health. Activities may include climbing stairs, standing, operating a vehicle, and long hours of work, as well as some bending, stooping, or light lifting. Individuals almost always can govern the extent and pace of their physical activity." Each performance level has its own unique Work Capacity Test: Pack Test - The pack test is a job-related test of the capacity for arduous work. It consists of a 3-mile hike with a 45-pound pack over level terrain. A time of 45 minutes, the passing score for the test, approximates an aerobic fitness score of 45, the established standard for wildland firefighters. Field Test - The field test is a job-related test of work capacity designed for those with moderately strenuous duties. It consists of a 2-mile hike with a 25-pound pack. A time of 30 minutes, the passing score, approximates an aerobic fitness score of 40. Walk Test - The walk test is designed to determine the ability to carry out light duties. It consists of a 1-mile test with no load that approximates an aerobic fitness score of 35. A time of 16 minutes, the passing score for the test, ensures the ability to meet emergencies and evacuate to a safety zone.

Work/Rest ratio - An expression of the amount of rest that is required for each hour an individual is in work status. Current NWCG guidelines require one hour of rest for every two hours in work status.

Woven jacket fire hose - Fire hose of conventional construction, woven on looms from fibers of cotton or synthetic fibers. Most fire department hose is double jacketed (i.e., it has an outer jacket protecting the inner one against wear and abrasion).

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WRCC - Western Regional Climate Center.

WUI - Wildland Urban Interface.

Wye – (1) A hose connection with two outlets permitting two connections of the same coupling diameter to be taken from a single supply line. (2) A hose fitting permitting two or more lines to be taken from a single supply line. Used frequently in progressive hose lays on wildland fires. (NWCG) (See: Reversible Siamese; Siamese)



Zone weather forecast - A portion of the general fire weather forecast issued on a regular basis during the normal fire season specifically to fit the requirements of fire management needs, such as time, areas, and weather elements. These zones or areas are a combination of administrative and climatological areas, usually nearly the size of an individual forest or district.

