GLOSSARY OF FIRE CONTROL TERMS

ABORT: To jettison a load of water or retardant from an aircraft.

AERIAL FUELS: All live and dead vegetation located in the forest canopy or above the surface fuels, including tree branches and crowns, snags, moss, and high brush.

AERIAL IGNITION: The process of dropping or dispensing an igniting device or material from an aircraft.

AGL (Above Ground Level): A term frequently used in aviation operations, usually in connection with a stated altitude.

AIR TANKER: Any fixed-wing aircraft certified by the FAA as being capable of transport and delivery of fire suppressant solutions.

ANCHOR POINT: An advantageous location, generally a fire barrier, from which to start constructing a fireline. Minimizes the chance of being out flanked by the fire while the line is being constructed.

BACKFIRING: A tactic associated with indirect attack, intentionally setting fire to fuels inside the control line. Most often used to contain a rapidly spreading fire. Backfiring provides a wide defense perimeter, and may be further employed to change the force of the convection column. Backfiring is a tactic which makes possible a strategy of locating control lines at places where the fire can be fought on the firefighter's terms. Except for rare circumstances meeting specified criteria, backfiring is executed on a command decision made through line channels of authority. See Burning out for difference.

BACKING FIRE: Fire spreading or ignited to spread into the wind and/or downslope.

BERM: In fire suppression, a ridge of soil and debris along the edge of a fireline resulting from line construction. May be created on the downhill side to stop rolling material.

BLACKLINE: In fire suppression, a blackline denotes a condition where there is no unburned material between the line and the fire edge.

BLOWUP: Sudden increase in fire intensity or rate of spread sufficient to preclude direct control or to upset existing control plans. Often accompanied by violent convection.

BREAK/LEFT OR RIGHT: Means "turn" left or right. Applies to aircraft in flight, usually on the drop run and when given as a command to the pilot. Implies a prompt compliance. Should be used only in an emergency.

BUCKET: Any device suspended by cables from a helicopter designed to contain and drop retardant or water onto a fire.

BURNING OUT: When attack is direct, intentionally setting fire to fuels inside the control line to strengthen the line. Burning out is almost always done as a part of line construction; the control line is considered incomplete unless there is no fuel between the fire and the line. See *Backfiring* for difference.

BURNING PERIOD: That part of each 24-hour period when fires will spread most rapidly, typically from 10:00 a.m. to sundown.

CALCULATION OF PROBABILITIES: Evaluation of all existing factors pertinent to probable future behavior of a going fire and of the potential ability of available forces to carry out control operations on a given time schedule.

CANOPY: The uppermost spreading, branchy layer of vegetation.

CARDINAL DIRECTIONS: North, south, east, west to always be used in giving directions and information from the ground or air in describing the fire, e.g., the west flank or east flank, not right or left flank.

CENTER FIRING: A method of broadcast burning in which fires are set in the center of the area to create a strong draft, additional fires are then set progressively nearer the outer control lines as in-draft builds up so as to draw them in toward the center.

CHECK LINE: A temporary fireline constructed at right angles to the control line and used to interrupt the spread of a backfire as a means of regulating the heat or intensity of the backfire.

CLOCK METHOD: A means of establishing a flight path to a target on a fire by reference to clock directions.

COLD TRAILING: A method of controlling a partly-dead fire edge by careful inspection-and feeling with the hand so as to detect any fire and extinguishing it by digging out every live spot and trenching any live edge.

CONDITION OF VEGETATION: 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. In grass areas, minimum qualitative distinctions for stages of annual growth are usually green, curing, and dry or cured.

CONFINE A FIRE: To restrict the fire within determined boundaries established either prior to or during the fire.

CONSTRAINTS: Parameters or limitations on the use of specific suppression resources.

CONTAIN A FIRE: To take suppression action as needed, which can reasonably be expected to check the fire's spread under prevailing conditions.

CONTAINMENT: Completion of a control line around a fire and any associated spot fires, which can be expected to stop fire spread.

CONTROL A FIRE: To complete a control line around a fire, any spot fires therefrom, and any interior islands to be saved; bum 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 foreseeable conditions.

CONTROL FORCE: Resources used to control a fire.

CONTROL LINE: A comprehensive term for all the constructed or natural fire barriers and treated edges used to control a fire.

COYOTE TACTIC: The "coyote tactic" consists of a progressive line construction technique involving self-sufficient crews who build fireline until the end of a shift, remain overnight (RON)-at/near that point, and then begin again on the next shift. Crews should be properly equipped and be prepared to spend several shifts on the line with minimal support from fire camp.

DENSITY ALTITUDE: The pressure altitude corrected for temperature deviations from the standard atmosphere. "Density altitude" bears the same relation to "pressure altitude" as "true altitude" does to "indicated altitude." In air operations, the altitude at which the aircraft "thinks" it is flying.

DEPLOYMENT ZONE: Deployment zones are very similar to safety zones. The key difference is that fire shelters must be deployed to insure firefighter survival in a deployment zone due to the available space and/or fire behavior conditions at the deployment zone location. See Safety Zone.

DIRECT ATTACK: Any treatment of burning fuel, e.g., by wetting, smothering, or chemically quenching the fire by physically separating the burning from unburned fuel. A suppression strategy in which resources are directed to work close to the fire edge.

DIVISION SUPERVISOR: An operations supervisor responsible for all suppression activities on a specific division of a fire.

DIVISION: A unit of a fire perimeter between designated relief, drainage, or cultural features. A division is supervised between the Task Force/Strike Team and the Branch. (Also see "Group.")

DOWN LOADING: A reduction to aircraft payload made to compensate for loss of performance due to increase in density altitude.

DOZER BOSS: A person responsible for supervising one or more dozers.

DOZER COMPANY: Any dozer with a minimum complement of two persons.

DOZER LINE: Fireline constructed by a dozer.

DOZER: Any tracked vehicle with a blade for exposing mineral soil.

DROP CONFIGURATION: The type of air drop selected to cover the target. Terms which specify drop configuration include:

SALVO - Drop the entire load at one time.
TRAIL - Drop tanks in sequence.
SINGLE OR DOUBLE DOOR - Drop a partial load.

DROP ZONE: The area around and immediately above the target, applies to retardant and paracargo.

DRY RUN: A trial pass over the target area by an air tanker.

DUFF: Forest floor material composed of the L (litter), F (fermentation), and H (humus) layers in different stages of decomposition. ,

DUMMY RUN: A simulated bombing run made on a target by the lead plane or air tanker. Used to indicate approach and target to air tanker and to check for flight hazards.

ENGINE COMPANY: Any ground vehicle providing specified levels of pumping, water, hose capacity, and personnel.

ESCAPED FIRE SITUATION ANALYSIS: A document approved by the line officer that outlines strategies to be used in suppressing an escaped fire.

ETA: Estimated Time of Arrival.

ETD: Estimated Time of Departure.

EXIT: A command used to indicate the direction for a pilot to fly after a given maneuver: i.e., "Exit southbound over the lake."

EXPOSURE: Property that may be endangered by a fire burning in another structure or by a wildfire. In general, property within 40 feet (12 meters) of a fire may be considered. to involve exposure hazard, although, in very large fires, danger may exist at much greater distances.

EXTEND: To drop retardant in such a way that the load slightly overlaps and lengthens a previous drop. "Extend your last drop."

FAA: Federal Aviation Agency.

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

FINAL: An air tanker is said to be "on final" when it is on line with the target and intends to make the drop on that pass. Applies also to cargo dropping.

FINE FUELS: Fast-drying dead fuels, generally characterized by a 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.

FIRE FOAM: An extinguishing agent, chemically and/or mechanically produced, that blankets and adheres to the fuel, reducing combustion. It relies on moisture it contains for its effectiveness, so is a short-term suppressant.

FIRE RETARDANT: Any substance except plain water that by chemical or physical action reduces the flammability of fuels or slows their rate of combustion, e.g., a liquid or slurry applied aerially or from the ground during a fire suppression operation.

FIRE SHELTER: A personal protection item carried by firefighters which forms a tent-like shelter of heat-reflective material.

FIRE WHIRL: A spinning, vortex column of ascending hot air and gases rising from a fire and carrying aloft smoke, debris, and flame. Fire whirls range from a foot or two in diameter to small tornadoes in size and intensity. They may involve the entire fire area or only a hot spot within the area.

FIREBREAK: Any natural or constructed discontinuity in a fuelbed utilized to segregate, stop, and control the spread of fire or to provide a control line from which to suppress a fire.

FIRELINE EXPLOSIVES (FLE): Specially developed coils containing explosive powder that are detonated to create a fireline through ground fuels.

FIRELINE: A loose term for any cleared strip used in control of a fire. That portion of a control line from which flammable materials have been removed by scraping or digging down to the mineral soil.

FIXED TANK: A device mounted inside or directly underneath an aircraft which can contain water or retardant for dropping onto a fire.

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.

FLANKING FIRE SUPPRESSION: Working along the flanks, whether simultaneously or successively, from a less active or anchor point toward the head of a fire in order to contain the latter.

FLANKS OF A FIRE: The parts of a fire's perimeter that are roughly parallel to the main direction of spread.

FLAREUP: Any sudden acceleration of fire spread or intensification of the fire. Unlike *Blowup*, a flareup is of relatively short duration and does not radically change existing control plans.

FLASHOVER: In structural fire terminology, flashover occurs when radiation and convection from burning objects within an enclosure heat the walls and other objects in the enclosure to their ignition temperature and all flammable interior surfaces begin to flame. Flashover in a room is marked by a large increase in flame volume and a sudden, marked rise in gas temperature.

FLIR (Forward Looking Infrared): A hand-held or aircraft-mounted device designed to detect heat differentials and display their images on a video screen. FLIRs have thermal resolution similar to IR line scanners, but their spatial resolution is substantially less. They are commonly used to detect hot spots and flareups obscured by smoke to evaluate the effectiveness of firing operations, to detect areas needing mopup work, and for other purposes.

FOAM: See fire foam.

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.

FUEL MODEL: A simulated fuel complex for which all the fuel descriptors required for the solution of a mathematical fire spread model have been specified.

FUEL MOISTURE CONTENT: The water content of a fuel particle expressed as a percent of the oven-dry weight of the fuel particle.

GROUND FIRE: Fire that consumes the organic material in the soil layer (e.g., a "peat fire").

GROUND FUELS: All combustible materials below the surface litter, including duff, tree or shrub roots, punky wood, peat, and sawdust that normally support a glowing combustion without flame.

HEAD FIRE: A fire spreading or set to spread with the wind and/or upslope.

HEADING: The compass direction in which the longitudinal axis of the aircraft points.

HELD LINE: All worked control lines that still contain the fire when mopup is completed.

HELIBUCKET: A specially designed bucket carried by a helicopter like a sling load and used to drop suppressants or retardants.

HELITACK: Fire suppression using helicopters and trained airborne teams to achieve control of wildfire.

HELITANK: A specially designed tank, generally of fabric or metal, fitted closely to the bottom of a helicopter and used for transporting and dropping suppressants or retardants.

HELITANKER: A helicopter equipped with either a helitank or a helibucket.

HELITORCH: An ignition device suspended under a helicopter, capable of dispensing ignited fuel to the ground to assist in burning out or backfiring.

HOT SPOT: A particularly active part of the fire.

HOTSPOTTING: Checking the spread of fire at points of particularly rapid spread or special threat-generally the initial step in prompt control, with emphasis on first priorities.

INDIRECT ATTACK: A method of suppression in which the control line is located some considerable distance away from the fire's active edge. Generally done in the case of a fast-spreading or high-intensity fire and to utilize natural or constructed firebreaks or fuelbreaks and favorable breaks in the topography. The intervening fuel is usually backfired; but occasionally the main fire is allowed to burn to the line, depending on conditions.

JUMP SPOT: A selected landing area for smokejumpers or helijumpers.

LEAD PLANE: Aircraft flown to make trial runs over the fire and used to direct the tactical deployment of air tankers.

LITTER: The top layer of the forest floor, composed of loose debris of dead sticks, branches, twigs, and recently fallen leaves or needles, little altered in structure by decomposition. See Duff.

LONG-TERM RETARDANT: A chemical that has the capability to inhibit spread of flame through chemical reactions between products of combustion and the applied chemicals, even after the water component has evaporated.

MAFFS (Modular Airborne Firefighting System): A manufactured unit consisting of five interconnecting tanks, a control pallet, and a nozzle pallet, with a capacity of 3,000 gallons (1 1,355 liters), designed to be rapidly mounted inside an unmodified C-130 (Hercules) cargo aircraft for use in cascading retardant chemicals on wildfires.

MODIFIED SUPPRESSION: Suppression action dictated by one or more management constraints that affect strategy and/or tactics.

MOPUP: The act of making a fire safe after it is controlled.

NATURAL BARRIER: A naturally occurring obstruction to the spread of fire.

ORBIT: The circular holding pattern of an air tanker in the vicinity of a fire waiting for orders to make a drop.

PARACARGO: Anything intentionally dropped or intended for dropping from any aircraft by parachute, other retarding devices, or free fall.

PARTS OF A FIRE: On typical free-burning fires, the spread is uneven with the main spread moving with the wind or upslope. 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* or [Australia] the *back*.

PATROL: To go back and forth vigilantly over a length of control line during and/or after construction to prevent slopovers, control spot fires, and extinguish overlooked hot spots.

PING-PONG BALL DISPENSER (Premo MK III Aerial Ignition Device): An aerial ignition device which injects ethylene glycol into a plastic sphere containing potassium permanganate. The primed sphere is ejected from the aircraft.

PLOW LINE: Line constructed by a fireline plow.

PRE-TREAT: Treating fuels with retardant or foam along a control line in advance of the fire where ground cover or terrain is best for control action.

PROGRESSIVE HOSE LAY: A hose lay in which double shutoff wyes 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.

RAPPELLING: The process of delivering firefighters by descending down a rope from a hovering helicopter.

RATE OF SPREAD: The relative activity of a fire in extending its horizontal dimensions. The forward rate of spread at the fire front or head is usually what is meant by this term.

REBURN: (1) Repeat burning of an area over which a fire has previously passed but has left fuel subsequently ignitable. (2) Also the area so reburned.

REHABILITATION: The activities necessary to repair damage or disturbance caused by wildfire or the wildfire suppression activity.

RESIDENCE TIME: The time required for the flaming zone of a fire to pass a stationary point; the width of the flaming zone divided by the rate of spread of the fire.

RESTRICTED AREA: Airspace of defined dimensions identified by an area on the surface of the earth within which the flight of aircraft, while not wholly prohibited, is subject to restrictions.

RETARDANT COVERAGE: The area of fuel covered and degree of coverage on the fuel by a retardant. Coverage levels are usually expressed in terms of gallons per hundred square feet or liters per square meter.

RETARDANT: See fire retardant.

SAFETY ZONE: An area (usually a recently burned area) 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. In firing operations, crews progress so as to maintain a safety island close at hand allowing the fuels inside the control line to be consumed before going ahead. Safety islands 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 "without utilization or deployment of a fire shelter."

SCRATCH LINE: A minimum line hastily established or constructed as an initial measure to check the spread of a fire.

SECONDARY LINE: Any fireline constructed at a distance from the fire perimeter concurrently with or after a primary control line has already been 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.

SHORT-TERM RETARDANT: A chemical which has no inherent fire retarding property but which alters the viscosity or retards the evaporation of water.

SIMPLE HOSE LAY: A hose lay consisting of consecutively coupled lengths of hose without laterals. The lay is extended by inserting additional lengths of hose in the line between pump and nozzle.

SLING LOAD: Equipment and supplies prepared and transported by cables suspended from a helicopter.

SLOPOVER: A fire edge that crosses a control line intended to confine the fire. Also the fire that results. Other names are breakaway, breakover, and breakover fire.

SMOLDERING FIRE: 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. Often called stub, if less than 20 feet tall.

SPAN OF CONTROL: The maximum number of subordinates who can be directly supervised by one person without loss of efficiency. In fire suppression, the number varies by activity but is usually in the general range of 3 to 7.

SPOT FIRE: A fire set outside the perimeter of the main fire by flying sparks or embers.

SPOTTING: Behavior of a fire producing sparks or embers that start new fires beyond the zone of direct ignition by the main fire.

STRATEGY: An overall plan of action for fighting a fire which gives regard to the most cost-efficient use of personnel and equipment in consideration of values threatened, fire behavior, legal constraints, and objectives established for resource management. Leaves decisions on the tactical use of personnel and equipment to supervisors and leaders in the operations section.

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 the wind where inner strips are fired first to create drafts which pull flames and sparks away from the control line.

SURFACE FIRE: Fire that burns surface litter, other loose debris of the forest floor, and small vegetation.

SURFACE FUEL: Fuels that contact the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low stature living plants.

SWAMPER: A worker on a dozer crew who pulls winch line, helps maintain equipment, etc., to speed suppression work on a fire. Sometimes used to walk ahead of the dozer to guide operator in construction of a fireline.

TACTICS: Operational aspects of fire suppression. Determining exactly where and how to build a control line and what other suppression measures are necessary to extinguish the fire. Tactics must be consistent with the strategy established for suppressing the fire.

TEST FIRE: A controlled fire set to evaluate fire behavior and control measures.

TIE-IN: To connect a control line or airdrop with another line coming from the opposite direction or with a specified point (road, stream, etc.). "Tie-in tanker 78's drop with the road."

TORCHING: The burning of the foliage of a single tree, or a small group of trees, from the bottom up.

TURN-THE-CORNER: To contain a fire along a flank and begin containing it across the head. Refers to ground or air attack.

UNDERCUT LINE: A fireline below a fire on a slope. Should be trenched to catch rolling material. Also called underslung line.

VALUES-AT-RISK: Physical and non-physical elements of the environment that may be adversely affected by fire.

VENTILATION: Air flow and supply through a structure.

VISCOSITY: The thickness of a solution or suspension. A measure of the relative capability of a fluid to resist flow. Heavy syrup has a high viscosity; gasoline has a low viscosity.

WET WATER: Water containing a wetting or foaming agent.

WETTING AGENT: An additive that reduces the surface tension of water (producing wet water) causing it to spread and penetrate more effectively.

WILDLAND-URBAN INTERFACE: That line, area, or zone where structures and other human development meets or intermingles with undeveloped wildland or vegetative fuels.

WING SPAN: The distance from wing tip to wing tip on a fixed-wing aircraft. Used for corrections left or right to a target location.