
**29 CFR 1960.20, Alternate Standard For Fire Safety In Airport
Traffic Control Towers (ATCTs)**

Fire Prevention Plan (FPP)

Emergency Action Plan (EAP)

FIRE SAFETY HANDBOOK



**DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION**

INTRODUCTION

The need for 29 CFR 1960.20

The Occupational Safety and Health Administration (OSHA) standard in the Code of Federal Regulations (CFR) Title 29, Part 1910.36 requires that “Every building or structure, new or old, designed for human occupancy shall be provided with exits sufficient to permit the prompt escape of occupants in case of fire or other emergency.” Simply put, facilities must have at least two (2) exits, or means of egress. Should a building have one of the means of egress blocked due to fire or smoke, an alternate means of escape is needed to exit the building. Due to the uniqueness of design and function, most Airport Traffic Control Towers (ATCTs) do not meet this requirement. It is also important to note that due to the nature of critical air traffic operations, some occupants may not be able to evacuate immediately.

Any federal agency that cannot meet the requirements of 29 CFR 1910.36 may apply for an alternative to this standard. The Federal Aviation Administration (FAA), after thorough consultation with employee representatives, requested from OSHA an alternate provision which provides a level of protection in ATCTs equivalent to that required in 29 CFR 1910.36. These provisions are contained in 29 CFR 1960.20, Alternate Standard for Fire Safety in Airport Traffic Control Towers (ATCTs).

This handbook is intended to provide ATCT occupants with an explanation of this alternative standard as well as information that will ensure the safety of the occupants in the event of fire or other emergencies. Upon completion of this training, you will be able to:

- ❑ State the required elements of 29 CFR 1960.20
- ❑ Determine whether your ATCT complies with Alternative “A” or Alternative “B”
- ❑ Identify the location of and components of your Facility Compliance Plan (FCP), Emergency Action Plan (EAP), and Fire Prevention Plan (FPP)
- ❑ List the elements required to start a fire, define the classes of fire, and describe the types and uses of fire extinguishers
- ❑ PASS THE FINAL EXAM!

29 CFR 1960.20 EXPLAINED

Exit Route Compliance

29 CFR 1960.20 ensures that every ATCT is constructed, equipped, and operated to protect occupants from fire and smoke during the period of time necessary to escape the building in case of a fire or other emergencies. OSHA has defined two alternatives to achieve compliance with this alternate standard. The determination of which alternative applies to a particular ATCT depends on the number of occupants in the tower. The FAA must choose an alternative based on the following:

ALTERNATIVE	# OCCUPANTS	REQUIREMENTS
A	<u>LESS</u> than 25	<ul style="list-style-type: none"> • ATCT not used for sleeping purposes. • ATCT is Type I, II, or IV construction. • Interior finish is Class A or B. • There are no combustibile materials in or under the ATCT, except necessary office furniture and supplies. • There are no high hazard areas within the immediate vicinity of the ATCT. • Single means of egress.
B	25 or <u>MORE</u>	<ul style="list-style-type: none"> • ATCT is constructed of protected noncombustible construction. • High hazard areas must be separated by enclosing the area with fire resistive walls, ceilings, and floors. • The single exit is protected by a smoke proof enclosure with 2-hour firewalls that exits to a public way. • Single means of egress.

The number of occupants, or occupant load, is defined as the total number of persons permitted to occupy a tower at any one time, regardless of square footage of the gross floor area. Occupancy signs indicating the occupant load should be posted at the base of the tower shaft. All ATCTs constructed after the year 2001, with an occupant load of 25 or more, must have two (2) means of egress.

The FAA may request, from OSHA, a variance from the alternate standard. A variance is using methods, equipment, or facilities that differ from those prescribed by OSHA. In applying for a variance, the FAA must be able to show that their facility or method of operation provides employee protection "at least as effective as" that required by OSHA's standard. All variances requested by the FAA will provide as safe an ATCT as required by the alternate standard, 29 CFR 1960.20. All affected employees and their representatives will be notified of any variance request for a particular ATCT and a copy will be placed in the Facility Compliance Plan (FCP).

The FAA may also be required to file a petition for modification of abatement date (PMA) when compliance with the requirements of 29 CFR 1960.20 have not been achieved within one year of the effective date of the standard. Compliance may not have been accomplished due to factors beyond the FAA's reasonable control, such as the unavailability of professional or technical personnel, insufficient materials and equipment necessary for construction, or budgetary constraints.

When applying for a PMA, the FAA must assess the effectiveness of modifications already in place and establish any additional measures to ensure that employees are provided equivalent protection until compliance is achieved. These interim measures must be in place to safeguard FAA employees against potential fire hazards, until compliance is attained. Interim measures include administrative controls such as conducting fire drills monthly (instead of annually) and/or structural modifications such as the installation of fire alarm/detection systems. All affected employees and their representatives will be notified of any PMA request for a particular ATCT and a copy will be placed in the Facility Compliance Plan (FCP).

Once the tower is in compliance with the requirements of 1960.20, a Compliance Certification form must be signed by the authorized person (an FAA employee who has specifically been assigned to assure compliance with the alternate standard) and submitted to OSHA. This certification states that the ATCT complies with all requirements specified in 1960.20 and that programs and processes are in place to ensure compliance with these requirements. All newly commissioned towers (replacement ATCTs) must also be certified once the requirements of 1960.20 are met. A copy will be placed in the Facility Compliance Plan (FCP).

Structural Requirements

In addition to the requirements of the alternative selected above, there are several structural requirements for each ATCT that must be complied with at a minimum. These requirements are: 1) Stairways must be at least 28 inches wide; 2) Interior finishes must be Class A or B (wood paneling and carpeting on walls DO NOT meet this requirement); 3) Vertical shafts (i.e. chase and stairwell) must be enclosed with a 2 hour fire wall; 4) Fire walls, partitions and stops must be constructed to limit the spread of fire and restrict the movement of smoke; 5) Fire detection and alarm systems must be provided; and 6) Suitable fire suppression equipment must be available.

Programs, Plans, Procedures

The alternate standard requires that written plans be completed and communicated to all occupants of the ATCT. These plans define specific procedures and actions to follow in the event of a fire or other emergency. A Facility Compliance Plan (FCP), Emergency Action Plan (EAP) and Fire Prevention Plan (FPP) must be developed. The FCP describes the engineering plans and modifications that will be made to comply with the alternate standard. The EAP explains what to do in the event of a fire or other emergency and the FPP shows how to prevent fires. Included in the FPP is a fire drill program, which requires all ATCT occupants to participate in a fire drill annually.

A copy of 29 CFR 1960.20 is available at every ATCT for review by employees, located in the FCP.

EMERGENCY ACTION PLAN (EAP)

What is an Emergency Action Plan?

Emergency Action Plan is a set of procedures describing actions the FAA and FAA employees must take to ensure employee safety from fire and other emergencies. The types of emergencies that may occur include fires, bombs and bomb threats, asbestos releases, hurricanes, tornadoes, floods, earthquakes, civil disturbances, electrical failures, and chemical or gas leaks. The EAP is a short-term response strategy for protecting lives and property during these types of emergencies in all FAA facilities. The EAP provides a step-by-step guide to assist FAA employees to understand their roles and responsibilities in the event of an emergency. These procedures are required to be reviewed annually. The EAP may also be referred to as an *Occupant Emergency Plan (OEP)*. All requirements of an EAP are contained in an OEP.

EAP	OEP
OSHA Regulations	Federal Property Management Regulations

Contents of Your Facilities Site Specific EAP

- Emergency escape procedures, emergency escape route assignments, and assembly area.
- Procedures to be followed by employees who remain to operate critical ATCT operations before they evacuate.
- Procedures to account for all employees after emergency evacuation has been completed.
- Rescue and medical duties for those employees who are to perform them.
- The preferred means of reporting fires and other emergencies.
- Names or regular job titles of persons or departments who can be contacted for further information or explanation of duties under the plan.
- A plan or diagram of designated emergency exit routes.

How to Evacuate

Your instructor will provide ATCT information and emergency procedures for each particular workplace.

FIRE PREVENTION PLAN (FPP)

What is a Fire Prevention Plan?

Preventing fires from occurring is the most effective way of managing them. The Fire Prevention Plan (FPP) is a series of methods to stop fires before they start. Every precaution must be taken in order to prevent a fire from starting. A written FPP is required in addition to the Occupant Emergency Plan to effectively manage tower evacuations and minimize/control potential fire hazards.

Contents of Your Facilities Site Specific FPP

- A list of the major workplace fire hazards, proper handling and storage procedures, potential sources of ignition and their control procedures, and type of fire protection equipment or systems which can control a fire involving them.
- Job titles of personnel responsible for maintenance of equipment and system installed to prevent or control ignitions of fires.
- Job titles of personnel responsible for the control of fuel source hazards.
- Housekeeping procedures to control the accumulation of flammable and combustible waste materials.

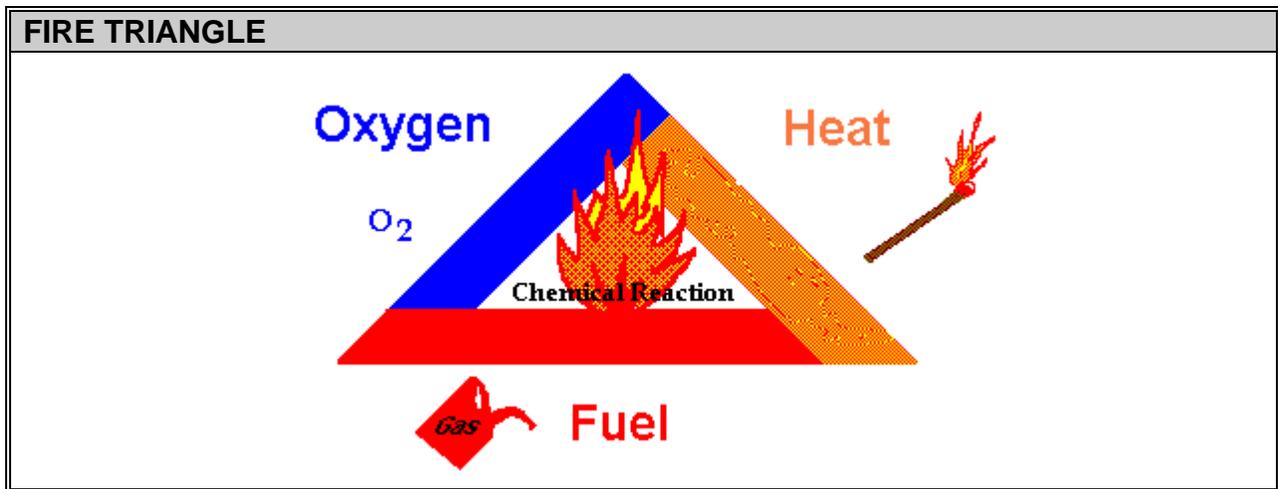
In order to prevent a fire, or extinguish a small fire, you must first understand the elements of fire, classes of fire, and potential fire hazards in your ATCT.

ELEMENTS OF FIRE

Fire Triangle

Fuel, *Oxygen*, and *heat*, are referred to as the "fire triangle." The addition of a fourth element, the *chemical chain reaction*, causes combustion or fire to occur. In order for a fire to begin, each of these elements must be present in the right proportion:

- *Fuel* – Any flammable material such as wood, coal, and gasoline.
- *Oxygen* – Present in the surrounding air we breathe.
- *Heat* – Energy that is provided by an external ignition source such as a flame or spark.
- *Chemical Chain Reaction* – When the components of the fire triangle come together under the right circumstances, a chemical reaction occurs and a fire begins.



Extinguishing a fire occurs through the removal of one or more of the elements of the fire triangle.

CLASSIFICATION OF FIRE

Fires are classified by the kind of material that is being burned.

CLASSES OF FIRE		
	CLASS A	<i>Ordinary Combustibles:</i> wood, paper, cloth, and some rubber and plastic materials.
	CLASS B	<i>Flammable Gases and Liquids:</i> gasoline, oil, grease, propane, paint, and other flammable gasses.
	CLASS C	<i>Energized Electrical Equipment:</i> appliances, computers, and power tools.

	<p>CLASS D</p>	<p><i>Combustible Metals:</i> magnesium, titanium, potassium, zirconium, lithium, and sodium.</p>
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ATCT FIRE HAZARDS

ATCTs are classified as a business occupancy. Potential fire hazards associated with this type of operation are necessary office supplies, paper products, furnishings, and carpeting (Class A materials). Other hazards are posed from the energized electrical devices such as air traffic control communication, surveillance, weather and navigation/landing equipment, computers, and small appliances such as microwaves, refrigerators and coffee makers (Class C materials). Only small amounts of flammable liquids, such as household cleaners or solvents, are present in the tower (Class B materials). Potential fuel ignition sources are smoking, overheated electrical equipment, sparks, electrical arcing, static electricity, and lightning. Please refer to your facilities Fire Prevention Plan (FPP) for other fire hazards and ignition sources at your ATCT.

FIRE PREVENTION

Preventing Class A Fires – Class A fires can be prevented through routine housekeeping. This means that workplaces should be free and clear of excess storage and trash. All trash receptacles should be emptied daily. Exits, hallways, and doors should be free of supplies, debris, and other materials.

Preventing Class B Fires – Class B fires can be avoided by properly using, handling and storing of flammable liquids and gasses. This should be accomplished by using flammable liquids only in well-ventilated areas, keeping flammable liquids in approved, closed containers and stored in cabinets away from excessive heat sources.

Preventing Class C Fires – Class C fires are the most common type of fires in the workplace. Controlling the potential for electrical fires can be accomplished by: inspecting equipment for old or frayed wiring, investigating any odors near electrical appliances that resembles burning, not overloading wall outlets, and limiting the overheating of appliances, equipment, and utility lights through proper maintenance and inspection.

Preventing Class D Fires – It is unlikely that you will encounter Class D fires in your ATCT. If combustible metals are utilized, follow the manufacturers’ instructions for proper handling and storage.

FIRE PROTECTION EQUIPMENT

Fire Detection and Alarm Systems

The FAA has provided fire detection and alarm systems as required by 29 CFR 1910.164 and 1910.165. The employee alarm system provides a warning that is necessary for safe escape of employees from the ATCT. Each ATCT has a preferred means of reporting fires and other

emergencies, such as manual pull box alarms or public address systems. Please refer to your facilities Fire Prevention Plan (FPP) for the preferred means of reporting fires at your ATCT.

Automatic Fire Suppression Equipment

Automatic fire suppression systems (sprinklers) and/or standpipe may be provided at some facilities. OSHA does not require these two types of fire protection equipment. A sprinkler system is a series of pipes that carry water throughout the ATCT, which will be used to extinguish or control a fire when sprinkler heads are opened by heat from a fire. Only sprinklers that have been activated by heat from a fire will open and discharge water. A standpipe and a connecting hose system are used to extinguish a fire by manually applying water. A standpipe may also be used by the fire department as a means of supplying water to the automatic fire suppression system.

Fire Extinguishers

The FAA is required to provide portable fire extinguishers in every ATCT for use in fighting small fires. It is important to know which type extinguishers can put out what class of fire. All fire extinguishers are labeled using standard symbols for the classes of fires they can put out. A slash through any of the symbols tells you the extinguisher cannot be used on that class of fire. A missing symbol tells you only that the extinguisher has not been tested for a given class of fire. There are three basic classes of fire extinguishers:

TYPES OF EXTINGUISHERS		
	Class A	Ordinary combustibles such as wood, cloth, paper, rubber, and many plastics.
	Class B	Flammable liquids such as gasoline, oil, grease, tar, oil-based paint, lacquer, and flammable gas.
	Class C	Energized electrical equipment including wiring, fuse boxes, circuit breakers, machinery, and appliances.

Fire extinguishers have limits. The proper use of portable fire extinguishers can save lives and property by putting out a small fire or containing it until the fire fighters arrive.

Using A Fire Extinguisher - Remember The PASS Word

Employees may be expected to use a fire extinguisher and must understand how to properly operate them. Before beginning to fight a fire, be sure that the fire is small enough to be extinguished. Know what material is burning and be sure that you are using the proper type of extinguisher. Stand a safe distance (approximately 6 feet) away from the fire and follow the four-step PASS procedure. If the fire your are attempting to extinguish does not come under immediate control or your escape route is threatened, LEAVE THE AREA IMMEDIATELY!

	<p>PULL the pin out: This unlocks the operating lever and allows you to discharge the extinguisher. Some extinguishers have other devices that prevent inadvertent operation.</p>
	<p>AIM low: Point the extinguisher nozzle (or hose) at the base of the fire.</p>
	<p>SQUEEZE the lever below the handle: This discharges the extinguishing agent. Releasing the lever will stop the discharge. Some extinguishers have a button that you press.</p>
	<p>SWEEP from side to side: Moving carefully toward the fire, keep the extinguisher aimed at the base of the fire and sweep back and forth until the flames appear to be out. Watch the fire area. If the fire re-ignites, repeat the process.</p>

WARNING: Portable extinguishers discharge very rapidly – many within 15 to 30 seconds.

FIRE DRILLS

Be Prepared

The FAA must establish a fire drill program for each ATCT and ensure that every employee participates annually in a fire drill. All employees must be prepared to exit the building in case of fire or other emergencies. Employees should be aware of and study the posted escape routes. Elevators are NOT to be used in the event of a fire emergency.

TRAINING

The FAA is required to provide 29 CFR 1960.20 training for employees upon initial assignment and annual refresher training afterwards.

RECORDKEEPING

The FAA is required to document that each employee has received training associated with 29 CFR 1960.20. The FAA must also maintain a written record of modifications to the EAP, FPP, and facility compliance plans.

SUMMARY

Approximately 6000 fires occur in the workplace annually. In order to be safe while on the job, it is important to understand how fires occur, how it is possible to prevent a fire, what to do in case there is a fire, and how to extinguish a fire if necessary. All ATCT occupants must be familiar with each of these elements. It is up to each ATCT occupant to be prepared in the event of a fire or other emergencies. Employees should know the evacuation routes and know the plan of action.

Should you have questions regarding the alternate standard or the FAA fire safety program, contact the Regional Program Managers for Environment and Safety (RPMES), Regional Occupational Safety and Health Manager (ROSHM), or SMO Environmental Compliance Manager (SECM) for further assistance.