

Chapter 20 – Fire Protection (REDACTED)

20.1 Purpose

NASA Fire Protection policy is established in NPG 8715.3, NASA Safety Manual and NASA Technical Standard 8719.11 Safety Standards for Fire Protection. It contains the minimum fire safety requirements and guidelines applicable to NASA Ames Research Center. This chapter establishes the fundamentals of the NASA Ames fire protection and prevention programs, and elaborates on requirements and guidelines that exceed NASA-STD 8719.11, are unique to Ames Research Center, or are deemed to warrant special mention because of their importance.

20.2 Applicability

This manual is applicable to: (1) all Ames Employees; and (2) all persons and entities who agree in writing to comply with this manual.

20.3 References

- NPG 8715.3, NASA Safety Manual
- NASA Technical Standard 8719.11 Safety Standards for Fire Protection
- California Fire Code
- California Building Code
- California Mechanical Code
- U.L. Listing
- Factory Mutual Approval Guide
- California Code of Regulations, Title 19, Chapter 3
- 29 CFR 1910.22, General Requirements
- 29 CFR 1910.37, Means of Egress
- 29 CFR 1910.38, Employee Emergency Plans and Fire Prevention Plans
- National Fire Protection Association (NFPA) Latest Codes and Standards

20.4 Responsibilities

The Safety Division, Protective Services Office, Code (JP), line management, civil service and contractor personnel share the responsibility for the fire protection and fire prevention programs.

20.4.1 Safety Office

The Safety Division has responsibility for the fire protection engineering program, which consists of the following:

1. New construction design/plan review and approval.
2. Facility modification design/plan review and approval.
3. Witness fire suppression and fire alarm acceptance testing.
4. Daily construction site inspections of all key NASA construction sites, including fire safety issues.

5. Fire Code consultation as requested from NASA civil service and contract personnel (excluding Resident Agencies who have indicated they would prefer to use their own safety staffs).
6. Hot work permit issuance.
7. Construction of Facilities (C of F) advocacy for fire detection and suppression systems.
8. Oversight and management of fire extinguisher maintenance.
9. Provide guide specifications for fire alarm equipment and systems, and subsequent revisions as needed.

20.4.2 Protective Services Office

The Protective Services Office has responsibility for the fire prevention program development and implementation, which includes the following:

1. Conduct formally scheduled fire prevention inspections of all facilities at least annually, and more frequently for special and high-hazard occupancies (for example, conduct quarterly inspections of aircraft hangars).
2. Notify NASA line management of inspection findings and recommendations.
3. Track inspection recommendations through abatement and resolution of failure to abate issues.
4. Serve as focal point for resolution of fire safety issues from the Fire Department (other than from routine inspections) and other base personnel.
5. Resolve Multi-tenant occupancy fire prevention issues.
6. Coordinate with facility management for the conduct of annual fire drills of each facility and site familiarization activity for the Fire Department.
7. Establish and maintain adequate Fire Department manpower and equipment.

20.4.3 Line Management

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20.4.4 Civil Service and Contractor Personnel

Civil Service and contractor personnel who work at Ames Research Center have the responsibility to comply with Center fire protection/prevention policy as outlined in sections 20.4 through 20.8.

20.5 Authority Having Jurisdiction (AHJ)

The AHJ is the individual at the Center who is responsible for implementing the fire safety provisions of NASA-STD 8719.11, and has the authority for "approving/concurring" associated installations, procedures, and equipment. At Ames Research Center the Fire Marshall in Code JP has been designated as the Authority Having Jurisdiction.

20.6 Basic Fire Emergency Procedures

All fires or suspected fires shall be promptly reported according to the following guidelines. No one shall assume that a fire is too small to be reported, or that a fire will extinguish itself or will burn itself out. The BEAP shall be followed. It shall include evacuation procedures specific to each building, in addition to the following guidelines:

Upon discovery of a fire:

1. Activate a fire alarm pull station. Pull stations are in most buildings, located near the exits. When activated, they will automatically sound the evacuation alarms and notify the Dispatch Office, who will call the Fire Department.

2. Notify any other people in the immediate area who may be in danger. If possible to do so quickly and safely without endangering yourself, assist anyone unable to evacuate the building.
3. If a fire alarm pull station is not available, notify the people in the immediate area, exit to a safe location, and call 911 or the duty office at REDACTED. In most NASA buildings, the Dispatch Office can remotely turn on the evacuation alarms. Do not call 911 from a cell phone, use a wired phone.
4. Leave the building via the nearest safe exit. Use stairways, do not use the elevators.
5. Disabled personnel who are unable to use the stairways should move to a designated area of refuge, or near an exit stairway away from the fire, and await the assistance of the Fire Department. Each BEAP is required to include a plan for evacuation of disabled personnel.

Upon activation of evacuation alarms:

1. Evacuate the building immediately via your planned evacuation route, or alternate route if necessary. Take your keys, wallet, purse, money, I.D., and any prescription medication with you in the event the evacuation become a protracted operation. Close your office door behind you, but not locked if possible to aid the fire department in their required search. Once outside the building, assemble in the planned area, and report to the evacuation coordinator. The person, who reported the alarm, or the evacuation coordinator, should meet the Fire Department personnel when possible and advise them of the location of the fire, location of any known handicapped or missing persons, or any other pertinent information.
2. Many buildings have fire detectors or automatic sprinklers. If the fire is detected by these devices, the activation will automatically sound the evacuation alarms and notify the Dispatch Office. Do not wait for the fire detectors to operate or assume that they will quickly sound the evacuation devices. Use the fire alarm pull station in all fire emergency situations. If not sure that the Fire Department has been notified, call 911.
3. Upon arrival, the Fire Department will assume command. Do not cross security lines or re-enter the building until advised that it is safe to do so.

20.7 Fire Extinguishers

It is NASA Ames policy to provide fire extinguishers in NASA-occupied buildings in accordance with NFPA 10, and to maintain them in accordance with State of California requirements. Extinguishers are provided only for persons trained to use them. Do not attempt to use a fire extinguisher unless trained in its use and reasonably confident that the fire can be put out with the extinguisher. If in doubt, immediately evacuate the building.

20.8 Hot Work Permits

A signed hot work permit is required 24 hours in advance of any welding, cutting or burning operations. The permit will not be issued until:

1. It has been determined that the work can be safely conducted at the desired location.
2. Combustibles have been moved away or covered by an approved tarpaulin.
3. The atmosphere is nonflammable.
4. Precautions have been taken so that building fire detection and suppression systems will not be adversely affected.
5. If required by the permit issuer, provide a fire watch (with dedicated extinguisher) for the duration of the work and for 30 minutes thereafter (60 minutes for torch-applied roofing operations) to ensure that sparks or drops of hot metal do not start fires. All cracks and openings in floors shall be safely covered or closed.

The permit shall be requested by contacting the NASA Safety Office at: REDACTED.

Alternate: REDACTED

See Appendix A for a sample copy of the Hot Work Permit Form.

20.9 Facility Fire Protection

It is Ames policy to meet or exceed current codes in new construction, and to upgrade existing buildings to meet current codes. Fire protection and safety improvements in existing buildings are most easily and commonly accomplished as part of the NASA Construction of Facilities (C of F) program.

It is Ames policy to provide fire sprinkler and fire alarm systems in all new buildings. Existing buildings without these systems will be updated as part of the C of F program. Remodels (both C of F and non-C of F), of areas over 2500 square feet in nonsprinklered buildings shall include sprinkler systems.

It is Ames policy to install Emergency Voice Alarm Systems in major assembly buildings, occupied buildings over 75 feet high, and in all major office-type occupancies over 75,000 square feet. This will be accomplished in new buildings, and when replacing existing systems. New projects will not be generated to upgrade existing fire alarm systems that meet all other requirements. These systems can be used for both emergency and nonemergency purposes.

All facility partition or wall changes, regardless of size, and fire protection system installation and modification shall be submitted to the Safety Division for approval using the NASA Ames Building Permit System. Plans and specifications will be reviewed for compliance with the documents referenced in section 20.2.

The shut-off or outage of any fire protection, life safety system, or feature shall be avoided. Where necessary for maintenance or construction, the disruption of service or feature shall be scheduled in advance so as to minimize risk and time of disruption. Depending on the conditions, fire watches or additional security inspections may be required. Where outages involve sprinkler systems, fire alarm systems, fire hydrants, or other fixed fire equipment, notify the Safety Division, Fire Marshal at REDACTED, and the Fire Department via Ames Emergency Dispatch at REDACTED.

20.10 Fire Prevention

The goal of fire prevention is to reduce or eliminate fire-related hazards that can result in unsafe conditions, injury to personnel, and/or property damage. Where deficiencies are unable to be immediately corrected, other means of mitigating the hazard or modifying the facility or operation to reduce the hazard to a safe level will be implemented. Effective housekeeping procedures shall be implemented in accordance with NFPA 101, the California Fire Code and 29 CFR 1910.22, with the goal of preventing hazardous accumulations of combustible trash and debris and the maintenance of, access to, and use of emergency exits and fire protection equipment. The following guidelines shall be included in each building's Fire Prevention Plan:

1. Means of egress shall be arranged and maintained to provide free and unobstructed egress from all parts of the building at all times when it is occupied.
2. Corridors, stairways, and other means of egress shall be kept clear of storage, and not used for recycling bins, copy machines, mail-handling operations, coffee/snack/vending machine areas, or other office operations.
3. Exit doors, fire doors, fire sprinkler systems, fire alarm systems, emergency lighting, and other life safety systems and equipment shall be maintained fully functional at all times and have priority on maintenance.
4. No object shall be located in such a manner as to prevent access to or use of fire protection equipment such as fire extinguishers, fire alarm pull stations, fire hydrants, fire hose outlets, and siamese connections.

5. Waste cans shall be provided in sufficient numbers in all areas subject to accumulations of combustible trash. Metal waste cans with self-closing lids shall be provided in sufficient numbers in areas where cloth rags or paper towels saturated with oil, paint, ink, or other combustible or flammable liquid may be found (e.g., vehicle repair shops, paint shops, and printing and reproduction areas).
6. When activities occur that generate a large quantity of combustible trash and debris (such as woodworking or building construction), a general cleanup shall be conducted at the end of the [sic].
7. In all facilities, but especially in offices and research laboratories, where an inordinate amount of publications, files, and loose papers are found, a general housecleaning effort shall be periodically conducted to remove all items that no longer serve a useful purpose.
8. New operations or changes in existing operations that involve hazardous materials should be brought to the attention of the Fire Department and the Safety Division. These conditions may affect the manner in which the Fire Department would approach or fight a fire.
9. Areas above suspended ceilings and below raised floors shall not be used for storage purposes. Electrical and communications wiring through these areas shall be installed in conduit, or be the type of cable allowed by NFPA 70 for spaces used for environmental air.
10. Construction trailers shall not be placed within 20 feet of buildings, wind tunnels, or cooling towers.
11. Portable fueled equipment, cooking equipment, and automobiles shall not be stored under wind tunnels or other significant structures. Automobiles shall be parked only in authorized parking spaces.
12. Grass and ground cover shall be mowed or removed to eliminate fire hazard during dry seasons. A clear-cut space free of dried vegetation shall be maintained a minimum of ten feet wide on each side of roadways.

20.11 Appendix

20.11.1 Appendix A: Hot Work Permit Form

Hot Work Permit (Welding, Cutting, Burning, Brazing or Detonation)		1. Permit Number:
2. Date Permit Issued: / /	3. Time Permit Issued:	4. Expiration Date: / / Expiration Time:
5. Building No.		Room Number:
6. Outside Area/Location:		
7. Name of Person and Company/Organization Requesting Permit:		
8. Operation to be performed:		
9. <input type="checkbox"/> Fire watch is required during operation and for a period of 30 minutes after completion of operation.		
10. <input type="checkbox"/> A Closure Inspection Is Required. Call _____ at REDACTED after completion of this operation and remain in the area until the arrival of the inspector.		
11. SPECIAL PRECAUTIONS: (10a) Additional work at locations not specifically listed on this permit is strictly prohibited until further inspections are made. (10b) Approved type and size of fire extinguisher or fire hose must be immediately available for use. (10c) All concerned workers and fire watches must be made aware of the location of the nearest fire alarm box and telephone. (10d) Adequate protective covering and shields must be provided to protect adjacent materials and areas from flying sparks or hot slag. (10e) If buildings or areas are equipped with smoke or flame sensing detectors, the alarm technicians must be notified prior to commencing work REDACTED or REDACTED. (10f) This permit does not authorize Confined Space work. (10g) Dial 911 to report any fire or emergency. [Dial REDACTED from Cell or Pay Phones] (10h) (10i) (See reverse side for additional requirements)		
12. The location where the above operation is to be performed has been examined, and necessary precautions taken to provide a fire safe environment. Permission is granted to perform this operation. Signature Of HWP Issuer/Inspector issuing this permit:		
13. I am fully qualified to perform this operation and understand my responsibilities regarding fire safety on this operation, and will apply and abide by the precautions outlined in SECTION 10 of this permit. Signature of Official-in-Charge or Designated Representative performing Hot Work:		
14. <input type="checkbox"/> Official-in-Charge or Designated Representative of Permit Holder has declared the area safe.		
15. Permit Closed. Signature of HWP Issuer/Inspector:	DATE: / /	TIME:

END OF DOCUMENT