

**MWI 8715.11
REVISION E**

**EFFECTIVE DATE: September 30, 2004
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MARSHALL WORK INSTRUCTION

QD01

FIRE SAFETY PROGRAM

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DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		2/2/00	
Revision	A	3/28/01	Document renumbered in accordance with MPG 1410.2; changed "3.2" to "NSS-1740.12, 'NASA Safety Standard for Explosives, Propellants, and Pyrotechnics"; changed title of "3.7" to "Marshall Safety, Health, and Environmental (SHE) Program"; deleted "b" in section 4; added definition for "Impairment Plan"; changed 5.2 to read "...precautions for operation involving open flames or producing heat and/or sparks. This includes, but not limited to: Brazing, Cutting, Grinding, Soldering with a torch, Thawing Pipe, Torch-Applied Roofing and Cad Welding"; revised 6.1.4 to read "...building manager, Industrial Safety Department, building occupants...return to normal. The building manager is responsible for notifying the building occupants of the fire protection system outage"; revised 6.1.5 to read "...are taken. The Facilities Engineering Department is responsible for maintaining an outage log documenting impairment plan requirement..."; deleted "and fire hose stations" from 6.1.6; revised 6.1.6 to read "spreadsheet will be maintained by the building manager and/or building manager assistant to document the type and location of each fire extinguisher in their area or responsibility"; revised 6.2.2 to read "...markings shall be placed...with requirements of NSS-1740.12"; revised 6.5.1 to read "Housekeeping, cleanliness, and means of egress are maintained...of NFPA 101, Chapter 7, 29 CFR 1910.22, and MPG 8715.1"; revised 6.5.4 to read "...self-closing lids meeting NFPA 30A requirements are provided..."; revised 6.6.1 to read "...makers, portable heaters, urns, hot plates, ovens, microwave ovens, grills, and similar heat-producing devices"; revised 6.6.2 to read "...or Assistant will issue a permit, MSFC Form 3798. The user is responsible for posting the permit at each...Permit approval is based..."; revised 6.f.(3) to read "The user shall operate the portable..."; revised 6.6.4 to read "The user is responsible for shutting off portable...unattended and at the end of the workday"; added 6.6.5 and NOTE 1"; revised 6.6.6 to read "...hours or when no one is working in the area..."; added 6.6.7 through 6.6.9; deleted 6.f.(8); added "and combustible"...reference h(1)" to 6.7.4; added "and combustible"; revised 6.8.3 to read "...heaters (Kerosene) are not used unless ALL the following requirements are met and with S&MA approval"; added 6.8.3.1 through 6.8.3.8; revised 6.13.2 to read "...from any occupied building..."; revised paragraph 9.1 to read "...Log (Impairment Plan)..."; revised 9.4 to read "...will be maintained by the building manager or assistant building manager for the length of time he or she is responsible for checking the fire extinguishers, then destroy or maintain for historical purposes"; added 9.6 and added "Employees who are expected/ required to use portable fire extinguishers will be trained annually in the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting per 29 CFR 1910.157 (g). The hands-on portable fire extinguisher training offer by the Redstone Fire Department will meet this requirement at MSFC.
Revision	B	8/27/02	Purpose –changed to fire safety, 3.3 changed to NASA-STD-8719.12, 3.6 added CGP P-1, 6.1.6 added appendix C..., 6.6.6.1 reworded, 6.1.7 added mechanical/equipment rooms..., 6.1.7.2 added mechanical/equipment room..., 6.1.7.3 added hot work permit..., 6.3.1 deleted exit, 6.3.2 added emergency/evacuation..., 6.4.1 added Natural Christmas tree..., 6.5.2 added required egress..., 6.6.1 added electrical grills..., 6.6.2 added portable appliances..., 6.6.4.2 added portable appliance..., 6.6.5 added portable

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			appliance..., 6.6.6.1 added no more than, 6.6.7 added Portable..., 6.6.8 added portable, 6.6.9 added portable, 6.7 added portable charcoal or propane grills, 6.8 added MSFC Form 1155, 6.8.3.1 added MSFC Form 1155, 6.8.4 added or, 6.9.3 added areas that have cloth..., 6.9.3.1 added steel waste..., 6.9.4 added kerosene and oil-fired heaters, 6.9.4.1 added all heaters..., 6.9.4.2, 6.9.4.3 added and built-in..., 6.9.4.7 added will be required..., 6.9.4.8 added required in the..., 6.9.4.9 added heater will only..., 6.9.4.10 added In no case..., 6.10.3 added in accordance with..., 6.10.3 added bottles (approx 14..., 6.13 added specifically designed..., 9.4 added or the Facilities..., 10.1 added The hands-on..., 10.2 added Additional safety awareness..., added Appendix C
Revision	C	5/6/2004	Minor word changes throughout document, added Definition, 6.4 expanded Fire Emergency Procedure section, reworded 6.5.2 required for artificial holiday trees, added 6.6 candles, added 6.8.2.1, reworded 6.8.4, expanded 6.8.5 & 6.8.6.3, Added 6.9 Portable Heaters, Reworded 6.9.4, Added 6.11 Deep Fryers, Added New Appendix A , reworded section 6.17 Hot Work Permits, Added New Appendix E
Revision	D	6/22/2004	Added 3.9 US National Archives and Records Administration, "General Records Schedules" (GRS). Per the Directives Control Board decision June 3, 2004, changed the disposition of records (section 9) to match GRS schedule 18 section 9—"Destroy when 3 years old or upon discontinuance of facility, whichever is sooner."
Revision	E	9/30/2004	Revised per HQ rules and review, added 5.5, changed records 9.1 – 9.7 to include NRRS requirements, other minor wording changes in document.

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1. PURPOSE

This instruction implements the basic fire protection requirements from the National Fire Prevention Association (NFPA) and the NASA Safety Standard for Fire Protection. It establishes the Marshall Space Flight Center (MSFC) fire safety program.

2. APPLICABILITY

This instruction applies to all facilities and operations at MSFC and shall be applied when determined applicable by the MSFC Authority Having Jurisdiction (AHJ) to MSFC employees located off site.

3. APPLICABLE DOCUMENTS

- 3.1 MPR 8715.1, “Marshall Safety, Health, and Environmental (SHE) Program”
- 3.2 NASA-STD 8719.11, “NASA Safety Standard for Fire Protection”
- 3.3 NSS-1740.12, “NASA Safety Standard for Explosives, Propellants, and Pyrotechnics” (will be replaced by NASA-STD-8719.12, “NASA Explosives Manual”)
- 3.4 29 CFR 1910, “Occupational Safety and Health Standards”
- 3.5 ASTM E-136, “Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C”
- 3.6 CGA P1, “Safe Handling of Compressed Gas in Containers”
- 3.7 NFPA, “National Fire Codes”
- 3.8 NIST Technical Note 708, “Smoke Density Chamber”
- 3.9 US National Archives and Records Administration, “General Records Schedule” (GRS)
- 3.10 NPR 1441.1, “NASA Records Retention Schedule” (NRRS)

4. REFERENCES

- 4.1 NPR 8715.3, “NASA Safety Manual”
- 4.2 29 CFR 1926, “Safety and Health Regulations for Construction”

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5. DEFINITIONS

5.1 Authority Having Jurisdiction (AHJ). The organization, office, or individual responsible for “approving” equipment and installation or a procedure. At MSFC, the “Authority Having Jurisdiction” for the fire safety program is the Director, Safety and Mission Assurance (S&MA).

5.2 Authorized Official. Person familiar with and trained to the requirements provided in 29 CFR 1910.252 and 1910.253 and designated by the S&MA Directorate to issue a Hot Work Permit.

5.3 Hot Work Permit (MSFC Form 1155). Permit issued by an authorized official listing the safety precautions for operations involving open flames or producing heat and/or sparks. This includes, but is not limited to, Brazing, Cutting, Grinding, Soldering with a torch, Thawing Pipe, Torch-Applied Roofing, and Cad Welding.

5.4 Impairment Plan. A fire protection system outage plan providing details of work to be performed and safety measures taken during the time of the outage.

5.5 Incipient Stage Fire. A fire in the initial or beginning stage which can be controlled or extinguished by portable fire extinguishers with the need for protective clothing or breathing apparatus (e.g., a trashcan fire).

5.6 Nationally Recognized Testing Laboratory (NRTL). An Occupational Safety and Health Administration (OSHA) program in OSHA’s Directorate of Science, Technology, and Medicine. It recognizes private sector organizations as Nationally Recognized Testing Laboratories (NRTLs), and this recognition signifies that an organization has met the necessary qualifications specified in the regulations for the Program. The NRTL determines that specific equipment and materials ("products") meet consensus-based standards of safety to provide the assurance, required by OSHA, that these products are safe for use in the U.S. workplace. A current listing of OSHA approved NRTLs can be found at www.osha.gov. Go to site index A-Z index, select “N” and look under “Nationally Recognized Testing Laboratories.”

5.7 Unattended. No one in the vicinity to notice an appliance malfunction or fire.

6. INSTRUCTIONS

6.1 Fire Protection Systems and Equipment

6.1.1 All fire protection systems and equipment shall be installed, inspected, and maintained in accordance with requirements of the applicable documents.

6.1.2 All automatic fire protection systems and equipment shall be monitored by the MSFC central fire alarm system.

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6.1.3 The Facilities Engineering Department (FED) shall control all fire protection system outages.

6.1.4 All fire protection system outage times shall be minimized as much as possible. When a system is deactivated, the affected Building Manager, Industrial Safety Department, building occupants, FED, Security, and the Fire Department shall be notified prior to deactivation and upon return to normal.

6.1.4.1 The Building Manager and/or Assistant Building Manager shall be responsible for notifying the building occupants of the fire protection system outage and the following:

6.1.4.2 Instruct building occupants to call 911 in the event of a fire and use direct voice communication to evacuate the building.

6.1.4.3 Notify the building occupants when the fire protection system is returned to normal.

6.1.5 When a system is deactivated for a period exceeding four hours, the following additional precautions are taken: The FED shall be responsible for maintaining an outage log documenting impairment plan (Appendix D) requirements, name of the person responsible for completing the outage, and start and return to normal times.

6.1.6 Portable fire extinguishers shall be inspected monthly, Appendix C, “Portable Fire Extinguisher Inspection Procedure” provides the requirements. This inspection shall be documented on the fire extinguisher tag (MSFC Form 549). The Building Manager and/or Assistant Building Managers shall document the type and location of each fire extinguisher in their area of responsibility and shall maintain a MSFC Form 542 or an equivalent spreadsheet.

6.1.6.1 The Facilities Engineering Department shall maintain the MSFC Form 542 or an equivalent spreadsheet for the portable fire extinguishers located in building mechanical/equipment rooms.

6.1.7 Most mechanical/equipment rooms are locked and normally unoccupied. The following special rules for location of fire extinguishers in these spaces are established:

6.1.7.1 Mechanical/equipment rooms with direct access from the interior of the building: If a multipurpose dry chemical extinguisher is located inside the building on the same floor level, and is within 75 feet of the equipment room doorway, this can offer sufficient fire protection coverage (provided the equipment room does not meet the criteria cited later in this paragraph). If an extinguisher is not available, as defined above, then maintenance personnel shall carry one into the equipment room when performing maintenance operations. However, equipment rooms exceeding 3000 square feet, or containing flammable/combustible liquids or gases, shall require additional extinguishers inside the area. In such cases, contact the Industrial Safety Department for an evaluation to assure compliance with the requirements of NFPA 10.

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6.1.7.2 Mechanical/equipment rooms with exterior access only: Multipurpose, dry chemical extinguishers shall be permanently mounted on all service vehicles used by maintenance personnel who normally work in these areas. If the vehicle is parked within 75 feet of the equipment room doorway, then the fire extinguisher located on the service vehicle can offer sufficient fire protection. If the vehicle is parked over 75 feet from the doorway, then a fire extinguisher shall either be permanently mounted inside the equipment room, or maintenance personnel shall bring one with them when performing maintenance operations in these areas.

6.1.7.3 Work in a mechanical/equipment room that requires a Hot Work Permit (MSFC Form 1155) shall require a portable fire extinguisher to be present.

6.1.8 Fire protection systems and equipment used in areas that contain hazardous chemicals shall comply with the requirements in NFPA 45, "Fire Protection for Laboratories Using Chemicals."

6.2 Building Marking

6.2.1 Building identification numbers shall be placed on each building. The building number shall be visible from the street and/or main entrance.

6.2.2 Explosive markings shall be placed on buildings where explosives are stored or handled, in accordance with requirements of NSS-1740.12.

6.3 Fire Drills

6.3.1 Fire drills shall be conducted at least annually in every facility with a normal occupancy load of 10 or more. S&MA shall coordinate these drills.

6.4 Fire Emergency Procedures

6.4.1 Emergency/Evacuation Plans shall be conspicuously posted at main entrances/exits and/or lobbies. Multiple story buildings shall also have these plans posted in the elevator lobbies or main entrances to each floor. Employees shall become familiar with the plan for their area, or any area they are visiting.

6.4.2 Supervisors or leads of organizations or groups shall pre-select one of the Emergency/Evacuation Plan's designated areas for their employees to meet in the event of a building evacuation.

6.4.2.1 Employees shall be informed of this designated area and be instructed to gather at this location if they and/or their visitors are in the building when a building evacuation alarm is sounded.

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6.4.3 A person, who discovers a fire, shall immediately ensure that the building’s fire alarm system is activated, if applicable, and the Fire Department is notified by calling 911. If the fire is in its beginning (incipient) stage and the employee has been trained, he or she can use one of the portable fire extinguishers located throughout the Center to attempt extinguishment. In no case shall an employee put their self in personal danger!

6.4.4 When a facility fire alarm sounds, occupants shall immediately exit the facility and proceed to the designated assembly area in accordance with the Emergency/Evacuation Plan. If the last one out of a room or area, employees shall close any doors to help prevent spread of smoke and heat. Employees shall not delay timely exit to power down computers or remove personal items. The fire alarm systems at MSFC automatically notify Security and the Fire Department. However these automatic systems can fail. If no response is noted, employees shall ensure that emergency personnel are notified by calling 911. If a call is made using a cell phone, be sure the Madison County 911 operator knows you are calling from MSFC.

6.4.5 Persons requiring assistance to evacuate, including persons with permanent or temporary physical disabilities, shall notify their supervisor, or if a visitor, their Center sponsor. The supervisor or sponsor shall arrange for emergency assistance as required. Special evacuation chairs are available that can help in evacuation of physically disabled persons. Contact the Industrial Department for information about these chairs.

6.4.6 Fire Rescue spots are provided in some multi-story buildings at MSFC. See the posted Emergency/Evacuation Plan for locations. If a person is unable to evacuate by any other means, they may wait at one of these spots for rescue by emergency personnel as necessary. The person shall use the phone provided at these spots to notify emergency personnel of their location and following the instructions on the posted signs. These spots shall only be used if the person is unable to evacuate. In the event of fire, evacuation is always the safest option.

6.5 Holiday Decorations

6.5.1 Natural trees used for holiday decorations shall not be allowed inside buildings at MSFC.

6.5.2 Only Flame-retardant artificial holiday trees shall be allowed inside MSFC buildings.

6.5.3 Only indirect lighting shall be used on metal holiday trees. Lights shall not be installed on the tree itself.

6.5.4 All holiday electrical decorations shall bear a NRTL label (Underwriters Laboratories (UL), Applied Research Laboratories (ARL), Factory Mutual Research Corp. (FMRC), etc.) for intended use. The label shall be the holographic type indicating the decorative lighting meets the more recent NRTL standards. These labels have a silver base with multi-colored shapes and a UL mark “appears to float” in a 3-D background.

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6.5.5 All holiday interior electrical decorations shall be disconnected from the electrical outlet at the end of the workday.

6.6 Candles (open flames) used for decorations

6.6.1 Candles shall not be allowed in any MSFC building except under the following conditions:

6.6.1.1 Shall only be used as holiday decorations or for ceremonial purposes at occupied tables.

6.6.1.2 The candles shall be arranged so as to not make direct contact with or exposure to any combustible materials so as to avoid injury to users and persons in attendance.

6.6.1.3 Candles shall only be lit while the room or area is physically occupied and shall be extinguished whenever the room or area is unoccupied, even momentarily.

6.6.1.4 Candles shall be of the type whose burning is inherently controlled and a size that resists tipping (short candles are preferred and recommended).

6.6.1.5 Candles shall be placed in a tip-resistant, non-combustible container constructed so as not easily tipped over. Containers shall be constructed to be self-righting if placed in a free-standing position.

6.6.1.6 The user shall contact the Facilities Engineering Department to disable the heat/ smoke detectors in the area where the candles are being used or ensure the candles are arranged and located so as not to initiate the building fire alarm.

6.6.1.7 Candles used in accordance with the above conditions do not require an open flame permit (Hot Work Permit, MSFC Form 1155). Contact S&MA if there are any questions or concerns.

6.6.2 Sterno tins, votive warming candles, “canned Heat,” etc. (open flames) used in the preparation of food or to keep food warm at the table.

6.6.2.1 These devices include, but are not limited to Sterno tins, votive warming candles and any other warming device manufactured/intended for the purpose of keeping food warm with the use of an open flame.

6.6.2.2 A catering staff employee or other designated, competent person(s) shall light these devices and remain present at all times until the flames are extinguished.

6.6.2.3 The device shall be positioned to avoid direct contact with or exposure to combustible materials, and also positioned to eliminate the possibility of injury to employees.

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6.6.2.4 The device shall be shielded to prevent direct contact with or exposure to any combustibles this includes the tablecloths and the clothing of employees attending the event. This is accomplished by placing the warming device in a holder specifically designed for that purpose under the food tray. Non-combustible material can also be placed between the bottom of the device and tablecloth or tabletop to ensure adequate shielding.

6.6.2.5 Each device shall be extinguished as soon as possible after the ceremony has concluded.

6.6.2.6 Sterno tins, votive warming candles, “canned heat” used in accordance with the above requirements do not require an open flame permit (Hot Work Permit, MSFC Form 1155). Contact S&MA if there are any questions or concerns.

6.7 Housekeeping

6.7.1 Housekeeping, cleanliness, and means of egress shall be maintained in accordance with requirements of NFPA 101 Chapter 7, 29 CFR 1910.22 and MPR 8715.1.

6.7.2 Furniture, equipment, supplies, or other substantial physical objects shall not be stored in required egress corridors and passageways except in lobbies, recessed areas, or other spaces specifically designed for such purpose. Reference MPR 8715.1, “Safety, Health, and Environmental (SHE) Program.”

6.7.2.1 Egress corridors and passageways are identified on building emergency/evacuation plans by “red dashed lines” which lead to building exits.

6.7.3 Objects shall not be stored or placed where they would prevent or delay access to, or use of, fire protection equipment.

6.7.4 A sufficient number of waste cans shall be provided in all areas.

6.7.5 Areas shall be cleaned at the end of each workday where activities generate large quantities of combustible trash and debris exist, i.e. woodworking and building construction.

6.7.6 Furnace rooms, boiler rooms, or equipment rooms shall not be used for storage of excess materials and furniture.

6.8 Portable Appliances

6.8.1 The user shall request approval from the Building Manager or Assistant Building Manager for portable appliances with heating elements including coffee makers, personal desk type coffee warmers, portable electric heaters, urns, hot plates, ovens, microwave ovens, small electric grills, and similar heat-producing devices. Electric grills and other appliances that heat

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and produce grease during cooking shall be limited to use in kitchen/break rooms only, with a fire extinguisher nearby.

6.8.2 The Building Manager or Assistant Building Manager shall issue a Permit for Portable Appliances (MSFC Form 3798) Appendix A. The user shall be responsible for posting the permit at each location of approved portable appliances. The permit shall be conspicuously posted adjacent to appliance location. Permit approval shall be based on the checklist provided on the permit form. Portable appliances shall only be used in the location designated on the permit.

6.8.2.1 As part of their regular Safety Visits, supervisors shall check portable appliances to ensure the employees are following the instructions and the portable appliance is still in compliance with MSFC Form 3798 requirements.

6.8.3 Users shall operate the portable appliances in accordance with the permit's requirements and manufacturer's recommendations.

6.8.4 Users shall shut-off portable appliances with heating elements when the appliance is left unattended and at the end of the workday. Exception: Coffee makers may be left unattended during normal working hours, but shall be shut-off at the end of the workday.

6.8.4.1 Automatic timers shall be acceptable to help users ensure coffee makers are shutoff during off duty hours. Shutoff timers can either be built into the unit or a separate device to which the unit's power-supply cord is connected. Automatic timers shall be NRTL listed (UL, FMRC, ARL, etc).

a. Providing this automatic shutoff feature does not relieve the users of their responsibility for ensuring the coffee maker is shutoff. **Automatic timers shall not be used to turn coffee makers "on."**

6.8.4.2 If Protective Services reports a portable appliance left "on" after normal working hours or when no one is working in the area, the Building Manager or Assistant Building Manager shall revoke the permit for a period of 30 days in accordance with Safety, Health, and Environmental Central Committee rule, October 1, 1999.

a. When the Building Manager or Assistant Building Manager has revoked the portable appliance permit, the appliance shall not be moved to another location and a new permit issued.

6.8.5 The safest method for connecting a portable appliance with heating elements shall be to plug it directly into a wall receptacle. If an extension cord is required it shall have an electrical rating as great as the electrical rating of the appliance, but in no case less than 14 AWG (American Wire Gauge).

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6.8.6 Power strips or power taps shall be allowed per section 6.7.5 for portable appliances if the following requirements are met:

6.8.6.1 No more than 2 coffee makers shall be connected to a single power strip. The power strip wattage rating shall not be exceeded.

6.8.6.2 Only one portable electric heater shall be connected to a power strip. The power strip wattage rating shall not be exceeded.

6.8.6.3 No combination of coffee makers, heaters, or similar heat-producing devices shall be connected to the same power strip. Example: A coffee maker and a heater cannot be connected to the same power strip.

6.8.7 Microwave ovens shall be attended while cooking. If the Fire Department responds to a fire in a microwave oven due to unattended cooking, the Building Manager or Assistant Building Manager shall revoke the permit for a period of 30 days in accordance with Safety, Health, and Environmental Central Committee rule, October 1, 1999.

6.9 Portable Heaters (Electric Space Heater and Oil-Filled Radiator Heater)

6.9.1 Shall comply with all the requirements in section 6.8.

6.9.2 Only electric heaters equipped with a thermostat or an automatic shut-off switch shall be allowed.

6.9.3 Portable heaters shall be located on a firm level non-combustible surface free from combustibles, and at least three (3) feet from any wall and any other objects such as combustible furniture, paper, curtains, clothing, or anything else that can be easily ignited.

6.9.4 Portable heaters shall be located so they cannot easily turnover.

NOTE: The carpet used at MSFC is fire resistant. Portable heaters can sit directly on the carpet.

6.9.5 The safest method for connecting a portable heater shall be to plug it directly into a 120-volt outlet.

6.9.5.1 If an extension cord is required it shall be a single outlet cord with an electrical rating as great as the electrical rating of the appliance, but in no case less than 14 AWG (American Wire Gauge).

6.9.6 Power cord shall be arranged away from traffic areas and where it will not be tripped over.

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6.9.6.1 Cords shall not be routed under carpet, rugs, or similar coverings, through holes in walls, ceilings, floors, doorways, windows, or similar openings.

6.9.7 Users shall unplug the portable heater when left unattended and at the end of the workday.

6.9.8 Portable heaters shall be equipped to de-energize electric power to the unit when tilted, or turned over, or overheated.

Exception: Oil-filled heaters shall not be required to be equipped with turn over or overheat switches.

6.9.9 Heaters that use fuel such as Propane/butane, kerosene or oil shall not be allowed in office areas. These heaters are only allowed in construction areas and shall comply with the requirements in sections 6.13 and 6.14.

6.10 Portable Charcoal or Propane Grills

6.10.1 Grills used within 25 feet of buildings at MSFC shall require a Hot Work Permit (MSFC Form 1155) Appendix B issued by S&MA. Permits shall not be required if located more than 25 ft from the building or at the MSFC designated picnic areas.

6.10.2 Prior to each use, propane grills shall be inspected/checked for safety condition, valves, fittings, and hoses.

6.10.3 When in use, grills shall be attended at all times.

6.10.4 After charcoal grill use, the residue shall be extinguished with water to eliminate the possibility of smoldering. If charcoal residue shall not be disposed of less than 24 hours after use.

6.10.5 Grills or assorted charcoal, lighter fluid, or propane bottles shall never be stored inside an MSFC building.

6.10.6 Grills with glass viewing windows shall not be approved for use at MSFC.

6.11 Deep Fryers

6.11.1 Deep Fryers used within 25 feet of buildings at MSFC shall require a Hot Work Permit (MSFC Form 1155) Appendix B issued by S&MA. Permits shall not be required if located more than 25 ft from the building or at the MSFC designated picnic areas.

6.11.2 Fryers shall be placed in an open area away from all walls, fences, or any other structure that can catch fire.

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6.11.3 Prior to each use, propane fryer burner shall be inspected/checked for safety condition, valves, fittings, and hoses.

6.11.4 When in use, deep fryers shall be attended at all times.

6.11.5 At least 2 feet of space between the propane gas tank and fryer burner shall be maintained.

6.11.6 The propane gas tank and fryer burner shall be placed so that any wind blows the heat of the fryer away from the propane tank.

6.11.7 Manufacturer's instructions shall be followed to determine the proper amount of oil to add to pot.

6.11.8 The pot shall be centered over the fryer burner.

6.11.9 The oil temperature shall be checked frequently.

6.11.10 If the oil begins to smoke, the gas supply shall be turned off immediately.

6.11.11 The oil shall be cooled completely before discarding. The Environmental Engineering shall be contacted for the proper requirements when discarding used cooking oil.

6.12 Construction Operations

6.12.1 Construction, alteration, and demolition operations shall be fire safeguarded in accordance with NFPA 241, "Standard for Safeguarding Construction, Alteration, and Demolition Operations."

6.12.2 Tar kettle operators shall comply with requirements of NFPA 241 and the following:

6.12.2.1 A Hot Work Permit (MSFC Form 1155) shall be obtained from S&MA.

6.12.2.2 The tar kettle shall be located at least 25 feet from any building or combustible material, or protected from the facility by a barrier standing four feet above and to all sides of the tar kettle that are exposed to the building.

6.12.2.3 Rope barriers shall keep unrelated personnel 20 feet from the tar kettle.

6.12.2.4 The tar kettle shall be provided with a metal cover that will close tight.

6.12.2.5 The tar kettle shall be equipped with an accurate thermometer or gage located in full view of the operator.

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6.12.2.6 Tar kettles shall not be operated at temperatures greater than 425 F degree (218 C) or 25 F degree (13.9 C) below the ignition point of the material being used.

6.12.2.7 Two 60BC-rated fire extinguishers shall be provided and maintained within 25 feet of the tar kettle.

6.12.2.8 Continuous supervision by the user shall be maintained while equipment is in operation from 30 minutes prior to operation until 30 minutes beyond.

6.12.2.9 Tar kettle operators shall wear the proper Personal Protective Equipment (PPE) that at a minimum includes gloves, apron, face shield, and goggles.

6.12.3 Torch-applied roofing system installers shall comply with NFPA 241 and the following:

6.12.3.1 A Hot Work Permit (MSFC Form 1155) shall be obtained from S&MA.

6.12.3.2 Torch shall not be used in areas where the flame impingement cannot be fully viewed.

6.12.3.3 Combustible insulation and other combustible substrates with a base ply shall be covered.

6.12.3.4 A fire watch shall be maintained for a minimum of 1 hour after torches have been extinguished.

6.12.4 Portable flammable or combustible liquid or gas burning stoves and heaters shall not be used without S&MA approval, reference sections 6.9 and 6.10.

6.13 Flammable or Combustible Liquids

6.13.1 Shall be used and stored in accordance with NFPA 1, NFPA 30, and 29 CFR 1910.106, Subpart H.

6.13.2 If more than 10 gallons of flammable liquids are stored in one fire area, the containers shall be stored in an approved flammable storage cabinet.

Exception: Specific facilities meeting the requirements of NFPA 30.

6.13.3 Areas that have cloth rags or paper towels saturated with combustible or flammable liquids shall have a steel can with a self-closing lid and ventilated bottom meeting NFPA 30A requirements and approved by a Nationally Recognized Testing Laboratory (NRTL).

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6.13.3.1 Steel waste cans with self-closing lids shall be emptied daily into 55 gallon drums at satellite collection points. Contact the Environmental Engineering Department for the satellite collection locations and transportation requirements.

6.13.4 Portable kerosene and oil-fired heaters (combustible liquid) shall only be permitted in special situations such as construction sites. They shall meet all the following requirements:

6.13.4.1 All heaters shall be inspected by a representative from S&MA prior to being used and a Hot Work Permit (MSFC Form 1155) will be obtained.

6.13.4.2 All heaters shall be listed by an NRTL, such as UL, FMRC, ARL, etc..

6.13.4.3 All heaters shall be equipped with a tip-over mechanism and built-in flame-out control that automatically shuts down all systems if the flame fails.

6.13.4.4 Heaters shall be lit and refueled only by those properly trained in the operation of the specific heater being used.

6.13.4.5 Heaters shall be shut off when left unattended.

6.13.4.6 Heaters shall be refueled outside the building. Adequate time shall be allowed for heaters to cool before refueling. Kerosene containers shall be clearly marked "KEROSENE USE ONLY".

6.13.4.7 A 10-pound, multipurpose dry chemical fire extinguisher shall be located not less than 25 feet nor more than 75 feet from the heater.

6.13.4.8 A carbon monoxide detector shall be located in the room or area. Carbon monoxide content of 35 parts per million or greater shall result in evacuation of the room.

6.13.4.9 Heaters shall only be used in well-ventilated areas; users shall supply at least 3 sq ft of fresh air for each 100,000 Btu's of heater capacity. Ventilation shall be provided for all heaters at a ratio of 1 square inch per 1000 BTU's.

6.13.4.10 Minimum clearances of 36 inches shall be maintained on all sides of kerosene heaters and 5 feet in front of forced-air (torpedo style) heaters. In no case shall clearances be less than manufacturer's requirements.

6.14 Flammable Gas

6.14.1 Liquefied petroleum gases (LPG) (Propane, Butane) shall be stored and used in accordance with NFPA 58 and 29 CFR 1910.110.

6.14.2 Natural fuel gases shall be stored and used in accordance with NFPA 54.

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6.14.3 LPG containers shall be stored in accordance with CGA P1, with the following exceptions:

6.14.3.1 Small hand-held propane torch bottles (approximately 14 oz) shall be stored in accordance with the following requirements: Reference CGA P1.

- a. Store in areas where the temperature does not exceed 120° F.
- b. Keep away from potential ignition sources such as near arcing electrical equipment, open flame, or other sources of ignition.
- c. Keep away from flammable liquids, highly combustible materials, and oxidizers.
- d. If there are 4 or more hand-held propane bottles in the work area they shall be stored in an approved flammable storage cabinet separate from item c.

6.14.3.2 Facilities under construction.

6.14.4 Oxygen-fuel gas systems shall be designed, installed, and used in accordance with NFPA 51.

6.15 Plastics and Polyurethane

Material used for tents or temporary clean rooms at MSFC shall comply with at least one of the following:

6.15.1 Flame resistant when tested in accordance with NFPA 701, “Flame-Resistant Textiles and Films.”

6.15.2 Have a flame spread rating of 25 or less when tested in accordance with NFPA 255, “Surface Burning Characteristics of Building Materials.”

6.15.3 Conform to the criteria contained in Section 7 of ASTM E136, “Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degrees C,” when tested in accordance with this standard.

6.16 Metals

6.16.1 Class D fire extinguishers shall be provided in areas where magnesium is machined.

6.16.2 Magnesium shall be handled and machined in accordance with NFPA 480.

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6.16.3 Magnesium chips and shavings shall be placed in covered metal drums and removed from buildings at regular intervals. In no case shall these chips and shavings left in buildings overnight.

6.16.4 Drums shall be marked with “Magnesium Only” signs and stored separate from other scrap.

6.17 Hot Work (Open flame or produce heat and/or sparks including grinding, brazing, cutting, and welding) Operations

6.17.1 Hot Work shall be performed in conformance with the requirements of 29 CFR 1910, Subpart Q, and NFPA 51B.

6.17.2 Hot Work performed in an area or locations not specifically designed for that purpose, shall require an approved Hot Work Permit (MSFC Form 1155) and shall be conducted in compliance with the requirements of that permit.

6.17.3 The Hot Work Permit shall be issued and approved by a representative of S&MA prior to start of work. The S&MA representative shall inspect the hot work area and review the operation prior to signing.

6.17.3.1 On-site contractors can submit a Memorandum or Agreement (MOA) (Appendix E) and a copy of their Hot Work Program/Procedure to S&MA for approval to issue and approve Hot Work Permits for operations performed by their employees. S&MA shall use the MOA to document this authority.

6.17.4 The person responsible for the hot work operation shall post the permit in a conspicuous location or keep it readily available for reference at the job site.

6.18 Portable Structures (Trailers, Mobile Homes, Relocatable Buildings, etc.)

6.18.1 Portable structures shall meet the same fire protection requirements established for permanent structures at MSFC.

6.18.2 Single trailers shall be located at least 25 feet (7.6 meters) from any permanent building and at least 10 feet (3 meters) apart.

Exception: If fire wall separation or sprinkled protection is provided.

6.18.3 Trailers shall be allowed to be connected to a building or other trailers, when the materials used for interconnection are fire resistive or noncombustible.

6.18.4 Two or more trailers shall be allowed to be interconnected to form a complex (single unit) subject to the following requirements:

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6.18.4.1 The complex shall be located at least 50 feet (15.2 meters) from any permanent building.

6.18.4.2 Total unsprinkled floor space shall not exceed 5,000 square feet (465 square meters) or 10,000 square feet (930 square meters) for a sprinkled space.

6.18.4.3 If normally occupied, an automatic/manual fire alarm system shall be installed and connected to the Center fire alarm system.

6.18.4.4 Interior finishes shall comply with this document's requirements for permanent structures.

6.18.4.5 Portable structure location shall not block roads, access to any building, or fire hydrants.

6.18.4.6 Portable structures shall be supported and anchored in accordance with Standard Building Code.

Exception: Single trailers

6.19 Interior Finishes

6.19.1 Interior walls, partitions, modular partitions, and ceiling finish materials shall have a Flame Spread Index less than 25 and a Smoke Density Index less than 50, as determined by the test method described in NFPA 255.

6.19.2 Interior floor finish materials shall have a critical radiant flux value of 0.05 or above (as determined by the method described in NFPA 253) and have a maximum specific optical density of 450 or less (flaming and non-flaming) as determined in NIST technical Note 708, "Smoke Density Chamber."

7. NOTES

None

8. SAFETY PRECAUTIONS AND WARNING NOTES

8.1 Gasoline shall not be used for cleaning purposes.

9. RECORDS

9.1 Fire Protection System Outage Log (Impairment Plan) shall be maintained by the FED in accordance with NRRS 1/71 (E) [1410] for 3 years then destroy when not longer needed.

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9.2 MSFC Form 1155, Hot Work Permit for heat, flame, or spark-producing operations shall be documented evidence of a function performed by the responsible organization. This permit shall be maintained at the job site and a copy by S&MA in accordance with NRRS 1/117.5 (B) [1700] for the length of the job, then destroy when no longer needed.

9.3 MSFC Form 549, Portable fire extinguisher inspection tag is documented evidence of a function performed by the responsible organization. This tag shall be maintained on the portable fire extinguisher until full with the required data, and then replaced with a new tag in accordance with 1/117.5 (B) [1700] and destroy when no longer needed.

9.4 MSFC Form 542 or an equivalent spreadsheet, Portable fire extinguisher type and location form shall be maintained by the Building Manager, or Assistant Building Manager, or the Facilities Engineering Department in accordance with NRRS 1/117.5 (A) [1700] for a period of 3 years or upon discontinuance of facility, then destroy when no longer needed.

9.5 MSFC Form 3798, Portable Appliance Permit, is documented evidence of a function performed by the responsible organization. This Permit shall be posted and maintained by the user at the location of the portable appliance in accordance with 1/117.5 (B) then destroy when superseded or no longer needed.

9.6 Employee and Organizational Development Department shall maintain a record of the portable fire extinguisher training in accordance with 3/33 (G.2) [3400] for the length of employee employment, then destroy when no longer needed.

9.7 Memorandum of Agreement (MOA) for contractors approved by S&MA to issue and approve Hot Work Permits for operations performed by their employees. This record shall be maintained by S&MA in accordance with 1/6 (C) [1050] for the length of time the contractor is allowed to issue and approve Hot Work Permits, then destroy when no longer needed.

10. PERSONNEL TRAINING AND CERTIFICATION

10.1 Employees who are expected to use portable fire extinguishers shall be trained annually in the general principles of fire extinguisher use and the hazards involved with incipient stage fire fighting per 29 CFR 1910.157 (g). The hands-on portable fire extinguisher training offered by the Redstone Fire Department shall meet this requirement at MSFC.

NOTE: MSFC employees (Civil Service or Contractor) are not required to use portable fire extinguishers to extinguish fires. However, if they have been trained and can fight an incipient stage fire without placing themselves in danger, they are encouraged to do so.

10.2 Additional safety awareness for employee fire safety can be accomplished by viewing the following videos:

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- 10.2.1 “On-The Job Housekeeping,” tape no. 971
- 10.2.2 “Good Housekeeping,” tape no. 18219
- 10.2.3 “Fire Safety,” tape no. 16484/NUS
- 10.2.4 “Fire Extinguisher: Fight or Flight,” tape no. 88/NFPA
- 10.2.5 “Fire In America,” tape no. 18433/NFPA
- 10.2.6 “Flammables Contained: The Safe Handling and Storage of Flammable Liquids,” tape no. 18415
- 10.2.7 “Fire Prevention at Home,” tape no. 18663
- 10.2.8 “Fire: Countdown to Disaster,” tape no. 18668/NFPA
- 10.2.9 “Stacking and Storage,” tape no. 335
- 10.2.10 “Housekeeping: It’s Everybody’s Job,” tape no. 352
- 10.2.11 “Fire Safety: Everybody’s Job,” tape no. 356

11. FLOW DIAGRAM

None

12. CANCELLATION

MWI 8715.11D dated June 22, 2004

Original signed by
Robin N. Henderson for

David A. King
Director

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APPENDIX A

PERMIT FOR PORTABLE APPLIANCES (with heating element)		
COMPLETED BY RESPONSIBLE SUPERVISOR		
<i>I hereby apply for approval of a portable appliance as described below:</i>		
DESCRIPTION OF APPLIANCE:	LOCATION OF APPLIANCE:	
<p>CONFORMANCE TO FIRE PROTECTION REQUIREMENTS: (Check if O.K.)</p> <p><input type="checkbox"/> Nationally-Recognized Testing Laboratories (NRTLs), such as ARL, FM, UL, WL, etc. Reference www.osha.gov for a current list.</p> <p><input type="checkbox"/> Plugged directly into floor or wall receptacle or with a NRTL listed flexible extension cord of hard or extra hard usage, 14 AWG or larger.</p> <p><input type="checkbox"/> No extension cords over 15 feet permitted.</p> <p><input type="checkbox"/> No easily ignitable material (paper, curtains, wood paneling, etc.) within 3 feet. Exception: Limited combustible materials associated with the use of the appliance such as napkins and cups.</p> <p><input type="checkbox"/> Cords to be arranged to prevent tripping hazard.</p> <p><input type="checkbox"/> Electric heater has either tip-over or overheat safety "shutoff" feature.</p> <p><input type="checkbox"/> Permit to be conspicuously posted.</p>		
<i>I understand that failure to comply with the Fire Protection Requirements in the above block may result in withdrawal of this permit.</i>		
NAME OF REQUESTING INDIVIDUAL:	SIGNATURE OF REQUESTING INDIVIDUAL:	DATE:
NAME OF BUILDING MANAGER/ASSISTANT:	SIGNATURE OF BUILDING MANAGER/ASSISTANT:	DATE:
COMPLETED BY SUPERVISOR OR DESIGNATED ALTERNATE		
NAME OF SUPERVISOR:	SIGNATURE OF SUPERVISOR:	DATE:

MSFC Form 3798 (Rev. October 2003)

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APPENDIX B

MSFC HOT WORK PERMIT MPG 8715.1																																																																								
<p>This Hot Work Permit is required for any operation involving open flames or producing heat and/or sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, Soldering Thawing Pipe, Torch-Applied Roofing and Cad welding.</p>																																																																								
<p>INSTRUCTIONS</p> <p>A. Verify precautions listed under Required Checklist (or do not proceed with the work)</p> <p>B. Permit must be displayed at the work site</p> <p>C. Organization performing Hot Work is responsible for assuring employees are properly trained</p>	<p>REQUIRED CHECKLIST (All items must be marked Applicable or N/A)</p> <p>PRECAUTIONS</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">APP</td> <td style="width: 10%;">N/A</td> <td></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Sprinklers are in service/operable</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Extinguishers are available and in service</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Hot work equipment in good repair</td> </tr> </table> <p>WITHIN 35 FT. OF WORK AND/OR OF OPEN AREAS BELOW WORK</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Flammable liquids, dust, lint, and oil deposits removed</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Explosives atmosphere in area eliminated</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Floors swept clean</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Combustible floors wet down, covered with damp sand or fire-resistant tarpaulins</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Other combustibles removed where possible. Otherwise protect with fire-resistant tarpaulins or metal shields.</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>All wall and floor openings covered</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Fire resistant tarpaulins suspended beneath work</td> </tr> </table> <p>WORK ON WALLS OR CEILING/ENCLOSED EQUIPMENT</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Construction is noncombustible and without combustible covering or insulation</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Combustibles on other side of walls moved away</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Danger exists by conduction of heat into another area</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Enclosed equipment cleaned of all combustibles</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Containers purged of flammable liquids/vapors and oil</td> </tr> </table> <p>FIRE WATCH/HOT WORK AREA MONITORING</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Dedicated fire watch required; Fire watch will be provided during and until final check (see below), including any coffee or lunch breaks; Suitable extinguishers will be provided; Fire watch is trained in use of this equipment and in sounding alarm</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Fire watch required for the following adjoining areas, above, and below:</td> </tr> </table> <p>_____</p> <p>_____</p> <p>FINAL CHECK</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Monitor hot work area 30 minutes after job is completed</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Monitor hot work area one hour after job is completed (Always required for Torch-Applied Roofing)</td> </tr> </table> <p>OTHER PRECAUTIONS</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Have Facilities Services Office deactivate smoke detectors</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Provide ample ventilation to remove smoke/vapor from work area</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td>Personal Protective Equipment (PPE) required</td> </tr> </table> <p>SPECIAL REQUIREMENTS</p> <p>_____</p> <p>_____</p> <p>_____</p>			APP	N/A		<input type="checkbox"/>	<input type="checkbox"/>	Sprinklers are in service/operable	<input type="checkbox"/>	<input type="checkbox"/>	Extinguishers are available and in service	<input type="checkbox"/>	<input type="checkbox"/>	Hot work equipment in good repair	<input type="checkbox"/>	<input type="checkbox"/>	Flammable liquids, dust, lint, and oil deposits removed	<input type="checkbox"/>	<input type="checkbox"/>	Explosives atmosphere in area eliminated	<input type="checkbox"/>	<input type="checkbox"/>	Floors swept clean	<input type="checkbox"/>	<input type="checkbox"/>	Combustible floors wet down, covered with damp sand or fire-resistant tarpaulins	<input type="checkbox"/>	<input type="checkbox"/>	Other combustibles removed where possible. Otherwise protect with fire-resistant tarpaulins or metal shields.	<input type="checkbox"/>	<input type="checkbox"/>	All wall and floor openings covered	<input type="checkbox"/>	<input type="checkbox"/>	Fire resistant tarpaulins suspended beneath work	<input type="checkbox"/>	<input type="checkbox"/>	Construction is noncombustible and without combustible covering or insulation	<input type="checkbox"/>	<input type="checkbox"/>	Combustibles on other side of walls moved away	<input type="checkbox"/>	<input type="checkbox"/>	Danger exists by conduction of heat into another area	<input type="checkbox"/>	<input type="checkbox"/>	Enclosed equipment cleaned of all combustibles	<input type="checkbox"/>	<input type="checkbox"/>	Containers purged of flammable liquids/vapors and oil	<input type="checkbox"/>	<input type="checkbox"/>	Dedicated fire watch required; Fire watch will be provided during and until final check (see below), including any coffee or lunch breaks; Suitable extinguishers will be provided; Fire watch is trained in use of this equipment and in sounding alarm	<input type="checkbox"/>	<input type="checkbox"/>	Fire watch required for the following adjoining areas, above, and below:	<input type="checkbox"/>	<input type="checkbox"/>	Monitor hot work area 30 minutes after job is completed	<input type="checkbox"/>	<input type="checkbox"/>	Monitor hot work area one hour after job is completed (Always required for Torch-Applied Roofing)	<input type="checkbox"/>	<input type="checkbox"/>	Have Facilities Services Office deactivate smoke detectors	<input type="checkbox"/>	<input type="checkbox"/>	Provide ample ventilation to remove smoke/vapor from work area	<input type="checkbox"/>	<input type="checkbox"/>	Personal Protective Equipment (PPE) required
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<p>LOCATION/BUILDING & FLOOR:</p> <p>_____</p>																																																																								
<p>NATURE OF JOB/OBJECT:</p> <p>_____</p>																																																																								
<p>I verify the above location has been examined and permission is authorized for work subject to precautions checked in the Required Checklist</p> <p>SIGNED:</p> <p>_____</p> <p style="text-align: center;">Authorizing Official / Organization</p>																																																																								
<p>I will examine and confirm that requirements have been taken to prevent fire prior to starting work.</p> <p>SIGNED:</p> <p>_____</p> <p style="text-align: center;">Person in Charge of Operation/Organization</p>																																																																								
<p>PERMIT EXPIRES:</p>	<p>DATE:</p>	<p>TIME (optional):</p>	<p style="text-align: center;">AM PM</p>																																																																					
<p>FOR ALL EMERGENCIES CALL 911</p>																																																																								

MSFC Form 1155 (Rev. August 1999)

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APPENDIX C

Portable Fire Extinguisher Inspection Procedure

Portable fire extinguishers shall be inspected at approximately 30-day intervals and shall include a check of at least the following items:

1. Location in designated place
2. No obstruction to access or visibility
3. Operating instructions on nameplate legible and facing outward
4. Safety seals and tamper indicators are not broken or missing. Where a safety seal or tamper indicator is missing, it can be evidence the fire extinguisher has been used and therefore should be removed from service.
5. Fullness determined by weighing or “hefting”
6. Examination for obvious physical damage, corrosion, leakage, or clogged nozzle.
7. If applicable, pressure gauge reading or indicator in the operable range or position
8. Hazardous Materials Identification System (HMIS) label or an equivalent label in place

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APPENDIX D

***FACILITIES SERVICES OFFICE FIRE PROTECTION SYSTEM
IMPAIRMENT LOG***

BLDG. _____ AREA AFFECTED: _____
DATE OF OUTAGE: _____ TROUBLE CALL NO: _____

TYPE OF AFFECTED SYSTEM

SPRINKLER SYSTEM _____
FIRE ALARM SYSTEM _____
OTHER _____

FIRE ALARM SYSTEM COMMUNICATIONS _____
(CSC RESPONSIBILITY)
CSC REPAIR TICKET NO: _____

REASON SUPPRESSION/ALARM SYSTEM IS OUT OF SERVICE:
(PROVIDE BRIEF DESCRIPTION OF PROBLEM, STEPS BEING TAKEN TO REPAIR
SYSTEM, PARTS ORDERED, ETC.)

RESPONSIBLE ORGANIZATION/PERSON: _____

ESTIMATED DATE SUPPRESSION/ALARM SYSTEM WILL BE RETURNED TO
SERVICE: _____ RETURNED TO SERVICE: _____

IMPAIRMENT PLAN (Complete if outage will exceed 8 hrs.)

AFFECTED SYSTEM TAGGED OUT OF SERVICE: _____(Y/N)
(BY WHOM): _____
SECURITY FIREWATCH REQUIRED DURING OFF-SHIFT PERIODS? _____(Y/N)
SECURITY NOTIFIED: _____(Y/N)
(BY WHOM): _____
(MSFC SECURITY CONTACT): _____
FIRE DEPARTMENT NOTIFIED: _____(Y/N)
(BY WHOM): _____
(RSAFD CONTACT): _____
BLDG. MANAGER NOTIFIED: _____(Y/N)
(BY WHOM): _____
(BLDG. MANAGER): _____
EWS COORDINATOR NOTIFIED: _____(Y/N)
(BY WHOM): _____
INDUSTRIAL SAFETY OFFICE NOTIFIED: _____(Y/N)

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(BY WHOM): _____

(SAFETY CONTACT: _____)

OTHER: _____

CENTERWIDE ACTIVITY NOTICE SENT/AB11: _____(Y/N)

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APPENDIX E

MEMORANDUM OF AGREEMENT BETWEEN MARSHALL SPACE FLIGHT CENTER

SAFETY AND MISSION ASSURANCE DIRECTORATE

AND

SUBJECT: Marshall Space Flight Center (MSFC)/_____ Memorandum of Agreement (MOA) for contractors who are permitted to issue Hot Work Permits (MSFC Form 1155 or equivalent) for operations involving open flames, brazing, cutting, grinding, and welding performed by the contractor.

PURPOSE: The intent of this MOA is to establish the responsibilities and relationship between the MSFC Safety and Mission Assurance Directorate (S&MA) and the Contractor providing this service.

RESPONSIBILITIES: The MSFC S&MA Directorate has overall responsibility for ensuring all MSFC employees, contractors and visitors are provided with a safe and healthful working environment. The following requirements have been established and shall be part of the contractors Hot Work Procedure. Failure to follow any of these requirements may result in terminating the contractor's permission to issue Hot Work Permits for their operations.

Specifically, the contractor shall:

1. Ensure all safety precautions specified on the Hot Work Permit (MSFC Form 1155 or equivalent) and in MWI 8715.11, "Fire Safety Program," are taken.
2. Ensure and/or provide appropriate safety and fire fighting equipment (portable fire extinguishers) are available.
3. Issue the Hot Work Permit in advance of commencing the hot work activities.
4. Ensure the hot work is performed in accordance with all safety precautions identified on the Hot Work Permit (MSFC Form 1155).
5. Determine if the hot work operation can be moved to an approved designated Hot Work Area.

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6. Ensure flammable and combustible material is properly protected with barriers or shields or move at least 35 feet away from the hot work.
7. Inspect the hot work equipment and ensure it is in good condition.
 - a. No Worn or cracked hoses
 - b. No Grease or oil on regulators
 - c. Gas cylinders are secured and upright
 - d. Backflash Arrestor installed
 - e. Adequate ventilation in work area
 - f. Welding screens placed around work area
 - g. Operators wear PPE (Helmet, gloves, long sleeved shirt, long pants, apron, etc.)
8. Ensure a fire watch is required anytime the hot work is performed outside of an approved designated Hot Work Area.
9. Ensure the fire detection system is disabled when required and restored as soon as possible after the work is completed or at the end of the shift, which ever is sooner. Deactivating the fire detection system will be coordinated with the Center Operations Support Services (COSS) contractor.
10. Provide a copy of the contractor's Hot Work Permit program to S&MA for review.

Company Name _____

Point of Contact (print) _____

(signature) _____

Contract Number _____

Phone _____ Date _____

MSFC Safety & Mission Assurance Directorate Director/Designee

(print) _____

(signature) _____ Date _____

Industrial Safety Department Manager/Designee

(print) _____

(signature) _____ Date _____

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