

Version: 24.0	Fire Protection / Extinguishers	
	Effective Date	May 20, 2024
	Page	1 of 9

Brunel Energy, Inc.

Fire Protection / Extinguishers

Contents

1. Purpose	2
2. Applicability	2
3. Definitions	2
4. Responsibilities	2
5. Requirements	3
6. Procedure	3
6.1. Fire Risks	3
6.2. Fire Classifications	3
6.3. Fire Tetrahedron	4
6.4. Fire Development	4
6.5. Fire Prevention Plan	5
6.6. Fire Prevention Techniques	5
6.7. Types of Extinguishing Agents	6
6.8. Selection and Location of Fire Suppression Equipment	6
6.9. Installation	6
6.10. Inspection and Maintenance of Fire Control Equipment	6
6.11. Hydrostatic Testing	7
7. Training	7
8. Recordkeeping	8
9. Reference	8
10. Appendix	8

Version: 24.0	Fire Protection / Extinguishers	
	Effective Date	May 20, 2024
	Page	2 of 9

1. Purpose

- 1.1. Brunel Energy, Inc., hereinafter referred to as, the “Company,” has established a program compliant with OSHA to set the minimum requirements for fire protection, prevention, and training.

2. Applicability

- 2.1. This policy applies to employees, subcontractors and/or visitor(s) of the Company. For the purposes of this policy, an employee shall be considered on the job whenever he/she is:
 - 2.1.1. On or in, any Company or client property, including parking areas; or
 - 2.1.2. On Company time even if off Company premises (including paid lunch, rest periods and periods of being on call).
- 2.2. As a condition of employment, Company employees are required to abide by additional governmental or customer policies and requirements that may be imposed at a worksite in addition to the requirements of these policies and procedures. Nothing set forth in this policy constitutes, construes, or interprets in any way as a contract of employment.

3. Definitions

- 3.1. **Fire Hazard** is any condition, arrangement, or act which may cause an increase in the potential for fire to a greater degree than customarily recognized as normal; or which may obstruct, delay, or hinder, or may become the cause of obstruction, delay or hindrance to the prevention, suppression, or extinguishment of fire.
- 3.2. **Fire Suppression Equipment** is any device used to suppress fire. This includes fixed building equipment such as fire extinguishers and sprinkler systems as well as mobile equipment used by the fire department.
- 3.3. **Fire Detection Equipment** is any device or sensor that is used to detect heat or smoke caused by combustion. These devices and sensors are usually integrated with a fire alarm system to alert building occupants to evacuate.
- 3.4. **Fire egress** includes aisles, corridors, stairways and other approaches to ramps, exterior doors, or other building exits.

4. Responsibilities

- 4.1. Manager(s) shall:
 - 4.1.1. Be responsible for implementing, supporting, and enforcing the requirements of this policy in their area of responsibility by:
- 4.2. HSE Supervisor(s) shall:

Version: 24.0	Fire Protection / Extinguishers	
	Effective Date	May 20, 2024
	Page	3 of 9

- 4.2.1. Assist management in the implementation of this policy and ensure that all fire protection and suppression equipment are installed and maintained in accordance with all OSHA and NFPA regulations and standards, and the local Fire Code.
- 4.2.2. Ensure that all employees are trained and familiar with the location and operation of all fire protection and suppression equipment as well as fire alarm signaling and employee alarms.
- 4.2.3. Ensuring that all employees are trained and familiar with all points of egress, emergency assembly areas, and employees accounting procedures in accordance with the Emergency Response Plan.
- 4.2.4. Ensuring that all fire protection and suppression equipment is not impaired and in good working condition.
- 4.2.5. Ensuring that all required work permits are obtained before engaging in planned hot work or confined space entries.
- 4.2.6. Notifying all parties of any use of any hazardous material or process; and
- 4.2.7. Report any occurrence of fire, the discharge of any fire suppression equipment, or impairment of any fire protection and suppression equipment.
- 4.3. Employee(s) shall:
 - 4.3.1. Comply with all applicable guidelines contained in this policy and are responsible for immediately reporting suspected unsafe conditions and fire hazards to their supervisor or manager.

5. Requirements

- 5.1. Provide portable fire extinguishers and mount, locate, and identify them so they are readily accessible to employees without subjecting the employees to possible injury.
- 5.2. Assure that portable fire extinguishers are maintained, fully charged, operating properly, and kept in designated places at all times except during use.

6. Procedure

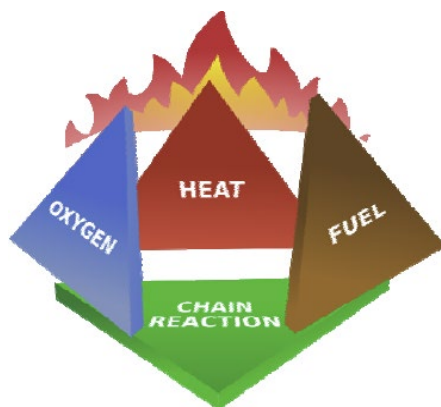
- 6.1. Fire Risks
 - 6.1.1. Fires and explosions are a frequent cause of serious and fatal injuries in oil and gas operations. Proper equipment and facility design, sound maintenance practices, knowledge of the risks, adherence to operating rules, and experience shall be utilized to reduce these risks to a minimum.
- 6.2. Fire Classifications
 - 6.2.1. Class A – Fires occur in ordinary combustible materials such as wood, cloth, and paper. Extinguishing agents most commonly used are water and type ABC dry chemical agent (Ansul Foray).

Version: 24.0	Fire Protection / Extinguishers	
	Effective Date	May 20, 2024
	Page	4 of 9

- 6.2.2. Class B – Fires occur in the vapor-air mixture over the surface of a flammable liquid such as grease, gasoline, or oil. BC type dry chemical (Ansul Purple-K), foam, carbon dioxide and water fog may be used as extinguishing agents.
- 6.2.3. Class C – Fires occur in electrical equipment. Nonconducting extinguishing agents must be used. Carbon dioxide and Halon are the most suitable extinguishing agents. Water type extinguishers should not be used as water is conductive, which can lead to injury or kill the user. Dry chemical agents can be used but require extensive cleanup of equipment after the fire.
- 6.2.4. Class D – Fires occur in combustible metals such as magnesium, titanium, zirconium, and sodium. Specialized techniques, extinguishing agents and extinguishing equipment have been developed to control and extinguish fires of this class. The most commonly used agent is MET-L-X.

6.3. Fire Tetrahedron

- 6.3.1. The fire tetrahedron is a geometric shape used to depict the four components required for a fire to occur – fuel, oxygen, heat, and chemical reaction between the three.
- 6.3.2. Depriving the fire tetrahedron of any one of the three primary elements of fuel, oxygen or heat or interrupting the chain reaction will extinguish the fire.



6.4. Fire Development

- 6.4.1. Accidental fires may develop by many means including raising the fuel above the ignition temperature or flash point in the presence of a competent ignition source, by spontaneous combustion, or by the escape of a friendly fire to create a hostile fire.
- 6.4.2. There are four phases of fire development – incipient phase, growth phase, fully-developed phase, and decay phase.
- 6.4.3. The incipient phase of fire development is where the fire is limited to the immediate point of origin and which may be controlled or extinguished by portable fire extinguishers, Class II standpipe, or small handlines without the need for personal protective equipment or SCBA breathing apparatus.

Version: 24.0	Fire Protection / Extinguishers	
	Effective Date	May 20, 2024
	Page	5 of 9

- 6.4.4. The growth phase of fire development is where the fire extends beyond the point of origin and begins to involve other fuels in the immediate area. In the growth phase, the fuel in the fire area begins undergoing pyrolysis and may suddenly flashover instantly to the fully developed stage.
- 6.4.5. The fully developed phase of fire development is where the fire area is fully involved and the fire is consuming much of the fuel, producing toxic gases and an oxygen-deficient atmosphere immediately dangerous to life and health such that employee's protective equipment and an SCBA are required to suppress.
- 6.4.6. The decay phase of fire development is where the fire has consumed either most of the fuel or the oxygen and is beginning to die down. The decay phase is dangerous because of the hazard of a backdraft if additional oxygen is added by ventilation, causing the fire to flashover again to the fully developed stage.
- 6.4.7. Employee suppression of fire shall be at the incipient stage only using portable fire extinguishers. A person can determine if the fire is in the incipient phase if they can stand upright, approach the fire within range of the portable fire extinguisher without the use of personal protective equipment or an SCBA and can clearly see without excessive smoke.
- 6.4.8. If the fire is above the incipient stage, employees shall evacuate the building and wait for fire department suppression operations.
- 6.5. Fire Prevention Plan
 - 6.5.1. All worksites shall review firefighting requirements and prepare a Fire Prevention Plan detailing a list of all major fire hazards, proper handling and storage procedures for hazardous materials, potential ignition sources and their control, and the type of fire protection equipment necessary to control each major hazard.
 - 6.5.2. Fire alarm and evacuation drills shall be completed annually.
 - 6.5.3. Employees shall be trained in incipient firefighting and be competent in the identification and use of all fire extinguishers.
 - 6.5.4. The Fire Prevention Plan shall be in writing, be kept in the workplace, and be made available to employees for review.
 - 6.5.5. Implementation of The Fire Prevention Plan shall include:
 - 6.5.5.1. The Company shall inform employees upon initial assignment to a job of the fire hazards to which they are exposed.
 - 6.5.5.2. The Company shall review with each employee those parts of the fire prevention plan necessary for self-protection.
- 6.6. Fire Prevention Techniques
 - 6.6.1. Flammable and combustible material shall have limited quantities on site.
 - 6.6.2. Do not allow trash or debris to accumulate, maintain good housekeeping.
 - 6.6.3. Only chemicals needed for present tasks shall be kept on site.

Version: 24.0	Fire Protection / Extinguishers	
	Effective Date	May 20, 2024
	Page	6 of 9

- 6.6.4. Hazardous waste shall not be allowed to accumulate.
- 6.6.5. Products, including waste, shall be stored in proper containers.
- 6.6.6. Flammable materials shall be kept separate from other processes and storage areas.
- 6.6.7. Proper ventilation shall be provided to ensure that flammable vapors do not accumulate.
- 6.6.8. Properly designed ventilation shall be installed in storage areas.
- 6.6.9. Processes that use or make flammable materials shall not be exhausted back into work areas.
- 6.6.10. External exhausts shall be located away from air intake.
- 6.6.11. Ventilation systems shall be maintained in compliance with national or country specific fire codes.
- 6.7. Types of Extinguishing Agents
 - 6.7.1. Water – Liquid, controls fire by cooling; used on Class A fires.
 - 6.7.2. Carbon Dioxide – A blanket of CO₂ vapor controls fires by reducing oxygen supply to the fire; used on Class B and C fires and small Class A fires.
 - 6.7.3. AFFF Foam – A foam blanket smothers the flame; used on Class A and B fires.
 - 6.7.4. Dry Chemical – Powder, breaks chemical chain reactions in fires; used on Class B and C fires and small Class A fires.
 - 6.7.5. Dry Powder – Composed mostly of sodium bicarbonate or potassium bicarbonate, acts mainly by smothering; used on Class D fires.
 - 6.7.6. Halons – Vapor, breaks chemical chain reaction to fire; used on Class B and C fires and some Class A fires.
- 6.8. Selection and Location of Fire Suppression Equipment
 - 6.8.1. To avoid putting workers in danger, portable fire extinguishers will be located throughout the workplace and readily accessible in the event of a fire. See Appendix 10.1 - Extinguisher Size and Spacing.
 - 6.8.2. Portable fire extinguishers must be selected and positioned based on potential type and size of fire that can occur in accordance with all regulatory requirements.
- 6.9. Installation
 - 6.9.1. To prevent fire extinguishers from being moved or damaged, they should be mounted on brackets or in wall cabinets with the carrying handle placed 3-1/2 to 5 feet above the floor. Larger fire extinguishers need to be mounted at lower heights with the carrying handle about 3 feet from the floor.
 - 6.9.2. Before installing any portable fire extinguisher, check the label to be sure it is approved by a nationally recognized testing laboratory.
- 6.10. Inspection and Maintenance of Fire Control Equipment

Version: 24.0	Fire Protection / Extinguishers	
	Effective Date	May 20, 2024
	Page	7 of 9

6.10.1. Fire extinguishers shall be visually inspected monthly by a safety representative to confirm:

- 6.10.1.1. The locking pin is intact, and the tamper seal is unbroken. Examine the extinguisher for obvious physical damage, corrosion, leakage, or clogged nozzle.
- 6.10.1.2. Confirm the pressure gauge or indicator is in the operable range or position and lift the extinguisher to ensure it is still full.
- 6.10.1.3. Make sure the operating instructions on the nameplate are legible and facing outward.
- 6.10.1.4. Check the last professional service date on the tag.
- 6.10.1.5. Initial and date the back of the monthly inspection tag.
- 6.10.1.6. Report expired service tags and missing, damaged or used extinguishers immediately to the HSE Manager.
- 6.10.1.7. Extinguishers removed from their locations to be inspected, repaired, or recharged shall be replaced by spare extinguishers of the same type during the period they are gone.

6.10.2. Fire extinguishers shall be inspected annually by a licensed fire extinguisher maintenance contractor. Once a fire extinguisher passes its annual maintenance, it is verified with a dated inspection tag. That tag is good for one year from the date indicated. If the unit fails to pass the inspection, it must be repaired or replaced. Annual maintenance check records shall be retained for one year after the last entry of the shell, whichever is less.

6.11. Hydrostatic Testing

- 6.11.1.1. An outside company shall conduct hydrostatic tests of the extinguishers as frequently as is outlined below:
 - 6.11.1.1.1. Pressurized water, carbon dioxide, and wet chemical extinguishers need to be hydrostatically tested every 5 years.
 - 6.11.1.1.2. Dry chemical extinguishers need to be tested every 12 years.
 - 6.11.1.1.3. Whenever they show new evidence of corrosion or mechanical injury.

7. Training

- 7.1. Where the Company has provided portable fire extinguishers for employees use in the workplace, the Company also shall provide an educational program to familiarize employees with the general principles of fire extinguisher use and the hazards involved in incipient stage firefighting.
- 7.2. Employees will be trained in the general principles of fire extinguisher use and the hazards involved with incipient stage firefighting upon initial employment and annually thereafter.

Version: 24.0	Fire Protection / Extinguishers	
	Effective Date	May 20, 2024
	Page	8 of 9

8. Recordkeeping

- 8.1. Fire extinguisher inspection records shall be maintained.

9. Reference

- 9.1. NFPA 10 (National Fire Protection Association) Standards for Portable Fire Extinguishers 2007 Ed.
- 9.2. NFPA 51B (National Fire Protection Association) Standards for Fire Prevention During Welding, Cutting or other Hot Work.
- 9.3. IADC HSE Reference Guide, Revised Edition, Jan. 2004, Section 3.0 – Electrical Equipment.
- 9.4. OSHA 1910.39 – Fire Prevention Plans.
- 9.5. OSHA 1910.157 - Portable fire extinguishers.
- 9.6. OSHA 1926.150 - Fire protection.

10. Appendix

- 10.1. Extinguisher Size and Spacing

Version: 24.0	Fire Protection / Extinguishers	
	Effective Date	May 20, 2024
	Page	9 of 9

APPENDIX 10.1 EXTINGUISHER SIZE AND SPACING

Type of Fire

Extinguisher Size and Spacing

Class A The National Fire Protection Association (NFPA) recommends that locations such as offices, classrooms, and assembly halls that contain mainly Class A combustible materials have one 2-A extinguisher for every 3,000 square feet. [Standard for Portable Fire Extinguishers (NFPA 10 (2010), Table 6.2.1.1, Fire Extinguisher Size and Placement for Class A Hazards)].

OSHA requires that all employees have access to an extinguisher within 75 feet travel-distance. [29 CFR 1910.157(d)(2)]

NOTE: Uniformly spaced standpipe systems or hose stations connected to a sprinkler system for emergency use can be used instead of Class A portable fire extinguishers, if they meet the respective requirements of 29 CFR 1910.158 or 29 CFR 1910.159, provide total coverage of the area to be protected, and employees are trained at least annually in their use. [29 CFR 1910.157(d)(3)]

Class B Locations that contain Class B flammables, such as workshops, storage areas, research operations, garages, warehouses, or service and manufacturing areas require that all employees have access to an extinguisher within 50 feet travel-distance. [29 CFR 1910.157(d)(4)]

Class C Class C extinguishers are required where energized electrical equipment is used. The extinguisher size and spacing is based on its Class A or B hazard. [29 CFR 1910.157(d)(5)]

Class D Locations where combustible metal powders, flakes, shavings, or similarly sized materials are generated at least once every two weeks must install Class D portable fire extinguishers not more than 75 feet from the hazard. [29 CFR 1910.157(d)(6)]

Class K Locations where potential fire hazards from combustible cooking media (vegetable or animal oils and fats) exist must install Class K extinguishers at a maximum travel distance of 30 feet. [NFPA 10, Standard for Portable Fire Extinguishers. See Section 6.6, Installations for Class K Hazards]