

GP 17-01-01	Firefighting Equipment	July 2001
-------------	------------------------	-----------

Firefighting Equipment

GP 17-01-01

Scope

[I] This Global Practice (GP) covers the purchase of non-fixed firefighting equipment. It includes foam proportioning trucks, foam concentrate trucks, fire equipment trucks and trailer mounted firewater pumps. Portable/auxiliary firefighting equipment used with firewater or foam systems (such as nozzles, monitors, fire hose) are included, as well as other auxiliary firefighting equipment (i.e., extinguishers, loudspeakers, lighting equipment, fire suits and blankets).

[I] An asterisk (*) indicates that a decision by the Purchaser is required or that additional information is furnished by the Purchaser.

Downstream, Chemical, Pipelines and Terminals	For ExxonMobil Use Only	Version 1.0.0
Page 1 of 26	©ExxonMobil Development Company	



Documents

Document Sharing Hub

GP 17-01-01	Firefighting Equipment	July 2001
-------------	------------------------	-----------

Table of Contents

1. Required References	4
1.1. Global Practices–ExxonMobil Engineering Practices	4
1.2. Federal Specifications	4
1.3. NFPA–National Fire Protection Association	4
1.4. UL–Underwriters Laboratories, Inc.	4
1.5. Other References	5
2. Local Considerations	5
3. Foam Proportioning Truck	5
3.1. Foam Concentrate Tank and Appurtenances	6
3.2. Foam Proportioning System	7
3.3. Water Pump	8
3.4. Foam Concentrate Pump	8
3.5. Monitor Nozzle	8
3.6. Operating Panel and Other Controls	9
3.7. Water and Foam Solution Piping and Connections	9
3.8. Truck and Auxiliary Equipment	10
3.9. Elevating Platforms and Water Towers	12
4. Foam Concentrate Tank Truck	12
4.1. Foam Concentrate Tank and Appurtenances	12
4.2. Foam Concentrate Pump	14
4.3. Piping and Connections	14
5. Equipment Truck	15
6. Firepump (Trailer-Mounted)	17
7. Common Requirements for Mobile Equipment	17
7.1. Couplings	17
7.2. Mobile Equipment	18
8. Inspection and Testing	18
8.1. Foam Proportioning Truck	18
8.2. Foam Concentrate Tank Truck	18
8.3. Firepump Trailer Mounted	18

DNST, CHEM, PL	For ExxonMobil Use Only	Version 1.0.0
Page 2 of 26	©ExxonMobil Development Company	



Documents

Document Sharing Hub

GP 17-01-01	Firefighting Equipment	July 2001
-------------	------------------------	-----------

9. Portable Equipment.....	18
9.1. Hose.....	18
9.2. Hose Accessories	19
9.3. Nozzles	19
9.4. Foam Playpipes	20
9.5. Fire Extinguishers	20
10. Auxiliary Equipment.....	22
10.1. Loudspeakers	22
10.2. Lighting Equipment	22
10.3. Fire Suits and Blankets	22
10.4. Fire Equipment Cabinets	23
11. Installation of Fire Equipment Cabinets, Fire Extinguishers, and Other Portable Equipment.....	23
11.1. Fire Extinguishers	23
12. Procurement.....	24
Record of Change.....	25
Attachment: Purpose Codes Definitions	26

DNST, CHEM, PL	For ExxonMobil Use Only	Version 1.0.0
Page 3 of 26	©ExxonMobil Development Company	



Documents

Document Sharing Hub

GP 17-01-01	Firefighting Equipment	July 2001
-------------	------------------------	-----------

1. Required References

[I] This Section lists Practices and Standards that are generically referenced and assumed to be a part of this document. Unless otherwise specified herein, use the latest edition.

1.1. Global Practices–ExxonMobil Engineering Practices

GP 03-02-03	Firewater Systems
GP 14-03-01	Fireproofing
GP 20-01-01	Inspection of Equipment and Materials

1.2. Federal Specifications

29 CFR 1910.157	Portable Fire Extinguishers (Integrated)
49 CFR 178	Specifications for Packagings
O-D-1407	Dry Chemical, Fire Extinguishing, Potassium Bicarbonate

1.3. NFPA–National Fire Protection Association

NFPA 10	Standard for Portable Fire Extinguishers (National Fire Codes, vol. 1)
NFPA 11C	(Withdrawn) Standard for Mobile Foam Apparatus (National Fire Codes, vol. 1)
NFPA 24	Standard for the Installation of Private Fire Service Mains and Their Appurtenances
NFPA 1901	Standard for Automotive Fire Apparatus (National Fire Codes, vol. 8)
NFPA 1971	Standard on Protective Ensemble for Structural Fire Fighting (National Fire Codes, vol. 8)
NFPA 1976	Standard on Protective Ensemble for Proximity Fire Fighting

1.4. UL–Underwriters Laboratories, Inc.

UL 154	UL Standard for Safety Carbon-Dioxide Fire Extinguishers
UL 299	UL Standard for Safety Dry Chemical Fire Extinguishers
UL 626	UL Standard for Safety 2-1/2-Gallon Stored-Pressure Water-Type Fire Extinguishers

DNST, CHEM, PL	For ExxonMobil Use Only	Version 1.0.0
Page 4 of 26	©ExxonMobil Development Company	



Documents

Document Sharing Hub

GP 17-01-01	Firefighting Equipment	July 2001
-------------	------------------------	-----------

1.5. Other References

"International Safety Guide for Oil Tankers & Terminals 4th Ed." 1996. The Institute of Chartered Shipbrokers (ICS) & The Oil Companies International Marine Forum (OCIMF). London: Witherbys.

2. Local Considerations

- 1) [I] The Standards specified for use with this GP, and the equipment descriptions herein, apply to equipment installations in countries with no comparable standards. Where compliance with any Code or Standard by a local jurisdiction is mandatory, the requirements prescribed therein shall also be met.
* Motor vehicles shall comply with all local rules and regulations, as specified by the Purchaser.
- 2) [S] Fire hose couplings selected for a particular plant location shall be compatible with mutual aid and local fire protection facilities.

3. Foam Proportioning Truck

- 1) [S] The foam proportioning truck shall comply with NFPA 1901 and NFPA 11C and shall be designed to operate with low, intermediate, or high backpressure foam systems, as specified. The foam proportioning system shall be of the balanced pressure inductor type.
- 2) [S] The piping and equipment arrangement shall be per Figure 1 and the additional requirements given herein.

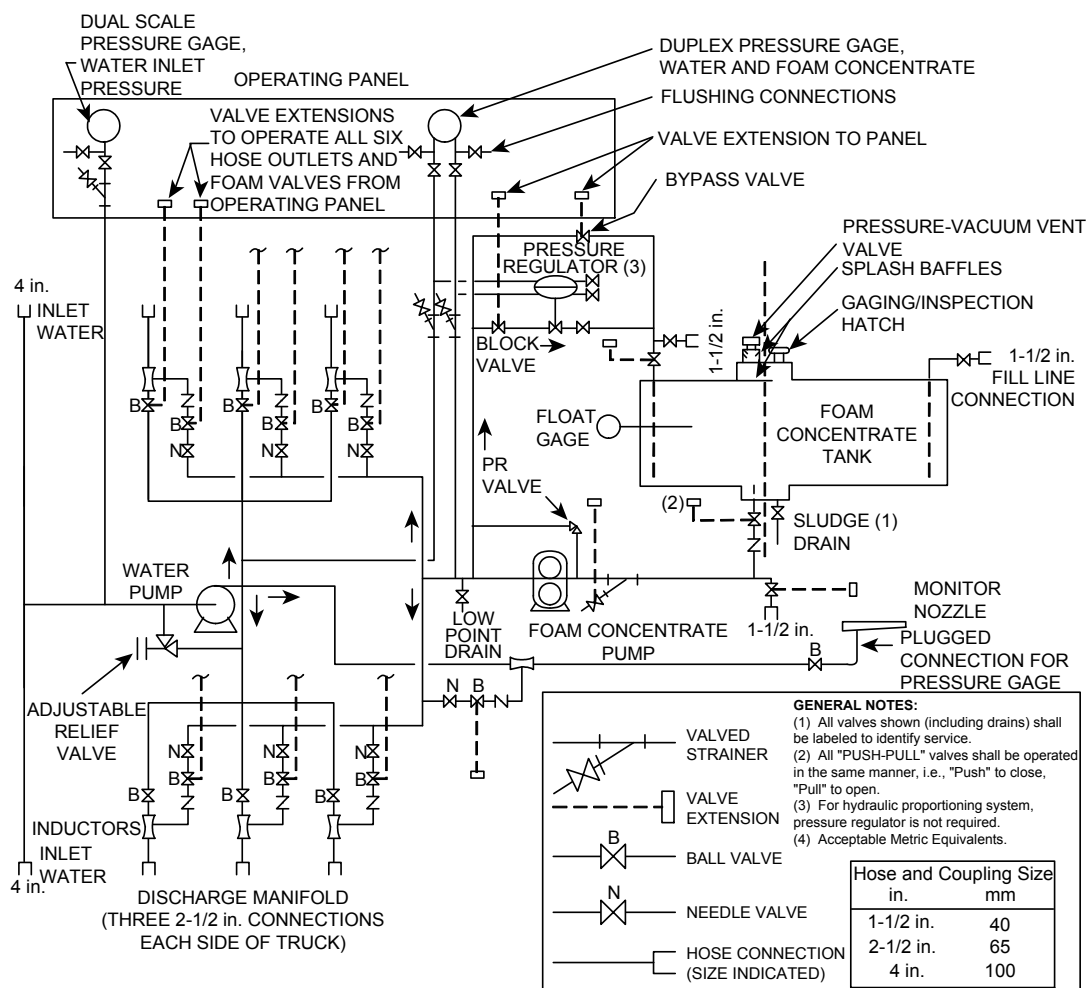
DNST, CHEM, PL	For ExxonMobil Use Only	Version 1.0.0
Page 5 of 26	©ExxonMobil Development Company	



Documents

Document Sharing Hub

**Figure 1: Foam Proportioning Truck
(Diagrammatic Layout of Piping and Equipment for
Balanced Pressure Proportioning System)**



3.1. Foam Concentrate Tank and Appurtenances

- 1) [S] The foam concentrate tank shall be designed to carry a minimum of 1000 gal (3795 L) of foam concentrate. Other size tanks may be specified as necessary, and shall be approved by the Plant Fire Chief.

* Carbon steel, stainless steel, or plastic (FRP) tank material is acceptable, but shall be compatible with the specific foam concentrate selected. The Plant Fire Chief shall approve material selections.

- 2) [S] The foam concentrate tank shall be furnished with the following appurtenances:
- a) Internal baffles to prevent excessive surging of the fluid. The baffle system shall be designed such that all parts of the tank are accessible for inspection.
 - b) A minimum 8 in. (200 mm) diameter hatch, with a hinged and latched cover to permit manual gauging and inspection of the concentrate.

DNST, CHEM, PL	For ExxonMobil Use Only	Version 1.0.0
Page 6 of 26	©ExxonMobil Development Company	



Documents

Document Sharing Hub

GP 17-01-01	Firefighting Equipment	July 2001
-------------	------------------------	-----------

- c) Additional openings with bolted covers shall be provided for tank inspection and cleaning.
 - d) An expansion dome, sized approximately two percent of the total volume, shall be located on the top of the tank. The horizontal cross-section area of the dome shall not exceed 300 sq. in. (0.19 m²).
 - e) A sediment sump, approximately 15 in. (380 mm) diameter and 6 in. (150 mm) deep, shall be provided at the bottom of the tank directly below the expansion dome. The following connections shall be provided.
 - i) The sump shall be connected to the suction line of the concentrate pump.
 - ii) The connecting pipe shall extend through the sump and terminate 1/2 in. (13 mm) above the bottom of the tank.
 - iii) A separate 2-in. (50-mm) valved drain shall be provided on the sump.
 - iv) The suction line valve and the drain valve shall be located adjacent to the sump.
 - f) All fittings and attachments shall have gas-tight closures.
- 3) [S] A pressure-vacuum vent shall be provided as follows:
- a) Installed on the top of the expansion dome on a riser. The riser shall be baffled to prevent splashing of the foam concentrate on the seat of the vent valve when the truck is in motion.
 - b) Set to open at 1 psig (6.9 kPa) pressure and at 1/2 oz per sq. in. (0.22 kPa) vacuum.
 - c) Sized to permit filling and pumping out of the foam concentrate at 100 gpm (22.7 m³/h) and 37.5 gpm (8.5 m³/h), respectively.

3.2. Foam Proportioning System

- 1) [S] Balanced pressure between the discharges of the water pump and the foam concentrate pump may be achieved by either of the following.
 - a) A pressure regulator in the recycle line from the foam concentrate pump back to the foam concentrate tank.
 - b) A variable speed foam concentrate pump, driven by a hydraulic motor with automatic control of the discharge pressure (to equal water pump discharge pressure). Such pump shall be equivalent to the National Foam "Servo Command TM" proportioning system.
- 2) [S] The balanced pressure system (used in the foam system to maintain foam pressure equal to water pressure) shall be provided with a manual bypass valve/control. This permits manual operation of the automatic system in the event of malfunction.
- 3) [S] The foam concentrate shall be supplied to inductors fitted to the individual hose outlets through variable percentage proportioning needle valves.

The valves shall be locked into position to prevent movement after the system has been calibrated for three percent foam pick up.

The system shall be capable of supplying either foam solution or plain water through all hose outlets. Other proportioning systems may be specified, but shall be approved by the Plant Fire Chief.

* Where the need for proportioning at different concentrations has been defined by the Plant Fire Chief, the proportioning valves shall be calibrated at each defined concentration. The needle valve position for different concentrations shall be clearly labeled. The needle valve shall be capable of locking into position.

DNST, CHEM, PL	For ExxonMobil Use Only	Version 1.0.0
Page 7 of 26	©ExxonMobil Development Company	



Documents

Document Sharing Hub

GP 17-01-01	Firefighting Equipment	July 2001
-------------	------------------------	-----------

3.3. Water Pump

[S] The water pump shall be of a centrifugal type, driven by a power take-off from the truck transmission. In addition:

- 1) * The pump materials of construction shall be suitable for plant firewater.
- 2) A priming system shall be provided.
- 3) * The pump shall have a minimum 1000 gpm (227 m³/h) capacity and be designed to operate over a range of inlet pressures from 10 ft (3 m) suction lift to 125 psig (860 kPa). A larger capacity pump may be specified.
- 4) The pump performance shall comply with NFPA 1901 requirements.

3.4. Foam Concentrate Pump

[S] The foam concentrate pump shall be a rotary or gear type. It shall be driven by a variable speed hydraulic motor, a direct drive auxiliary engine, or a power take-off from the truck transmission.

In all cases, the drive system for the foam concentrate pump shall be independent of the drive system for the water pump, such that the foam concentrate pump may be run without the water pump.

In addition:

- 1) The foam concentrate pump shall be suitable for pumping foam concentrate at the full range of temperatures experienced at the location.
- 2) The foam concentrate pump rated capacity at 250 psig (1725 kPa) discharge pressure shall be sufficient to proportion foam at the highest required concentration at the maximum water pump capacity, but shall not be less than 37.5 gpm (8.5 m³/h).
- 3) The foam concentrate pump maximum discharge pressure shall be 300 psig (2100 kPa) as limited by the pump pressure relief (PR) valve.
- 4) The foam concentrate pump shall provide sufficient concentrate when the water pump is running at low speed. A 90 gpm (20.4 m³/h) pump is usually required.
- 5) To protect the pump, a PR valve, sized for pump blocked outlet, shall be provided on the discharge side, bypassing back to the pump suction.
- 6) A valved blowoff strainer shall be installed on the foam concentrate pump suction, to protect this circuit from scale and foreign particles.

3.5. Monitor Nozzle

[S] The monitor nozzle shall be a combination foam-water nozzle equivalent to National Foam Systems, Inc., Model PC-50, for delivering a minimum of 500 gpm (113.5 m³/h) of solution at 150 psig (1035 kPa) as a straight stream or in spray form.

The monitor shall be permanently connected to the water and foam concentrate circuits. It shall be connected entirely with pipe, except that a short permanent hose section is permitted.

The monitor shall be located on top of the truck, aft of the cab, in an area accessible for manual operation.

This monitor shall be omitted on trucks with an elevating platform or water tower.

DNST, CHEM, PL	For ExxonMobil Use Only	Version 1.0.0
Page 8 of 26	©ExxonMobil Development Company	



Documents

Document Sharing Hub