

## FOAM DELIVERY SYSTEMS

### LEARNING OBJECTIVES:

GAIN UNDERSTANDING OF BASIC FUNCTION, COMPONENTS, AND APPLICATIONS OF VARIOUS FOAM DELIVERY SYSTEMS

### TIME:

TWO HOURS

### LEVEL OF INSTRUCTION:

BASIC FIREFIGHTER LECTURE AND APPLICATION

### MATERIALS NEEDED:

- ❑ LESSON PLAN
- ❑ *PRINCIPLES OF FOAM FIRE FIGHTING, CHAPTER 4, FOAM DELIVERY SYSTEMS, INTERNATIONAL FIRE SERVICE TRAINING ASSOCIATION, SECOND EDITION, 2003.*
- ❑ FIELD TOUR OF CHARTER TRIAD

### INSTRUCTION TO INSTRUCTOR:

- ❑ READ *PRINCIPLES OF FOAM FIRE FIGHTING, CHAPTER 4, FOAM DELIVERY SYSTEMS, INTERNATIONAL FIRE SERVICE TRAINING ASSOCIATION, SECOND EDITION, 2003.*
- ❑ UPDATE APPLICABLE REFERENCES
- ❑ SET UP TOUR WITH CHARTER TRIAD.
- ❑ CONTACT: MR. TIM FOX, TEL: 706-543-3447.

### VISUAL:

- ❑ SET UP FIELD TOUR WITH PERSONAL AT CHARTER TRIAD
- ❑ ENCLOSED VISUAL PRINTS

### REFERENCES:

- *PRINCIPLES OF FOAM FIRE FIGHTING, CHAPTER 4, FOAM DELIVERY SYSTEMS, INTERNATIONAL FIRE SERVICE TRAINING ASSOCIATION, SECOND EDITION, 2003.*
- NFPA: 1002, *STANDARD OF FIRE APPARATUS DRIVER/OPERATOR PROFESSIONAL QUALIFICATION, 1998 EDITION.*
- NFPA: 1021, *STANDARD OF FIRE OFFICER PROFESSIONAL QUALIFICATIONS, 1997 EDITION.*
- NFPA: 472, *STANDARD FOR PROFESSIONAL COMPETENCE OF RESPONDERS TO HAZARDOUS MATERIALS INCIDENTS, 2002 EDITION.*

### GOAL:

STUDENT SHOULD BECOME FAMILIAR WITH THE BASIC FUNCTION, COMPONENTS, AND APPLICATIONS OF VARIOUS FOAM DELIVERY SYSTEMS.

# FOAM DELIVERY SYSTEMS

Foam Delivery Systems enable fire fighters to control tank farm fires in their early stages and therefore minimizing the need of manual fire suppression methods ultimately reducing the loss of product and risk to fire fighters.

## I. ALL FOAM DELIVERY SYSTEMS HAVE FOUR PRIMARY COMPONENTS

- A. FOAM CONCENTRATE (SOURCE)
- B. PROPORTIONER
- C. PRESSURIZED WATER SUPPLY
- D. DELIVERY DEVICE

## II. FOAM DELIVERY SYSTEMS CLASSIFICATION

- A. FIXED
- B. SEMIFIXED
- C. MOBILE
- D. PORTABLE

## III. OUTDOOR STORAGE TANK PROTECTION SYSTEM

- A. TYPE I DISCHARGE OUTLET
- B. TYPE II DISCHARGE OUTLET
- C. TYPE III DISCHARGE OUTLET

## IV. FIXED CONE ROOF TANKS

### A. SURFACE APPLICATION

#### 1. DESCRIPTION

- a) FIXED DISCHARGE OUTLETS (FOAM CHAMBERS)
- b) SINGLE OR MULTIPLE OUTLETS
- c) ORIFICE PLATE
- d) DEFLECTOR

#### 2. PRODUCT APPLICATION

- HYDROCARBON FIRES

#### 3. ADVANTAGES

- a) SPECIFICALLY ENGINEERED
- b) EFFICIENT USE OF FOAM CONCENTRATE

#### 4. DISADVANTAGE

- MAY BE DAMAGED BY INITIAL FIRE OR EXPLOSION

# FOAM DELIVERY SYSTEMS

## B. SUB-SURFACE APPLICATION

### 1. DESCRIPTION

- a) WATER SUPPLY
  - 1) HYDRANT
  - 2) STATIC SOURCE
- b) FOAM CONCENTRATE
- c) PUMPER
- d) PROPORTIONER
- e) INLINE ASPIRATOR
- f) INLET PIPING MANIFOLD
- g) SUBMERGED INJECTION ORIFICE

### 2. PRODUCT APPLICATION

- HYDROCARBON FUELED FIRES

### 3. ADVANTAGES

- a) FINISHED FOAM EFFICIENTLY DELIVERED
- b) EQUIPMENT DAMAGE MINIMIZED

### 4. DISADVANTAGE

- a) FUEL VISCOSITY MUST BE LESS THAN 440 CENTISTROKS
- b) FUEL TEMPERATURE MUST BE LESS THAN 200F

## C. SEMI-SUBSURFACE INJECTION

### 1. DESCRIPTION

- SAME AS SUBSURFACE WITH AN ADDITIONAL FLEXIBLE HOSE APPLICATOR THAT FLOATS TO TOP OF FUEL AND APPLIES FOAM DIRECTLY TO THE SURFACE

### 2. PRODUCT APPLICATION

- a) HYDROCARBON FUELED FIRES
- b) POLAR SOLVENT FUELED FIRES

## V. EXTERNAL FLOATING ROOF TANK

### A. DESCRIPTION - TYPES

- 1. TUBE SEAL
- 2. MECANICAL SHOE SEAL

# FOAM DELIVERY SYSTEMS

## B. APPLICABLE FOAM SYSTEMS

1. TANK SHELL FOAM CHAMBERS
2. FLOATING ROOF FOAM DISCHARGES
3. HANDLINE SYSTEM

## VI. INTERNAL FLOATING ROOF TANK

### SUMMARY

Fires in general may cause material damage and injury to the public. Tank farm fires can be classified among the most catastrophic. CHARTER TRIAD is the local concern. Through understanding of the various foam application systems used at CHARTER TRIAD, ATHENS-CLARKE FIRE DEPARTMENT will be able to effectively control potential fires in the early developing stages and therefore reduce loss of product and minimize the need of manual fire suppression methods. This will ultimately reduce the loss of product and risk to fire fighters.

