TOPIC: Pump Pressure Control Systems

TIME FRAME: 30 Minutes

LEVEL OF INSTRUCTION:

BEHAVIORAL OBJECTIVE:

Condition: A written quiz

Behavior: The student will list and describe the types, parts and functions of pressure relief systems.

Standard: With a minimum of 70% accuracy

MATERIALS NEEDED:

- Appropriate visual aids
- Audio visual equipment

REFERENCES:

- IFSTA, Fire Department Pumping Apparatus, 7th Edition, Chapter 5

PREPARATION: The pump operator has the responsibility to protect the personnel and equipment from injury due to sudden increases in pressure or excessive pressure during pumping operations. It is essential for the operator to know and understand the types of pressure control systems being used in the fire service and the methods of controlling pressure. Failure to understand these operations could cause unnecessary injury and damage.

PRESENTATION	APPLICATION

I. PRESSURE CONTROL DEVICES

A. Purpose

1. Protects nozzle person from sudden pressure surges caused when

   a. Additional lines are shut down quickly

   b. System pressure is increased dramatically due to

      (1) Pump operator error

      (2) Mechanical failure

      (3) Pressurization of water supply to pump

2. Protects equipment from water hammer and resultant damage

B. Types of Devices

1. Pressure relief valve

   a. The pilot valve senses excessive pressure build-up on the discharge side of the pump

   b. The pilot valve actuates the pressure relief valve opens to relieve the excess pressure by diverting a small quantity of water from the discharge side of the pump to:

      (1) Suction side of the pump

      (2) Booster tank

      (3) Overboard

2. Pressure governor

PRESENTATION	APPLICATION
a. Available on some centrifugal pumps	
b. Excessive pressure causes governor to reduce the engine throttle, thereby reducing impeller speed and reducing pressure	
(1) Variety of types of governors are available	See manufacturer's literature
(a) Pressure control governor	
(b) Piston assembly governor	
(c) Electronic governor	
(2) Governor may be mounted	
(a) Directly on carburetor	
(b) On electric auxiliary motor which adjusts throttle setting	
(c) On piston which controls engine throttle	

SUMMARY:

There are two basic types of pressure control systems, pressure relief valves and pressure governors. Both control excessive pressures that could injure personnel and damage equipment.

EVALUATION:

A written quiz.

ASSIGNMENT:

To be determined by instructor(s).