CAFS On-Line Orientation

Montgomery County Fire & Rescue Service

Making CAFS
Making CAFS

Module Objectives

• Learn and Identify Main Components
• Learn how these components work
• Understand how the components work together to produce CAFS
How does it work?
How does it work?

Water leaves discharge side of the pump.

It then goes into the foam manifold where foam is added (from the foam pump).

It then goes into the CAFS manifold where air is added (from air compressor).

Purple arrows represent check valves which prevent backflow of foam solution or CAFS.
How does it work?

After air is injected in the CAFS Manifold, the foam product passes through mixing grates. This provides agitation. Further agitation and mixing occurs in the hose lines. Finished foam then comes out of the nozzle.

Air injection valve

Mixing grates
Important CAFS Components

Foam Pump
- FoamLogix Pump
- Paddlewheel Flow Sensor

Air Compressor
- Air Compressor
- Air/Oil Separator
- Water/Oil Heat Exchanger

Pump (Foam Manifold)
- Stainless Steel Manifold
- X-type Mixers
FoamLogix Proportioning System

- 5.0 GPM foam pump
- Rotary Gear Design driven by electric motor.
- Electronic Controller Interface - determines how much concentrate gets pumped into Foam manifold.
- If water pump discharge pressure is over 250 psi, the foam pump will not be able to inject foam concentrate into the water stream.
Hale Approved Compatible List

<table>
<thead>
<tr>
<th>Type of Foam Concentrate</th>
<th>Manufacturer</th>
<th>Name</th>
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<tbody>
<tr>
<td>US Forestry Service Approved</td>
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<tr>
<td>CLASS A FOAM</td>
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<tr>
<td>Ansl</td>
<td>Silvex Class A Foam Concentrate</td>
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<td>Angus</td>
<td>Foreexpan S (0.1% - 1.0%)</td>
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<td>1st Defense Class A Cold Water Foam</td>
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<td>PhosCheck WD81</td>
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<td>Light Water FT-1150</td>
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<td>ALCOSEAL 3.3%</td>
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<td>Chemonics</td>
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<td>FIRE FIGHTING WATER ADDITIVE</td>
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<tr>
<td>Hazard Control Tech.</td>
<td>F-500 (1%, 3%, 6%)</td>
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MCFRS will be using National Foam’s Knockdown for Class A Foam. This is the only foam that should be put in the Class A foam tanks.
Paddlewheel Flow Sensor

- Internal Paddlewheel Design
- Accurate from 30 to 800 gpm
- Sits in foam manifold

Talks to Foam Pump ECI to tell it how much foam concentrate to inject.
Air Compressor

- Rotary Screw Oil-Bathed Design - oil is necessary for cooling reasons

- **210 SCFM** rating - which is one of the largest on market

- Belt-Driven off of the fire pump gear box
  - No load start

- Delivers 75 to 150 psi
Compressor Air/Oil Separator

- Element based
- Also acts as oil reservoir
- Provides some over pressure protection
- Oil Level Sight Tube
Air/Oil Separator

- Large Min/Max Sticker
- **DO NOT OVERFILL!**
- **DO NOT OVERFILL!**
- Check when oil is cold and therefore has no froth
Water/Oil Heat Exchanger

- Pump Water Fed - line runs from discharge side of pump back to intake. This is critical for keeping compressor cooled. It is critical to keep water circulating in your pump.
Water/Oil Heat Exchanger Strainer

This strainer protects the air compressor water/oil heat exchanger.

The strainer should be cleaned out after every use of the CAFS system.

Do NOT open this cap when the pump is engaged - the cap will be under pressure and could seriously injure you.
Maintenance Points

- Bleed water out of the Air/Oil Separator every month
- The Air/Oil Separator Oil and Filter should be changed every time the engine oil is changed
- Remove and clean Water/Oil heat exchanger strainer every use
- Compressor air filter should be changed every time the engine air filter is changed
Foam Manifold

- Made out of Stainless Steel to resist corrosive effects of foam
- Capable of up to 1000 GPM Flow - all pre-connected handlines are plumbed off of this manifold. Therefore you are limited to an combined total flow of 1000 gpm at any one time through your handlines.
- Pump panel discharges are **not** plumbed off this manifold.
X-Type Mixers

- Stainless Steel Design
- 4 Variable Position “Fingered” grates

Flow
Review Questions

When should the oil in the air compressor oil reservoir be checked?

How does the foam pump know how much foam concentrate to inject into the water stream?

Put the following terms in the order in which water flows through them to become CAFS. Also list in which parts the foam and air get added.

- CAFS Manifold
- Discharge Manifold
- Foam Manifold
- Fire Pump
- Check Valves (can use more than once)

How many CFM can the air compressor produce?