TOPIC: Pump Configuration on CDF Model #1 and #5 Engines

TIME FRAME: 1 Hour

LEVEL OF INSTRUCTION:

BEHAVIORAL OBJECTIVE:

Condition: A written quiz

Behavior: The student will describe the types, components, and characteristics of the pumps found on CDF Model #1 and #5 engines.

Standard: With a minimum of 70% accuracy

MATERIALS NEEDED:

- CDF Model #1 or #5 engine
- Chalkboard and chalk
- Appropriate visual aids

REFERENCES:

- Vehicle Operation and Maintenance Guide, (CDF Handbook 6804)

PREPARATION: The model #1 and #5 fire engines make up a significant portion of the CDF engine fleet. Even though these engines may not be assigned to your station you will encounter them on most wildland fires. You should therefore have a basic knowledge of these engines pumping capabilities.

PRESENTATION	APPLICATION
I. THE MODEL #1 AND #5 ENGINE IS EQUIPPED WITH TWO PUMPS, AN AUXILIARY PUMP FOR MOBILE PUMPING AND A MIDSHIP PUMP FOR STATIONARY PUMPING.	
A. The Engine Water Tank Capacity is 500 Gallons.	
B. Auxiliary Pump Is a Single Stage Centrifugal Pump.	
	Check 6504 handbook for type of pump on this engine
1. Rated Capacity:	
a. 85 GPM at 150 PSI	
b. 50 GPM at 250 PSI	
	Point out plate on engine with rated capacity
2. Pump packing is a mechanical seal which is non-adjustable.	
3. The pump is powered by an air cooled, diesel or gasoline, two cylinder, 4 cycle engine.	
C. Main Pump (Midship Pump)	
1. Gear Ratio 3:94 to 1.	
	Check the 6804 Handbook for type
2. Single Stage Centrifugal pump	
3. Rated Capacity:	
a. 300 GPM at 150 PSI	

PRESENTATION	APPLICATION
	Point out plate on engine with rated capacity
b. 250 GPM at 300 PSI	
4. Pump is driven by main engine.	
5. Pump packing is a ceramic mechanical seal which is non-adjustable.	
D. Primer Pump	
	Point out primer pump and oil reservoir
1. Hale Model SMV 12	
2. Electrically driven rotary vane positive displacement pump.	
3. The primer pump primes both pumps through a 3-way valve.	
a. The operator selects which pump to prime by turning the handle to the pump you desire to prime.	
	Point out anti-syphon hole in copper tubing
4. Primer oil reservoir is needed for lubrication and to insure a seal within the pump case.	
a. Use engine oil in reservoir.	
II. PLUMBING SYSTEM AND WATER TANK	
A. Water Tank Capacity - 500 Gallons	
B. Sump Location and Function	
1. Clean after pumping dirty water	

PRESENTATION	APPLICATION
	Point out all valves and their function and get student under engine and trace plumbing.
C. Tank Fill Cap	
D. Water Level Gauge	
E. Trace Inlet Plumbing	
F. Trace Discharge Plumbing	
G. Show Valves, Purpose and Location	
1. Tank suction valve	
2. Tank fill valve	
3. Suction inlet valve	
4. Auxiliary pump discharges	
5. Midship pump discharges	
6. Primer valve	

SUMMARY:

Since CDF employees are likely to encounter model #1 and #5 engines on a frequent basis it is important that we know something about their pump characteristics.

EVALUATION:

A written quiz.

ASSIGNMENT:

To be determined by instructor(s).