



Fire Protection Training

Procedures Handbook 4300

PUMPING

TOPIC: Water Tender Need Calculations

TIME FRAME: 90 Minutes

LEVEL OF INSTRUCTION:

BEHAVIORAL OBJECTIVE:

Condition: A written quiz

Behavior: The student will be able to compute the travel times for water tenders involved in shuttle operations and compute the number of water tenders necessary to support fire flow requirements on an incident.

Standard: With a minimum of 70% accuracy

MATERIALS NEEDED:

- Appropriate visual aids
- Audio visual equipment

REFERENCES:

- IFSTA, Water Supplies For Fire Protection, 4th Edition, Chapter 7, NFPA Standard 1901

PREPARATION: Once fireground operations have begun it is imperative that adequate fire flows be maintained. In areas without hydrants or with inadequate hydrants shuttle operations are necessary. The incident commander must see that a shuttle plan is developed, executed and modified as necessary through the life of the incident.



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WATER TENDER NEED
CALCULATIONS

PRESENTATION	APPLICATION
<p>I. IS SHUTTLE OPERATION NECESSARY?</p> <p>A. Determine incident water requirements</p> <ol style="list-style-type: none">1. Preplan calculations2. Actual incident usage<ol style="list-style-type: none">a. Project maximum incident fire flow requirements<ol style="list-style-type: none">(1) Current fire flow for all hoselines on the incident plus(2) Estimated fire flows for anticipated hoselines <p>B. Determine whether local water supply and committed equipment can meet these projected water requirements</p> <ol style="list-style-type: none">1. Potential on-scene water sources:<ol style="list-style-type: none">a. Water system with hydrantsb. Water tendersc. Portable tanksd. Enginese. Ponds, rivers, lakes, etc.f. Irrigation ditches and canalsg. Swimming pools2. Calculate potential water supply capacity on-scene<ol style="list-style-type: none">a. Add capacities of all equipment on-scene	<p>Information sheet #1</p>



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<ul style="list-style-type: none"> <ul style="list-style-type: none"> b. Add capacities of all accessible water sources at scene 3. Calculate time incident will be self-supporting <ul style="list-style-type: none"> a. Divide total on-scene water capacity by total incident fire flow b. Resulting value will indicate time the incident will be self-sufficient 4. Calculate turn-around time for water shuttle using on-scene equipment in conjunction with the following guidelines: <ul style="list-style-type: none"> a. Travel time <ul style="list-style-type: none"> (1) Paved roads = two (2) minutes per mile (2) Unpaved roads = four (4) minutes per mile b. Loading or off-loading time = then (10) minutes each 5. If the on-scene equipment does not have access to adequate water supplies on-scene to extinguish the fire and the travel time exceeds the time the incident will be self sufficient a shuttle operation will be required. <p>II. CALCULATE ADDITIONAL WATER SHUTTLE EQUIPMENT REQUIREMENTS</p> <ul style="list-style-type: none"> A. Determine Desired Capacity/Size of Water Tenders B. Divide the Water Capacity of All On-scene Equipment by the Desired Capacity/Size of Water Tenders 	



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<p>C. Divide the Travel Time for the Shuttle Operation by the Time the Incident Will be Self-sufficient and then Round this Value Up to the Nearest Whole Number</p> <p>D. Multiply the Value Obtained in Step 2 by the Value Obtained in Step 3 to Arrive at the Number of Water Tenders Needed</p>	



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SUMMARY:

Once fire ground water requirements have been projected or established the Initial Attack Incident Commander must order sufficient water supply resources to meet those requirements.

EVALUATION:

A written quiz.

ASSIGNMENT:

To be determined by instructor(s).