

Operations Challenge 2010

Collection System Event

What we want you to do:

The event simulates connecting a 4-inch PVC lateral sewer to an existing 8-inch PVC sewer pipe while in service (the 'wet' pipe), and the programming of an automatic sampler.

- Drill a 4.5-inch diameter hole in the 'dry' PVC pipe.
- Cut out and remove a measured length from both the 'wet' and 'dry' PVC pipes. The section cut from the 'dry' pipe will include the 4.5-inch hole, and will be used to replace the section removed from the 'wet' pipe.
- Install a service saddle connection in the 4.5-inch hole, and secure with hose clamps.
- Install the replacement length of 8-inch PVC pipe (complete with service saddle) into the 'wet' PVC pipe, and secure with flexible repair couplings and hose clamps.
- Program the automatic sampler per the defined procedure.

What we will provide:

- A 6-foot length of PVC pipe strapped to a steel stand, ready for cutting. Water will be flowing through this length of pipe during the event (the 'wet' pipe).
- A 6-foot length of PVC pipe strapped to another steel stand, ready for cutting (the 'dry' pipe).
- Toolbox.
- Hand drill (non-ratcheting brace) with a LENOX 4.5-inch circular cutting blade (model 72L), or equivalent.
- One 4-inch service saddle with attached gasket.
- Four flexible repair couplings.
- Two LENOX saw handles with two 18" PVC saw blades (model HS F180), or equivalent.
- Two speed wrenches with sockets.
- Hose clamps.
- Tape measure and marker.
- Hach Sigma Model 900MAX automatic sampler (a drawing of the sampler is attached to this procedure) with all required accessories.
- Automatic sampler instruction sheet.

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What you will be judged on:

- The time taken to complete the event.
- The tightness of your completed connections. The 'wet' pipe connections will be checked for water tightness at 3 psig.
- The accuracy of the automatic sampler programming and the drawn sample.
- Compliance with any instructions given or procedures required.
- **Safety.**

Required procedures:

- Each team must ensure that all necessary tools are provided, and that all the tools and equipment to be used in the event are in satisfactory condition prior to the start of the event.
- Each team member is to wear all required safety equipment throughout the event, and compete in a safe manner. Gloves may be removed only when operating the control panel of the sampler.
- The straps holding the PVC pipe to the stands may not be loosened during the event.
- The PVC pipe sections strapped to the stands may not be moved laterally by the competitors.
- The team captain will start the event by signaling the judges.
- The 4.5-inch hole must be drilled in the section originating from the 'dry' PVC pipe, using the hole saw provided.
- The lengths of PVC pipe must be cut out using the LENOX saws provided.
- The saddle must be mounted to the appropriate replacement PVC pipe section and properly secured in place with the hose clamps provided.
- The automatic sampler must be programmed correctly using the data provided on the attached instruction sheet. Teams 1 through 9 must remember to enter a 0 before their team number, for example; 01, 02, 03 and so on.
- All tools must be returned to the toolbox after use. The toolbox lid is to be closed and latched, and the toolbox must be replaced in its original location.
- The team captain will signal the judges when the event is over.

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The judges will then:

- Record the elapsed time.
- Check the sewer service replacement section for water tightness. The 'wet' PVC pipe will be allowed to fill until water flows from the outlet end. At this point, the discharge valve will be closed and the pressure increased to 3 psi. Time penalties will be added for any leakage that occurs within 30 seconds.
- Check the accuracy of the programming of the automatic sampler and verify that a proper sample was taken.
- Add any other penalties incurred during the event to the total score and pass the information on to the Event Coordinator.

What you will provide:

- Hard hat, safety glasses or goggles, safety boots or shoes, protective gloves.
- Enthusiasm!

Remember:

- While sawing activity is occurring on a stand, no other activity is permitted on the same stand. Only one person (at a time) may operate the brace and bit assembly used to drill the 4½ -inch hole, with no additional forces being transmitted to the tool in use by any other team member(s).
- No running or jumping.
- No punching of the 4.5 inch hole saw coupon.

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Operations Challenge Collections Systems Event Hach Sigma 900MAX Sampler SET-UP PROCEDURE

1. Press "ON" key	
2. Press "MAIN MENU" key	
3. Select "SETUP"	Press white soft key
4. Select "MODIFY ALL ITEMS"	Press white soft key
5. Select "CLEAR ENTRY" to clear Number of Bottles	Press white soft key
6. To select the Number of Bottles, press number "1" key to enter one bottle	
7. Select "ACCEPT" to move to the next screen	Press white soft key
8. To select Bottle Volume, press number "3" key to enter three gallons	
9. Select "ACCEPT" to move to the next screen	
10. To select Intake Tube Length, press number "6" key to enter six feet	Press white soft key
11. Select "ACCEPT" to move to the next screen	Press white soft key
12. Select "CHANGE CHOICE" until Intake Tubing Type 3/8" Vinyl is displayed	Press white soft key
13. Select "ACCEPT" to move to the next screen	Press white soft key
14. Select "CHANGE CHOICE" until Program Lock DISABLED is displayed	Press white soft key
15. Select "ACCEPT" to move to the next screen	Press white soft key
16. Select "CHANGE CHOICE" until Program Delay DISABLED is displayed	Press white soft key
17. Select "ACCEPT" to move to the next screen	Press white soft key
18. Select "CHANGE CHOICE" until Sample Collection TIME-PROPORTIONAL is displayed	Press white soft key
19. Select "ACCEPT" to move to the next screen	Press white soft key
20. Select "CLEAR ENTRY" to clear Interval	Press white soft key
21. To select one minute Interval, press number "1" key	

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22. Select “ACCEPT” to move to the next screen	Press white soft key
23. Select “CHANGE CHOICE” until Take First Sample says IMMEDIATELY is displayed	Press white soft key
24. Select “CHANGE CHOICE” until Run Mode says STOP AFTER LAST SAMPLE is displayed	Press white soft key
25. Select “CLEAR ENTRY” to clear Samples To Collect	Press white soft key
26. To select one Sample To Collect, press number “1” key	
27. Select “ACCEPT” to move to the next screen	Press white soft key
28. Select “CHANGE CHOICE” until Liquid Sensors say ENABLED is displayed	Press white soft key
29. Select “CLEAR ENTRY” to clear Sample Volume	Press white soft key
30. To select 100ml Sample Volume, press number “1” , “0” , and “0” keys	
31. Select “ACCEPT” to move to the next screen	Press white soft key
32. Select “CLEAR ENTRY” to clear Intake Rinses	Press white soft key
33. To select zero Intake Rinses, press number “0” key	
34. Select “ACCEPT” to move to the next screen	Press white soft key
35. Select “CLEAR ENTRY” to clear Sample Retries	Press white soft key
36. To select one Sample Retry, press number “1” key	
37. Enter your team number by pressing the numeric keypad for Site ID (Teams 1-9 must enter 01, 02, 03 and so on.)	
38. Select “ACCEPT” to move to the next screen	Press white soft key

SCREEN SHOULD NOW SHOW:

Time and Date ADVANCED SAMPLING	
DO YOU WISH TO ACCESS THE ADVANCED SAMPLING FEATURES	YES
	NO

39. Select “NO” to move to the next screen	Press white soft key
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SCREEN SHOULD NOW SHOW:

Time and Date	**MAIN MENU**
----- DISPLAY DATA	SETUP -----
OPTIONS	STATUS -----

READY TO START (Flashing)

40. Press the “RUN STOP” key and press any key to start the program	
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SCREEN SHOULD NOW SHOW:

Time and Date	**MAIN MENU**
PREPURGE TO HALT SAMPLING PRESS ANY KEY, TWICE	

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RUNNING

The purpose of this procedure is to create a sampling program for a composite sample (1 bottle), with a volume of 3 gallons, with an intake tube length of 6ft, intake tube type 3/8" Vinyl, with no Program Lock (Disabled), with no program delay, type of sampling or collection Time-Proportional, at an interval of 1 minute, taking the sample immediately, and stopping after the last sample, samples to collect 1, and a sample volume of 100ml, 0 intake rinses, 1 sample retry, and Select Site ID by entering your team number. No Advanced options are needed.

After the sampling sequence is completed sampling history will show Sampling Complete.