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Sample Collection Procedures Using a 12 Volt Pump and Propane Tanks

A. Setup

1. Remove the foam packing from the case and, if not already connected, attach the line with the water trap to the inlet of the pump station using the quick-disconnect.
2. Attach the power cord to the cigarette lighter of the field vehicle. An extension cord is provided and may be used if necessary, but using it will decrease the pumping speed.

B. Purging

1. Attach the inlet tubing to the monitoring probe or extraction well to be sampled. **IMPORTANT**: extend the outlet line outside of the case and point it away from the case; if combustible gases are pumped into the pump case, **they could be ignited by the pump**.
2. Open the rate control valve on the pump station approximately 1/8 turn and turn on the pump switch.
3. Purge the tubing and lines. **Monitor the vacuum on the inlet**. Some drop in pressure is normal if sampling a monitoring probe completed with small tubing. However, if vacuum increases rapidly or exceeds about 10 inches of mercury, it generally indicates that the tubing or well is filled with water. If this occurs, immediately decrease the pumping rate by partially closing the rate control valve. If a significant vacuum on the inlet is still observed (more than 5"), turn off the pump to prevent drawing water into the system. If the inlet vacuum gauge reads less than 5, the control valve can be opened another full turn which will provide full pumping rate.
4. Purge the probe or well for a sufficient length of time to remove the gas in the bore of the probe or well, if possible. If sampling an extraction or vent well that is flowing, a few seconds to purge the pump and tubing is all that is necessary.

C. Collecting a Sample

1. Remove the plastic cap from one of the sampling cylinders, but **do not open the valve on the cylinder**.
2. With the pump running, loosely attach the outlet line to the cylinder so that the threads on the fitting just catch. Note that on these cylinders, the threads are reversed, so turn counter-clockwise to tighten. With the cylinder valve still closed, push the fitting in tight against the cylinder fitting until a pressure increase on the outlet gauge is observed and then pull the fitting back to allow the pressure to be released. Repeating this several times will purge the air from the dead volume of the valve. When the valve is purged, tighten the fitting down with fingers. It is not necessary to use a wrench on these fittings; the brass fitting seals by pressing against a rubber O-ring, which does not require a lot of pressure to seal.
3. Open the cylinder valve to collect the sample. The cylinders have been pre-evacuated and therefore purging the cylinder is not necessary. Note: because the cylinder is under vacuum, the sample will initially be "pulled" into the cylinder very quickly, probably at a rate much quicker than the rate of the pump. If it is suspected that there is water in the well, care must be taken at this stage so that the water is not pulled into the pump by the faster flow rate. If it is necessary to slow the rate at this time, use the control valve on the pump, not on the cylinder. Once the cylinder has reached atmospheric pressure, continue pumping until the cylinder reaches **20 psi**.
4. When the cylinder is filled to 20 psi, close the cylinder valve and then turn off the pump. Do not over tighten the valve; these valves have a soft seat and need only be tightened down snug. Over tightening will damage the valve. Disconnect the cylinder from the tubing and replace the plastic plug into the cylinder valve.
5. Record the sample name or well number, the cylinder pressure, and the date on the sample tag.
6. Fill out the "Analysis Request Form" indicating the analyses to be carried out and return the samples to Isotech following the packing and shipping instructions enclosed.

NOTE: If you encounter any problems with the use of this equipment, please notify us so that we may make corrections.