Question 29: What are the industry practices to take samples around high-pressure equipment which contain light hydrocarbon and H2S? How do you ensure the samples are handled safely and representative of sample stream?

SHARPE (Flint Hills Resources, LP)

Our Corpus Christi and Pine Bend refineries had standardized on Texas Sampling Incorporated samplers. They provide a variety of closed-loop captured sample systems. We have a Sampler Selection Procedure Flowchart that helps us walk through ‘yes’ or ‘no’ decisions considering high RVP (Reid vapor pressure) material, high-pressure material, high temperature material, high H2S (hydrogen sulfide) options, and plugging potential. One caution is that if you install temporary sample stations, you will then have to take into consideration the options regarding the pressure. This is a very simplified flow diagram compared to what we use at the refinery. I cleaned it up a little, but the flowchart just illustrates the process.

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Sample Stations

- Our Corpus Christi Refinery has standardized on Texas Sampling, Inc. samplers.
- They provide a variety of Closed Loop Captured Vent Sample Systems.
- We have a Sampler Selection Procedure flow chart that walks us through yes/no decision making considering high RVP material, high pressure material, high temperature material, high H2S options, and plugging potential.

If you are going to use temporary sample stations, you will need to make sure you are using the appropriate PPE (personal protective equipment); for instance, for pulling H2S Drägers when you are sulfiding. You can also use engineering controls to reduce your sampling, especially during sulfiding, by using online analytical capabilities provided by companies like Reactor Resources and others. These controls reduce the need for pulling Drägers during a rather hazardous part of your operations.

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Sampler Selection Procedure

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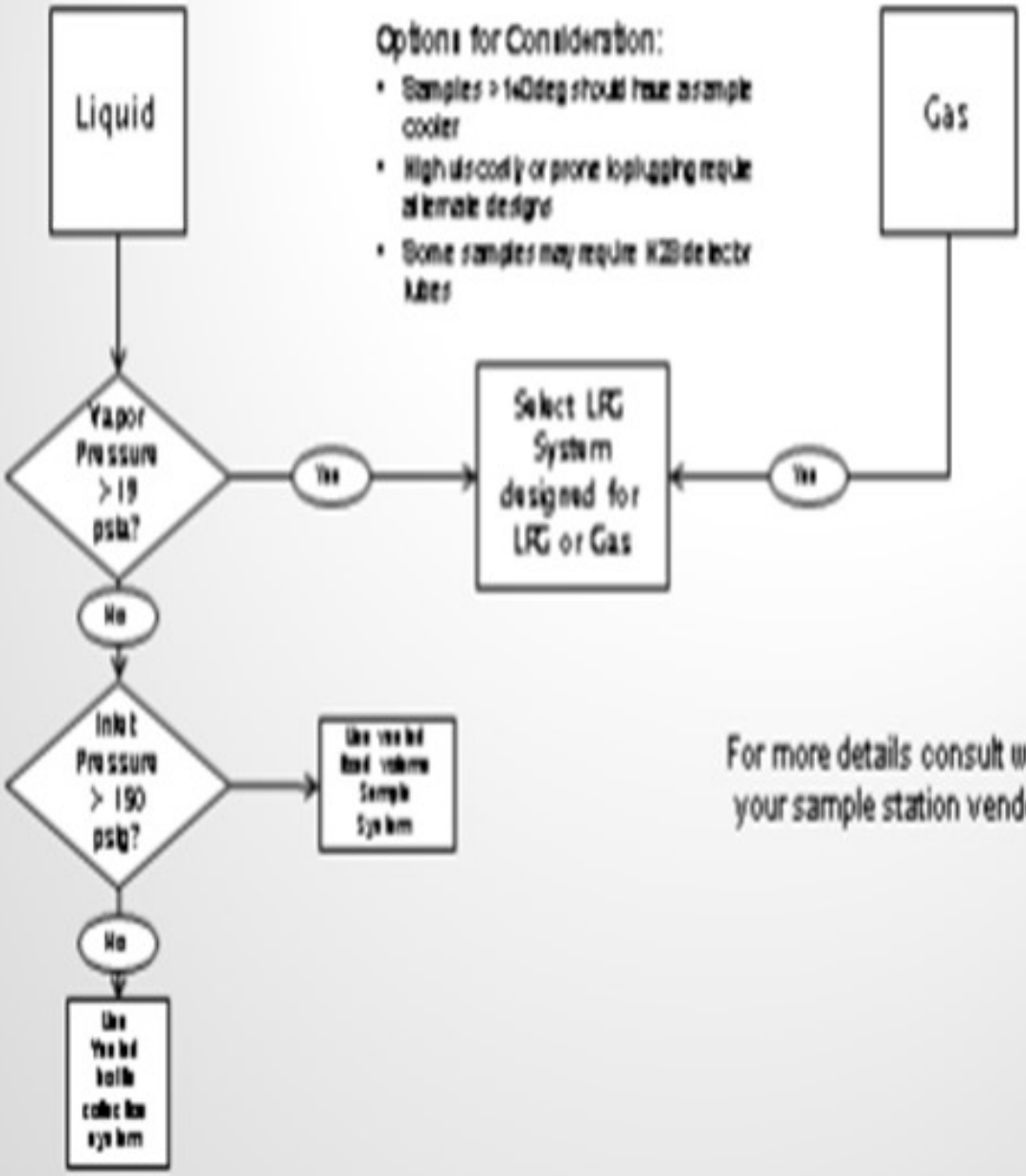

CHRIS STEVES (Norton Engineering)

These samples should be collected in a high-pressure sample cylinder using a flow-through arrangement. The sample return line must be connected to a lower pressure portion of the process (such as a compressor suction) or to the flare. The sample cylinder and the sample tubing should have valves right at the very end where the connections are made to minimize any product that will end up trapped between the valves. Once connected, the valves are opened long enough to purge the sample line and ensure that a representative sample is collected.

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