SegreTECH Procedure

Emptying Sand

Sweet / Sour: SWEET	Isolation: YES	De-Pressure: YES	Scales: NO

Objective:

Empty sand from the isolated containment sphere while continuing to flow the well.

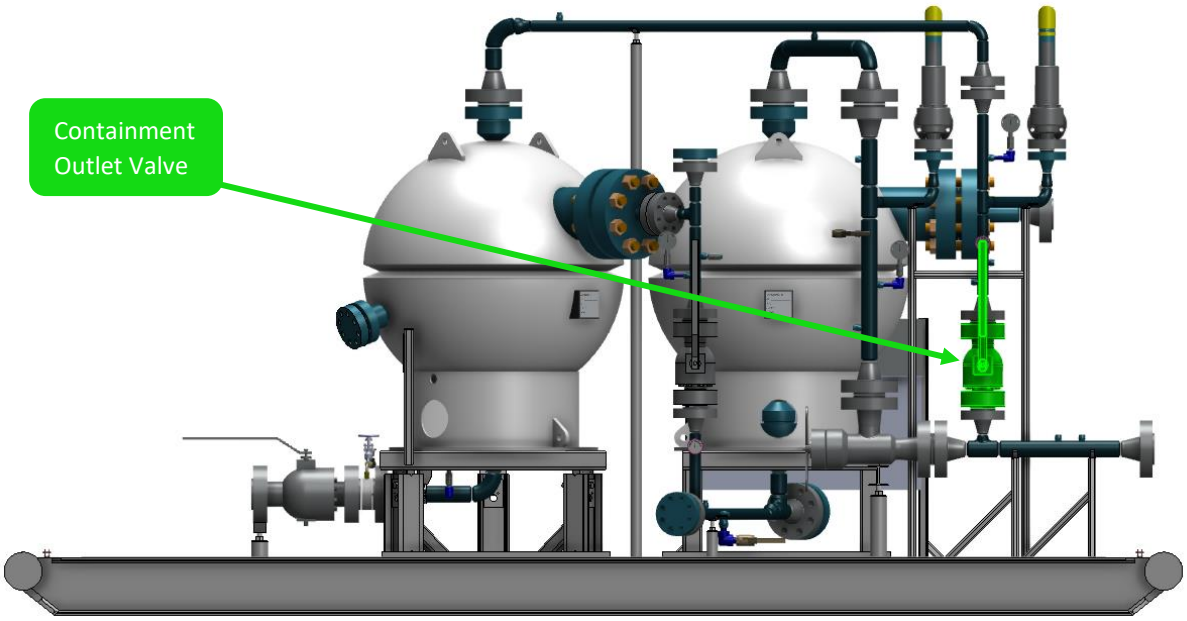
Safety Hazards:

Pressurized Equipment; Potential Exposure to Hydrocarbons

CONTAINMENT SPHERE EMPTYING PROCEDURE – NO WEIGHT MEASUREMENT (SCALES)

Procedure Steps

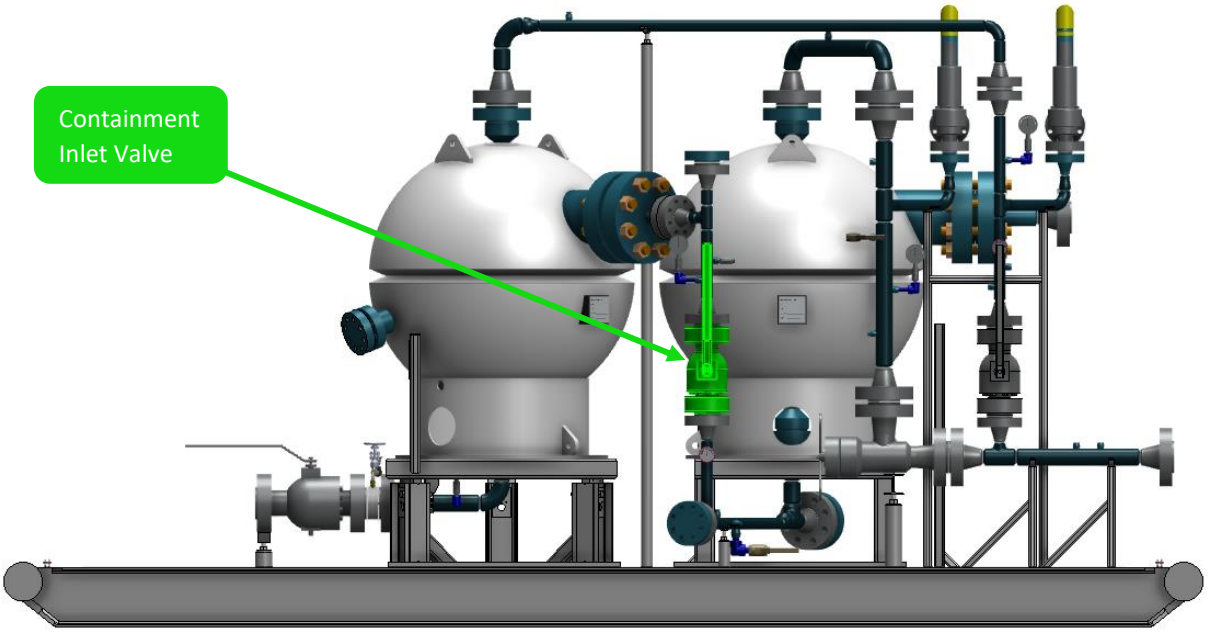
1. **ISOLATION** - Close the Containment Outlet Valve (2” Plug Valve).



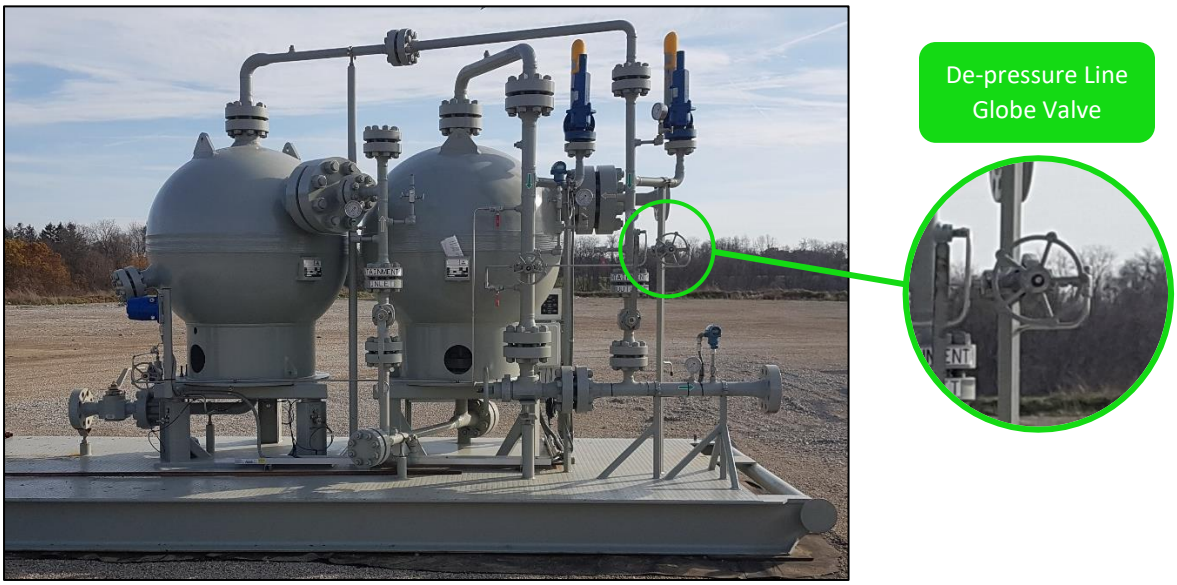
(NOTE: Unit shown above may not be identical to actual unit in the field. Buildings not shown for clarity)

(continued below)

2. **ISOLATION (continued)** - Wait approx. 20 seconds then close the Containment Inlet Valve (2” Plug Valve), trapping the sand, fluid and gas in the Containment Sphere.

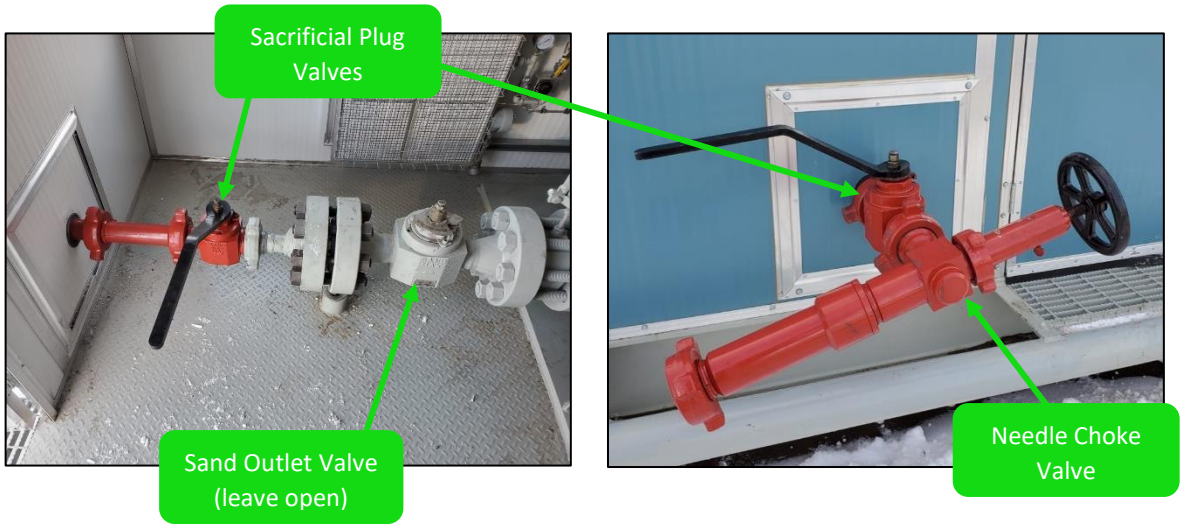


3. **DE-PRESSURE** - Open the De-pressure Line ½” ball valve then slowly open the ½” globe valve upstream of the ball valve. Bleed the line down to desired pressure or leave valves open if bleeding down to zero. **NOTE – Opening the valve too fast will result in liquids being pulled from the Containment Sphere.**

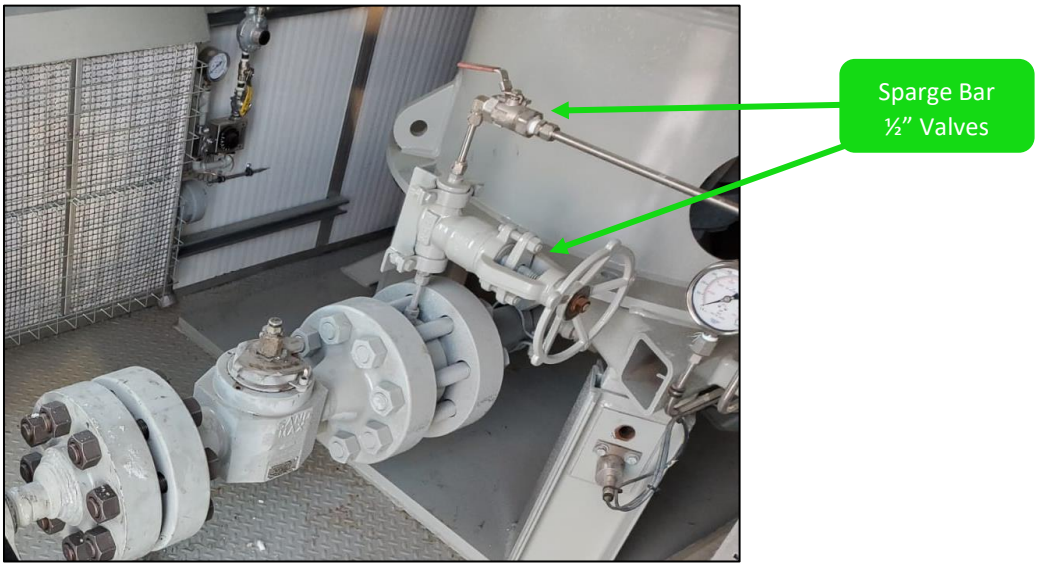


** ***NOTE: SegreTECH recommends installing two (2) sacrificial plug valves and one (1) needle choke valve downstream of the SegreTECH unit. This allows the SegreTECH Sand Outlet Valve to be the shut off if downstream valves need to be repaired or replaced. Using this practice, the Sand Outlet Valve should normally be in the "open" position.***

4. **EMPTYING SAND** - Slowly open the sacrificial plug valves to the fully open position. Then, slowly open the outside needle choke valve, allowing sand to flow from the Containment Sphere to the tub, tank or truck.

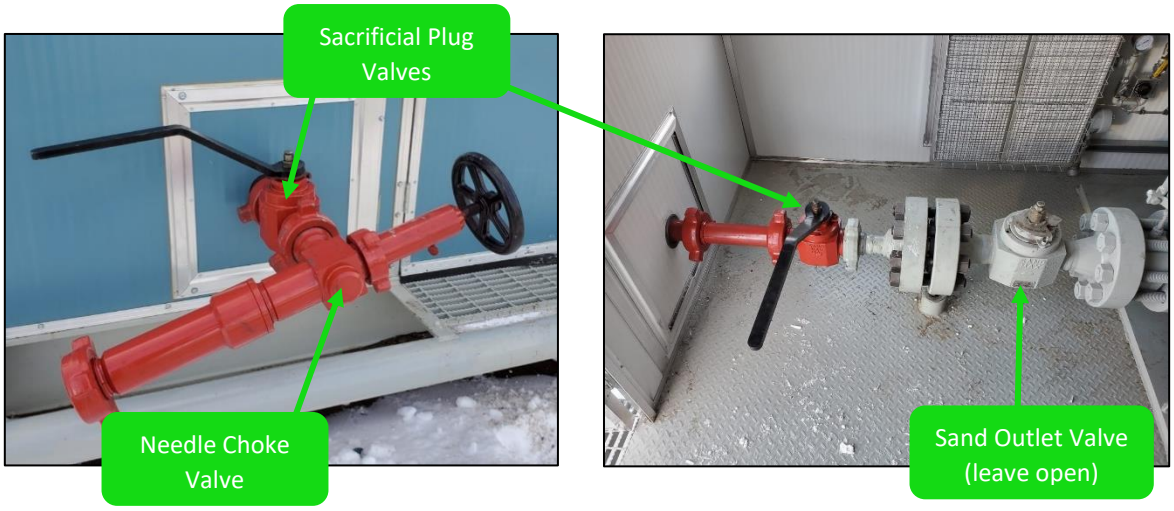


** ***NOTE: If the sand will not flow, close the needle choke valve and open the ½" ball valve and ½" globe valve located directly upstream of the Sand Outlet Valve. This will activate the sparge bar (sand agitation line) and loosen any packed sand. Wait 20-30 seconds, then close the globe valve then ball valve and re-open the needle choke valve.***



5. **EMPTYING SAND (continued)** - Listen for sand flow as the sand is being emptied from the unit. *NOTE: There is an audible difference through the needle choke valve between sand flow and liquid flow, both in sound volume and type.*

6. **FINISH EMPTYING SAND** - When the sand flow changes to liquid flow, close the needle choke valve, then close the sacrificial plug valve on the outside of the building and inside of the building. The SegreTECH Sand Outlet Valve should remain open.

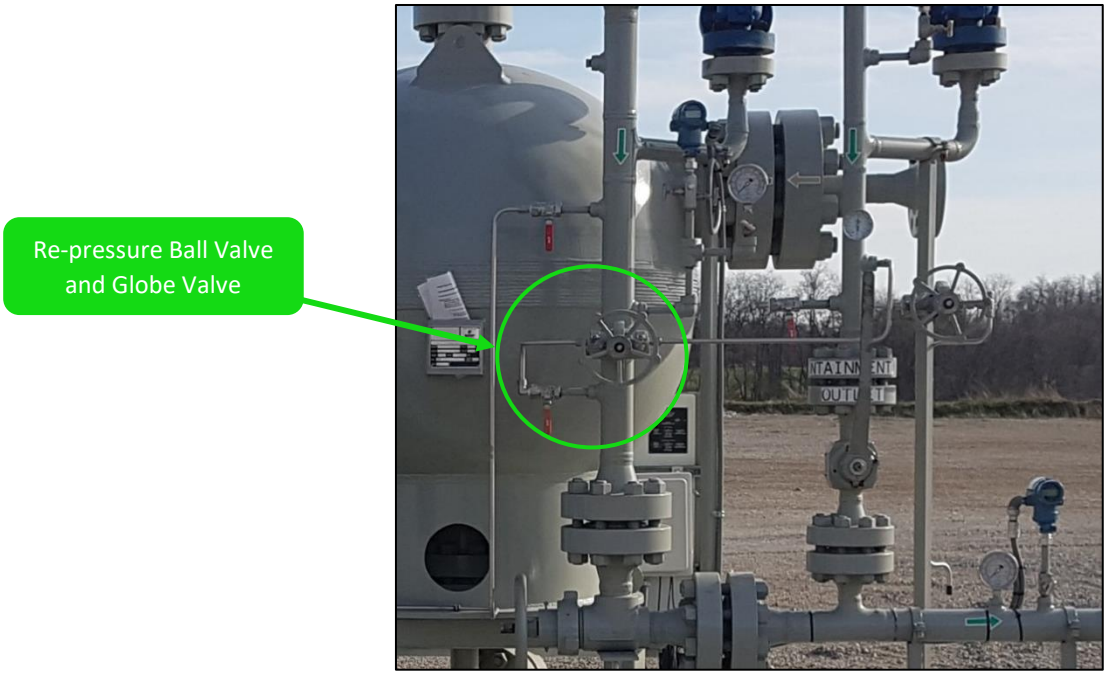


7. **FREEZE PROTECTION** - With the inside plug valve closed, open the outside plug valve and needle choke valve to bleed the pressure and drain the external piping, then close both valves again.

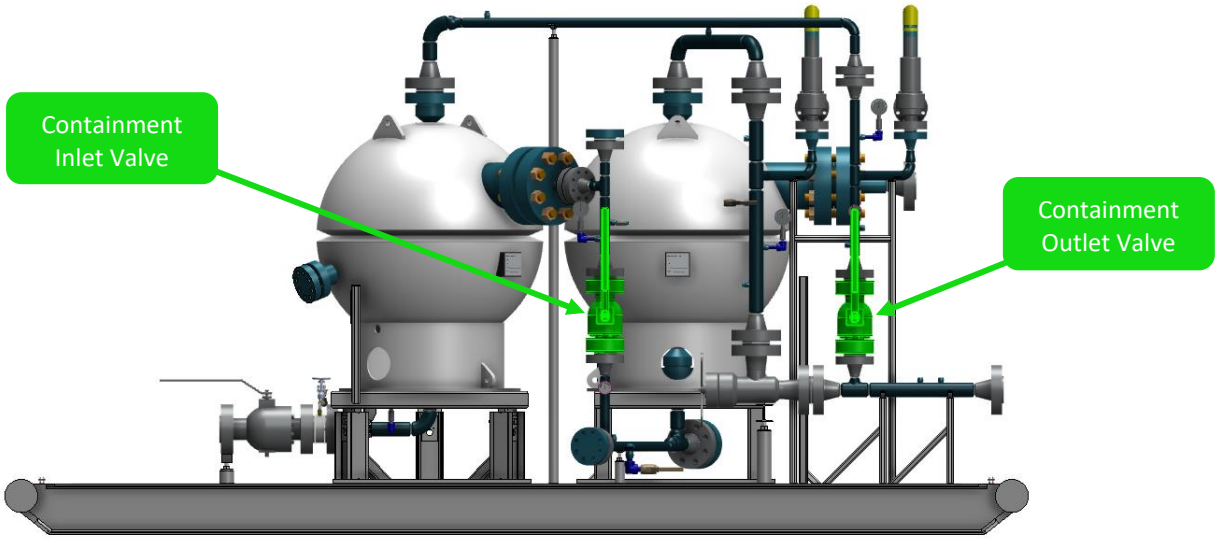
   NOTE: In extremely cold weather, the outside plug valve and needle choke valve may be left open to prevent freeze up. The valves should be closed again prior to emptying sand. (Consult your company's policies and procedures prior to leaving and valves open.)

8. **RE-PRESSURE** - If not already closed, close De-pressure line globe valve and ball valve.

9. **RE-PRESSURE (continued)** - Re-pressurize the isolated Containment Sphere by opening the ½" Re-pressure line ball valve and then the ½" globe valve downstream of it.



10. **RE-PRESSURE (continued)** - When the Containment Sphere pressure gets within 344 kPa (50 psi) of the Inlet Sphere, close the re-pressure line globe and ball valves and slowly open the Containment Inlet Valve to allow the flow of sand and water between the two spheres. **NOTE: Use a slow continuous motion to open the Containment Inlet Valve. This will effectively transfer the sand that has collected in the Inlet Sphere to the Containment Sphere.**



11. **RETURN TO OPERATION** - Slowly and continuously open the Containment Outlet Valve to commence flow thru the entire system.

12. **PRESSURE VERIFICATION** - Once the system has stabilized flow, double check to ensure that there is a minimum of 140 kPa (20 psi) pressure differential between the 2 vessels. (The Inlet Sphere gauge should show the higher pressure and the Containment Sphere gauge should show the lower pressure.)

    OPERATIONAL NOTE: If the Containment Sphere pressure is being reduced to zero during the dump cycle, monitor the Inlet Sphere pressure to ensure it does not rise beyond an acceptable level. If the Inlet Sphere pressure rises beyond an acceptable level, note the Differential Choke Valve setting and open the choke to relieve the pressure. Once the dump cycle is complete and the Containment Inlet Valve has been opened, return the choke valve to the noted setting.