

May 26, 2011  
Salinas Valley Ammonia Safety Day  
Salinas, CA

**Challenge to all Operators-Old and New**

(List of specific things every operator should know and be able to do.)

- #1: You need to have the attitude that **Learning Is Fun.**
- #2: **You should be able to draw a detailed sketch of your HPR** and accurately locate and describe **all** the piping connections, especially the HPL line and the King Valve.
- #3: **You should be able to draw your entire system** (in a block flow diagram format) and represent every compressor, condenser, metering device, and evaporator, along with all vessels and pressure regulators if present. You should be able to draw and explain this system to all of the top management and engineers in your organization, with few notes if any, while explaining all the pressures, temperatures, the relative speed of flow and the condition of the refrigerant in every component.
- #4: You should know “**how close to perfect**” you can operate your system in regards to head pressure and non-condensables. In other words how close can you get your actual system head pressure to the pressure that corresponds to your actual system condensing temperature. Within 6 psig, 5? 3? 2?
- #5. You must be able to explain to me why I consider **the evaporative condenser** to be the most important component in the system. (My list, my opinion). Hint: How maintaining it properly can pay for your salary verses how not maintaining it can cost your company big bucks.
- #6. **You must be knowledgeable of the construction, operation, function and proper maintenance of all valves in your system.** (Why? Because through investigations the Chemical Safety Board has determined that most NH<sub>3</sub> releases are related, somehow, to valves). This challenge is to be able to explain everything about the valves you have in your system using the correct terminology. (For example: **Body Style:** globe, angle, ball, other; **Connection Type:** threaded, socket weld or butt weld; **Bonnets:** bolted or threaded; **Stems:** stainless or carbon steel; **Packings:** graphite, teflon or “O”

rings. If “O” rings, single or double; **Seats**: moveable (are they lead, teflon or other) and stationary; **Handwheels or Seal Caps**; **Directional Arrows, etc.** This discussion also includes **Regulators** and other **Control Valves like: Solenoids, Reliefs, Checks, Needle and Expansion valves, etc., etc.**

#7. You must be **able to explain the function(s) of each system safety** that you have in your plant. You will be reading this off of a “chart or table” that you made (or that your plant already has). You will explain where these safeties are physically located, what their purpose is, how they work, how you know when they have “alarmed” or “tripped”, and how to reset them to put the system back into normal operation. Examples of system safeties would be: Ammonia Detection, Emergency Stop Buttons, King Solenoid Valve, High Liquid Level(s), Low Liquid Level(s), High Pressure(s), High Temperature(s), Oil Heater Controls, Ventilation System Controls, Transfer System(s), Purging system(s), Room Temps, etc., etc. Answer this question; How would you physically prove each one of these safeties?

#8\* You must be **competent** with **navigating, reading and explaining** your plant’s **P&IDs**.

#9: **You must be able to explain all these items above in great detail.** (My philosophy is this...if you can’t explain it, then you don’t know it well enough yet. Keep practicing until you can).

When you accomplish these things, then you will be in a very elite group of operators.  
(Courtesy of Russell Ramos, Joseph H. Schauf Co., Madera, CA Cell: 559-351-4288)