

Customer-Owned Tank Checklist

Customer Name NASA GRC PLUM BROOK STATION
 Customer Address 6100 Columbus Ave; Sandusky, OH 44870
(Street, City, State, Zip)

Tank Information

Is this tank outdoors? Yes No
 Tank Manufacturer and Model No. Chicago Bridge & Iron (Contract # 7-7471)
 Manufacturer's Serial No. - National Board No. -
 Product Liquid Nitrogen Tank Capacity (gallons) 28700 Tank fills at _____ inches
 Inner Tank Material of Construction* Stainless Steel
 Tank Maximum Allowable Working Pressure (psig) 150 psig
 Tank Pressure Relief Valve - Set Pressure (psig) 150 psig Size 2"
 Rupture Disk (if applicable) - Set Pressure (psig) 157 psig Size 3"
 CO₂ Fill Connection Size: CGA 1½" CGA 2" Other N/A

Safety Parameters

Customer or Tank Owner: Please verify that each of the following safety conditions are met. (Check box that applies.)

1. Tank has manufacturer's nameplate that indicates that tank meets ASME code requirements, is suitable for the product service indicated above, specifies maximum allowable working pressure (MAWP), and specifies maximum and minimum working temperature.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
2. Tank is equipped with ASME coded pressure relief valve(s) sized to relieve product at the MAWP. Each relief valve meets the capacity requirements specified in the manufacturer's instruction manual.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
3. Tank is equipped with rupture disk(s) sized to relieve product at tank test pressure.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
4. Pressure relief devices have been inspected and will protect <u>all</u> equipment against damage if the pressure should rise to MAWP. Also: a) There is no isolation valve between tank and relief devices. b) No cracks or other mechanical damage are present. c) No leaks are present, as evidenced by frost, sound, or escaping gas. d) Adjacent piping is not deformed. e) Relief device outlets are open and free to discharge. f) Relief devices discharge away from areas where personnel operate valves. g) Relief devices do not discharge against the tank surface.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
5. If tank is vacuum-jacketed, it is equipped with vacuum jacket relief devices.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A
6. The pipes and valves that may be exposed to cryogenic liquid or gas are made of aluminum, brass or bronze alloys, copper, or stainless steel (carbon steel is acceptable for CO ₂ ; PVC is not acceptable).	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
7. On argon, nitrogen, or oxygen tank, a trycock (95% valve) is installed and verified to be unobstructed. Note: Contents gauge does not qualify as a fill termination device on these tanks.	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	

Customer-Owned Tank Checklist

8. Tee fix (I): Union Carbide and Taylor Wharton 500–6,000 gallon tanks manufactured between 1964 and 1983 had the stainless steel liquid line slip-fitted and braised over the branch connection of the brass tee. This configuration is not acceptable.			
8a. If within this manufacturing range, has the tee fix been retrofitted?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
8b. If within this manufacturing range and not retrofitted, is the temporary clamp and support fix in place?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
9. Tee fix (II): Union Carbide and Taylor Wharton vertical and horizontal 9,000–13,000 gallon tanks up to 355 psig MAWP manufactured between 1970 and 1985 had the stainless steel liquid and gas lines joined to a brass tee. This configuration may not be acceptable.			
9a. If within this manufacturing range and construction, have the joints been inspected for leakage?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
9b. If within this manufacturing range and construction, and if either of the joints have leaked, have the tees been repaired/replaced?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	<input checked="" type="checkbox"/> N/A
10a. Is this vessel compliant with CGA Position Statement PS-8 regarding overpressure protection?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	
10b. If answer to 10a is Yes, what type of OPP device is installed? <u>Burst Disk</u>			
11. Are all areas where liquid product can be trapped protected from overpressurization by a block line relief device?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	<input type="checkbox"/> N/A