Mechanical Integrity Inspection of a Pressure Vessel

Peter Thomas, P.E.

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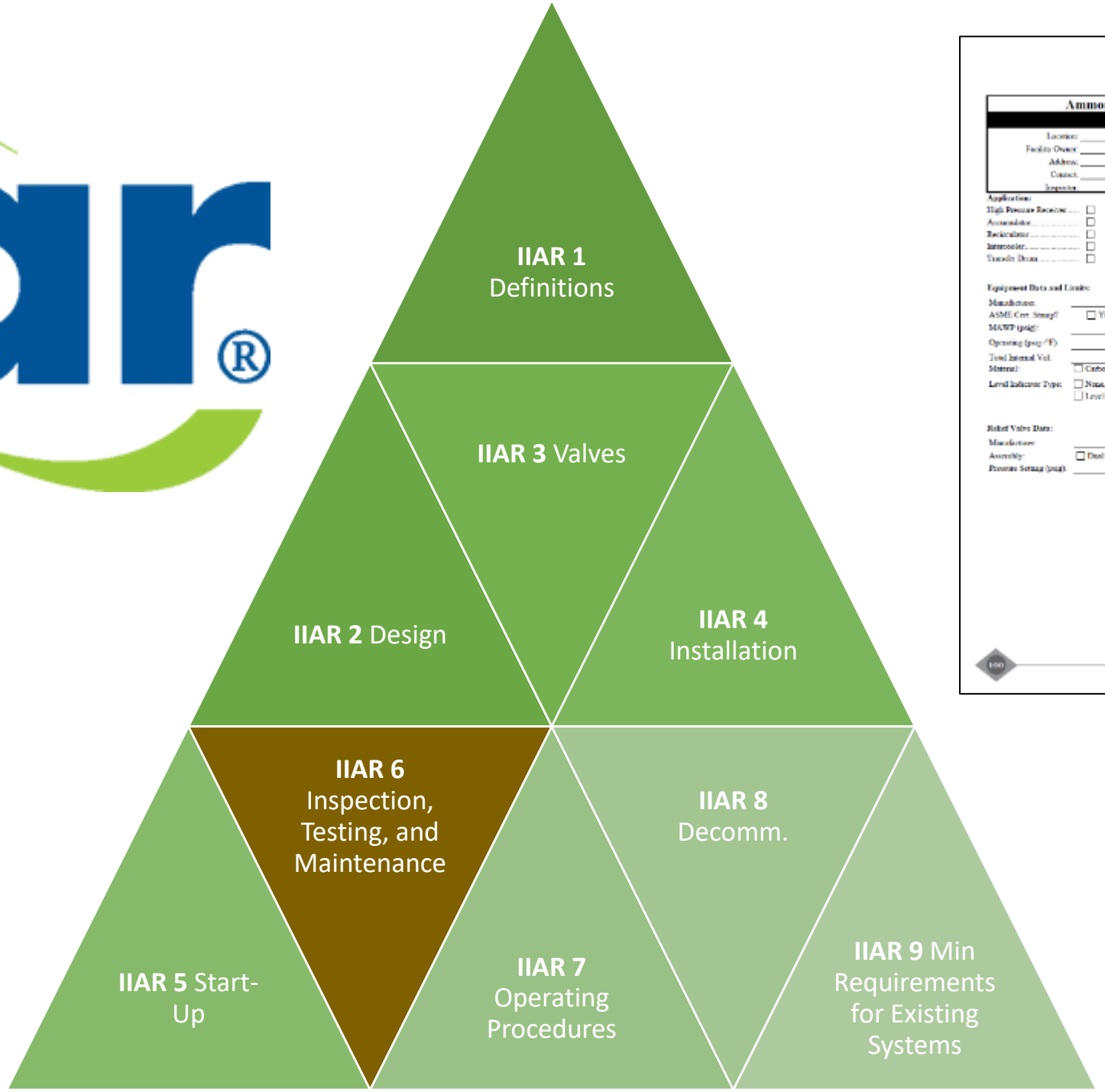
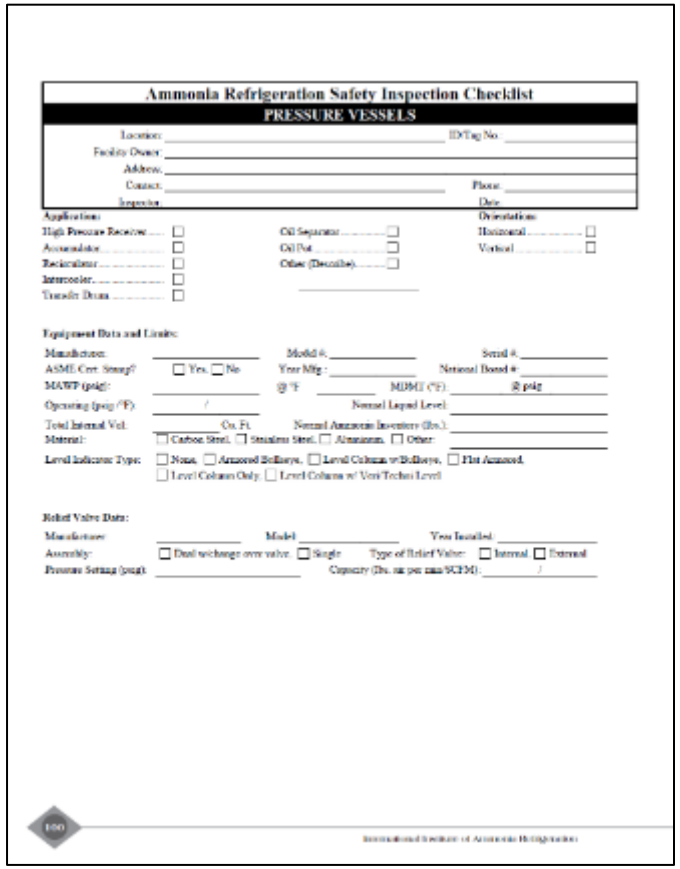




Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.

Facility Owner:

Address:

Contact: Phone:

Inspector: Date:

Applications: Orientation:

High Pressure Receiver ☐ Oil Separator ☐ Horizontal ☐

Accumulator ☐ Oil Pot ☐ Vertical ☐

Recirculator ☐ Other (Describe) ☐

Intercooler ☐

Transfer Drum ☐

Equipment Data and Limits:

Manufacturer: Model #: Serial #:

ASME Cert. Stamp? ☐ Yes ☐ No Year Mfg: National Board #:

MAWP (psig): @ °F MDMT (°F): @ psig

Operating (psig /°F): / Normal Liquid Level:

Total Internal Vol. Cu. Ft. Normal Ammonia Inventory (lbs.):

Material: ☐ Carbon Steel ☐ Stainless Steel ☐ Aluminum ☐ Other:

Level Indicator Type: ☐ None ☐ Armored Bullseye ☐ Level Column w/Bullseye ☐ Flat Armored

☐ Level Column Only ☐ Level Column w/ Vent/Techni Level

Relief Valve Data:

Manufacturer: Model: Year Installed:

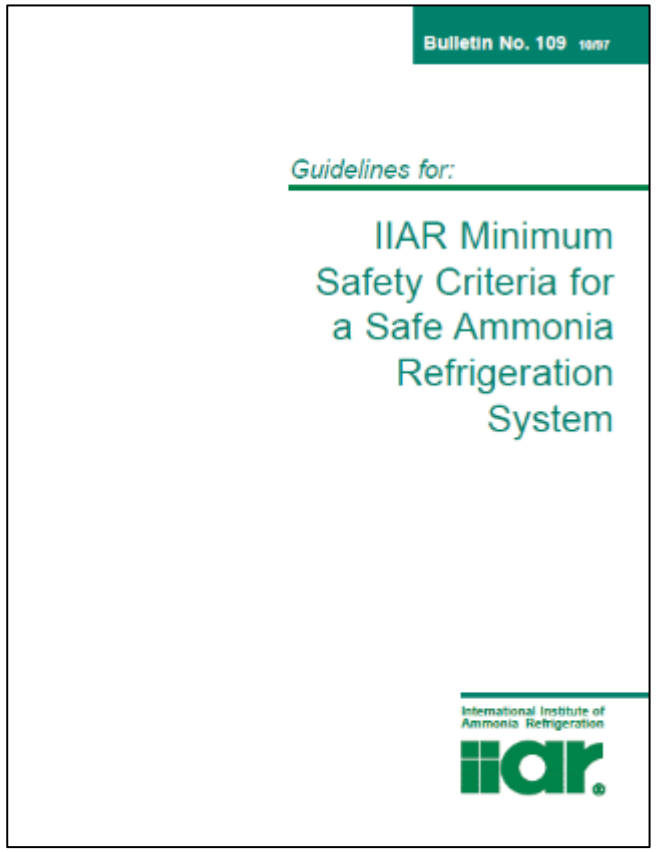
Assembly: ☐ Dual w/change over valve ☐ Single Type of Relief Valve: ☐ Internal ☐ External

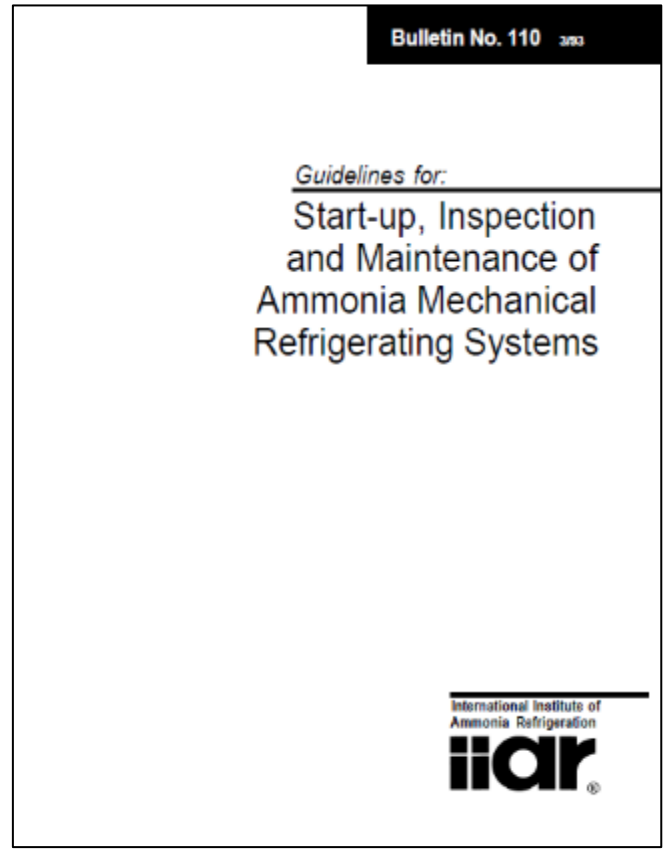
Pressure Setting (psig): Capacity (lbs. air per min/SCFM): /

History of IIAR 6

- IIAR Bulletin No. 107 *Guidelines for: Suggested Safety and Operating Procedures When Making Ammonia Refrigeration Plant Tie-ins*
- IIAR Bulletin No. 108 *Guidelines for: Water Contamination in Ammonia Refrigeration Systems*
- IIAR Bulletin No. 109 *Guidelines for: IIAR Minimum Safety Criteria for a Safe Ammonia Refrigeration System*
- IIAR Bulletin No. 110 *Guidelines for: Start-up, Inspection and Maintenance of Ammonia Mechanical Refrigerating Systems*
- IIAR Bulletin No. 111 *Guidelines for: Ammonia Machinery Room Ventilation*
- IIAR Bulletin No. 112 *Guidelines for: Ammonia Machinery Room Design*
- IIAR Bulletin No. 114 *Guidelines for: Identification of Ammonia Refrigeration Piping and System Components*
- IIAR Bulletin No. 116 *Guidelines for: Avoiding Component Failure in Industrial Refrigeration Systems Caked by Abnormal Pressure or Shock*
- IIAR Bulletin No. R1 *A Guide to: Good Practices for the Operation of an Ammonia Refrigeration System*

History of IIAR 6





International Institute of Ammonia Refrigeration

Ammonia Refrigeration Safety Inspection Checklist

ID Number: _____

PRESSURE VESSELS

Plant Owner: _____

Address: _____

Contact: _____ Telephone: _____

Inspector: _____ Date: _____

Pressure Vessel

Vessel Location: _____

Vessel Identification Mark/No.: _____

Application

☐ High Pressure Receiver ☐ Intercooler ☐ Accumulator ☐ Oil Pot

☐ Pump Receiver, Low Temp ☐ Pump Receiver, High Temp ☐ Other (Describe) _____

Application Data

Normal Operating Pressure *(psig)*: _____ Temperature *(°F)*: _____

Vessel Size *(Diam. x L/H, ft)*: _____ Normal Liquid Level *(ft)*: _____

Normal Ammonia Inventory *(cubic ft)*: _____

Design Capacity *(Specify: Pumpdown, Surge Vol., TR, etc.)*: _____

Vessel Nameplate Data

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured: _____ Max. Design Working Pressure *(psig)*: _____

Maximum Allowable Pressure *(psig)*: _____ At *(°F)*: _____

Minimum Design Metal Temperature *(°F)*: _____ At *(psig)*: _____

Test Pressure Applied *(psig)*: _____

National Board No.: _____ ASME Certification Stamp? ☐ Yes ☐ No

Safety Relief Valve Data

Type: ☐ Dual ☐ Single ☐ None

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured or Recertified: _____ ASME Seal Unbroken? ☐ Yes ☐ No

Pressure Setting *(psig)*: _____ Capacity *(lbs. air/min)*: _____

Valve Connections: ☐ Inlet _____ ☐ Outlet _____ Pipe Size: ☐ Inlet _____ ☐ Outlet _____

Is Valve Properly Installed and Piped to Termination? ☐ Yes ☐ No

If No, Explain: _____

Visual Liquid Level Indicator

☐ Tubular ☐ Flat Armored ☐ Armored Bullseye ☐ High Pressure Industrial ☐ None

ID Number: _____

PRESSURE VESSELS

Requirement/Recommendation	Conforms	Recommended Action/Comments	Safety Status	Target Date
a) Nameplate legible and complete?	☐ Yes ☐ No			
b) Operating within limitations:				
1) Maximum pressure?	☐ Yes ☐ No			
2) Minimum temperature?	☐ Yes ☐ No			
c) Vessel ASME stamp legible?	☐ Yes ☐ No			
d) Certification drawings on file?	☐ Yes ☐ No			
e) Manufacturer data report on file?	☐ Yes ☐ No			
f) Does vessel have known alterations/modifications?	☐ Yes ☐ No			
1) If yes, was vessel recertified?	☐ Yes ☐ No			
2) Is revised data report on file?	☐ Yes ☐ No			
g) Relief valve:				
1) Proper type?	☐ Yes ☐ No			
2) Correct setting?	☐ Yes ☐ No			
3) Capacity correct?	☐ Yes ☐ No			
4) Installation correct?	☐ Yes ☐ No			
5) Piping to termination correct?	☐ Yes ☐ No			
6) Relief valve replaced or recertified within last 5 years of service?	☐ Yes ☐ No			
7) ASME seal unbroken?	☐ Yes ☐ No			
h) Tubular linear liquid level indicator (sight glass):				
1) Protected from traffic hazards?	☐ Yes ☐ No			
2) 360° guards?	☐ Yes ☐ No			
3) Internal check shutoff valves?	☐ Yes ☐ No			
i) Vessel properly identified? (Name, pressure level per IIAR Bulletin 114)	☐ Yes ☐ No			

j) Vessel condition (check one): ☐ no visible corrosion ☐ slight visible corrosion ☐ extensive corrosion ☐ unknown (insulated)

k) Insulation condition (check one): ☐ no vapor retarder leaks ☐ slight vapor retarder leaks ☐ extensive vapor retarder leaks ☐ not insulated

l) Relief valve condition (check one): ☐ clean, no visible corrosion ☐ slight external corrosion ☐ extensive corrosion

Are there any other conditions that might negatively affect safe vessel operation? ☐ Yes ☐ No

If yes, describe. _____

Bulletin No. 109 IIAR

Guidelines for:

IIAR Minimum Safety Criteria for a Safe Ammonia Refrigeration System

Revision to Bulletin 110

(Approved by IIAR Board of Directors June 19, 2007)

6.6.3 Pressure Relief Devices

Pressure-relief devices are generally one of two types: rupture discs or spring-loaded valves. Rupture discs are membranes that open at a set pressure and cannot reseal. Once ruptured, these devices must be replaced.

Spring-loaded relief valves open to relieve pressure when a set pressure is exceeded. After opening, these valves are designed to re-seat when pressure in the protected component drops below the valve's closing pressure. If a spring-loaded relief valve opens, the valve shall be replaced or recertified in a safe and timely manner. If re-seating is not complete, the valve shall be taken out of service immediately.

Relief valve vent lines shall be visually inspected annually to ensure that the vent line piping is intact and that vent outlets terminated to atmosphere are unobstructed and piped to prevent foreign matter from entering the vent line piping. If equipped, drip pockets shall be checked for water accumulation.

Pressure relief devices shall be replaced or recertified in accordance with one of these three options:

1) Every five (5) years from the date of installation.

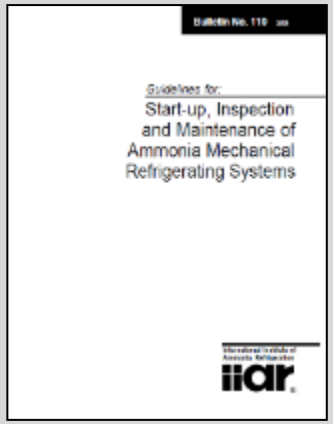
   IIAR originally recommended (in 1978) that pressure relief valves be replaced every five years from the date of installation. This recommendation represents good engineering practice considering the design and performance of pressure relief devices; or

2) An alternative to the prescriptive replacement interval, i.e., five years, can be developed based on documented in-service relief valve life for specific applications using industry accepted good practices of relief valve evaluation; or

3) The manufacturer's recommendations on replacement frequency of pressure relief devices shall be followed.

Exception: Relief devices discharging into another part of the closed-loop refrigeration system are not subject to the relief valve replacement practices.

All replacement pressure-relief devices shall be correctly selected in accordance with current editions of ANSI/IIAR 2 and ANSI/ASHRAE 15.



IIAR Literature - Bulletins

- IIAR Bulletin No. 110 §6.4.2 [emphasis mine]:
- *The system <u>should</u> be checked regularly for the presence of non-condensable gases which <u>should</u> be purged as necessary from the receiver(s) and/or condenser(s), <u>preferably</u> into a noncondensable gas remover or purger but <u>alternatively</u> into water. Where an automatic purger is fitted, its correct operation <u>should</u> be monitored. If there is a large accumulation of noncondensable gases the reason <u>should</u> be investigated and the cause <u>should</u> be corrected.*


IIAR 1
Definitions
IIAR 3 Valves
IIAR 2 Design
IIAR 4
Installation
IIAR 6
Inspection,
Testing, and
Maintenance
IIAR 8
Decomm.
IIAR 5 Start-
Up
IIAR 7
Operating
Procedures
IIAR 9 Min
Requirements
for Existing
Systems

IIAR 6

Part 1 – General

- 1 – Purpose, Scope, and Applic.
- 2 – Definitions
- 3 – Reference Standards
- 4 – Program Administration

Part 2 – Program Requirement

- 5 – General
- 6 – Compressors
- 7 – Pumps
- 8 – Condensers
- 9 – Evaporators
- 10 – Vessels
- 11 – Piping
- 12 – Safety Systems
- 13 – Overpressure Protection Devices
- 14 - Purgers
- 15 – Ammonia and Secondary Coolants

Part 3 Appendices

- A – Explanatory Material
- B – Safety Checklists
- C – Water Contamination
- D – Avoiding Abnormal Pressure/Shock
- E – Risk-Based ITM
- F - References

IIAR 6

Part 1 – General

- 1 – Purpose, Scope, and Applic.
- 2 – Definitions
- 3 – Reference Standards
- 4 – Program Administration

Part 2 – Program Requirement

- 5 – General
- 6 – Compressors
- 7 – Pumps
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- 10 – Vessels
- 11 – Piping
- 12 – Safety Systems
- 13 – Overpressure Protection Devices
- 14 - Purgers
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Part 3 Appendices

- A – Explanatory Material
- B – Safety Checklists
- C – Water Contamination
- D – Avoiding Abnormal Pressure/Shock
- E – Risk-Based ITM
- F - References

International Institute of Ammonia Refrigeration

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Ammonia Refrigeration Safety Inspection Checklist

ID Number: _____

PRESSURE VESSELS

Plant Owner: _____

Address: _____

Contact: _____ Telephone: _____

Inspector: _____ Date: _____

Pressure Vessel

Vessel Location: _____

Vessel Identification Mark/No.: _____

Application

☐ High Pressure Receiver ☐ Intercooler ☐ Accumulator ☐ Oil Pot

☐ Pump Receiver, Low Temp ☐ Pump Receiver, High Temp ☐ Other (Describe) _____

Application Data

Normal Operating Pressure (psig): _____ Temperature (°F): _____

Vessel Size (Diam. x L/H, ft): _____ Normal Liquid Level (ft): _____

Normal Ammonia Inventory (cubic ft): _____

Design Capacity (Specify: Pumpdown, Surge Vol., TR, etc.): _____

Vessel Nameplate Data

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured: _____ Max. Design Working Pressure (psig): _____

Maximum Allowable Pressure (psig): _____ At (°F): _____

Minimum Design Metal Temperature (°F): _____ At (psig): _____

Test Pressure Applied (psig): _____

National Board No.: _____ ASME Certification Stamp? ☐ Yes ☐ No

Safety Relief Valve Data

Type: ☐ Dual ☐ Single ☐ None

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured or Recertified: _____ ASME Seal Unbroken? ☐ Yes ☐ No

Pressure Setting (psig): _____ Capacity (lbs. air/min): _____

Valve Connections: ☐ Inlet _____ ☐ Outlet _____ Pipe Size: ☐ Inlet _____ ☐ Outlet _____

Is Valve Properly Installed and Piped to Termination? ☐ Yes ☐ No

If No, Explain: _____

Vessel Liquid Level Indicator

☐ Gauge ☐ Flat Armored ☐ Armored Bullseye ☐ High Pressure Industrial ☐ None

IIAR Bulletin No. 109

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application: Orientation:

High Pressure Receiver ☐ Oil Separator ☐ Horizontal ☐

Accumulator ☐ Oil Pot ☐ Vertical ☐

Recirculator ☐ Other (Describe) ☐

Intercooler ☐ _____

Transfer Drum ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol: _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

IIAR Standard 6

International Institute of Ammonia Refrigeration

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Ammonia Refrigeration Safety Inspection Checklist

ID Number: _____

PRESSURE VESSELS

Plant Owner: _____

Address: _____

Contact: _____ Telephone: _____

Inspector: _____ Date: _____

Pressure Vessel

Vessel Location: _____

Vessel Identification Mark/No.: _____

Application

☐ High Pressure Receiver ☐ Intercooler ☐ Accumulator ☐ Oil Pot

☐ Pump Receiver, Low Temp ☐ Pump Receiver, High Temp ☐ Other (Describe) _____

Application Data

Normal Operating Pressure (psig): _____ Temperature (°F): _____

Vessel Size (Diam. x L/H, ft): _____ Normal Liquid Level (ft): _____

Normal Ammonia Inventory (cubic ft): _____

Design Capacity (Specify: Pumpdown, Surge Vol., TR, etc.): _____

Vessel Nameplate Data

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured: _____ Max. Design Working Pressure (psig): _____

Maximum Allowable Pressure (psig): _____ At (°F): _____

Minimum Design Metal Temperature (°F): _____ At (psig): _____

Test Pressure Applied (psig): _____

National Board No.: _____ ASME Certification Stamp? ☐ Yes ☐ No

Safety Relief Valve Data

Type: ☐ Dual ☐ Single ☐ None

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured or Recertified: _____ ASME Seal Unbroken? ☐ Yes ☐ No

Pressure Setting (psig): _____ Capacity (lbs. air/min): _____

Valve Connections: ☐ Inlet _____ ☐ Outlet _____ Pipe Size: ☐ Inlet _____ ☐ Outlet _____

Is Valve Properly Installed and Piped to Termination? ☐ Yes ☐ No

If No, Explain: _____

Liquid Level Indicator

☐ Gauge ☐ Flat Armored ☐ Armored Bullseye ☐ High Pressure Industrial ☐ None

IIAR Bulletin No. 109

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐
_____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol: _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

IIAR Standard 6

International Institute of Ammonia Refrigeration

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Ammonia Refrigeration Safety Inspection Checklist

ID Number: _____

PRESSURE VESSELS

Plant Owner: _____

Address: _____

Contact: _____ Telephone: _____

Inspector: _____ Date: _____

Pressure Vessel

Vessel Location: _____

Vessel Identification Mark/No.: _____

Application

☐ High Pressure Receiver ☐ Intercooler ☐ Accumulator ☐ Oil Pot

☐ Pump Receiver, Low Temp ☐ Pump Receiver, High Temp ☐ Other (Describe) _____

Application Data

Normal Operating Pressure (psig): _____ Temperature (°F): _____

Vessel Size (Diam. x L/H, ft): _____ Normal Liquid Level (ft): _____

Normal Ammonia Inventory (cubic ft): _____

Design Capacity (Specify: Pumpdown, Surge Vol., TR, etc.): _____

Vessel Nameplate Data

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured: _____ Max. Design Working Pressure (psig): _____

Maximum Allowable Pressure (psig): _____ At (°F): _____

Minimum Design Metal Temperature (°F): _____ At (psig): _____

Test Pressure Applied (psig): _____

National Board No.: _____ ASME Certification Stamp? ☐ Yes ☐ No

Safety Relief Valve Data

Type: ☐ Dual ☐ Single ☐ None

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured or Recertified: _____ ASME Seal Unbroken? ☐ Yes ☐ No

Pressure Setting (psig): _____ Capacity (lbs. air/min): _____

Valve Connections: ☐ Inlet _____ ☐ Outlet _____ Pipe Size: ☐ Inlet _____ ☐ Outlet _____

Is Valve Properly Installed and Piped to Termination? ☐ Yes ☐ No

If No, Explain: _____

Vessel Liquid Level Indicator

☐ Gauge ☐ Float Actuated ☐ Armored Bullseye ☐ High Pressure Industrial ☐ None

IIAR Bulletin No. 109

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐ Oil Separator ☐

Accumulator ☐ Oil Pot ☐

Recirculator ☐ Other (Describe) ☐

Intercooler ☐

Transfer Drum ☐

Orientation:

Horizontal ☐

Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol: _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

IIAR Standard 6

International Institute of Ammonia Refrigeration

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Ammonia Refrigeration Safety Inspection Checklist

ID Number: _____

PRESSURE VESSELS

Plant Owner: _____

Address: _____

Contact: _____ Telephone: _____

Inspector: _____ Date: _____

Pressure Vessel

Vessel Location: _____

Vessel Identification Mark/No.: _____

Application

☐ High Pressure Receiver ☐ Intercooler ☐ Accumulator ☐ Oil Pot

☐ Pump Receiver, Low Temp ☐ Pump Receiver, High Temp ☐ Other (Describe) _____

Application Data

Normal Operating Pressure (psig): _____ Temperature (°F): _____

Vessel Size (Diam. x L/H, ft): _____ Normal Liquid Level (ft): _____

Normal Ammonia Inventory (cubic ft): _____

Design Capacity (Specify: Pumpdown, Surge Vol., TR, etc.): _____

Vessel Nameplate Data

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured: _____ Max. Design Working Pressure (psig): _____

Maximum Allowable Pressure (psig): _____ At (°F): _____

Minimum Design Metal Temperature (°F): _____ At (psig): _____

Test Pressure Applied (psig): _____

National Board No.: _____ ASME Certification Stamp? ☐ Yes ☐ No

Safety Relief Valve Data

Type: ☐ Dual ☐ Single ☐ None

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured or Recertified: _____ ASME Seal Unbroken? ☐ Yes ☐ No

Pressure Setting (psig): _____ Capacity (lbs. air/min): _____

Valve Connections: ☐ Inlet _____ ☐ Outlet _____ Pipe Size: ☐ Inlet _____ ☐ Outlet _____

Is Valve Properly Installed and Piped to Termination? ☐ Yes ☐ No

If No, Explain: _____

Liquid Level Indicator

☐ Gauge ☐ Float Actuated ☐ Armored Bullseye ☐ High Pressure Industrial ☐ None

MINIMUM SAFETY CRITERIA FOR A SAFE AMMONIA REFRIGERATION SYSTEM

IIAR Bulletin No. 109

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐ Oil Separator ☐

Accumulator ☐ Oil Pot ☐

Recirculator ☐ Other (Describe) ☐

Intercooler ☐

Transfer Drum ☐

_____

Orientation:

Horizontal ☐

Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol: _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

IIAR Standard 6

International Institute of Ammonia Refrigeration

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Ammonia Refrigeration Safety Inspection Checklist

ID Number: _____

PRESSURE VESSELS

Plant Owner: _____

Address: _____

Contact: _____ Telephone: _____

Inspector: _____ Date: _____

Pressure Vessel

Vessel Location: _____

Vessel Identification Mark/No.: _____

Application

☐ High Pressure Receiver ☐ Intercooler ☐ Accumulator ☐ Oil Pot

☐ Pump Receiver, Low Temp ☐ Pump Receiver, High Temp ☐ Other (Describe) _____

Application Data

Normal Operating Pressure (psig): _____ Temperature (°F): _____

Vessel Size (Diam. x L/H, ft): _____ Normal Liquid Level (ft): _____

Normal Ammonia Inventory (cubic ft): _____

Design Capacity (Specify: Pumpdown, Surge Vol., TR, etc.): _____

Vessel Nameplate Data

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured: _____ Max. Design Working Pressure (psig): _____

Maximum Allowable Pressure (psig): _____ At (°F): _____

Minimum Design Metal Temperature (°F): _____ At (psig): _____

Test Pressure Applied (psig): _____

National Board No.: _____ ASME Certification Stamp? ☐ Yes ☐ No

Safety Relief Valve Data

Type: ☐ Dual ☐ Single ☐ None

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured or Recertified: _____ ASME Seal Unbroken? ☐ Yes ☐ No

Pressure Setting (psig): _____ Capacity (lbs. air/min): _____

Valve Connections: ☐ Inlet _____ ☐ Outlet _____ Pipe Size: ☐ Inlet _____ ☐ Outlet _____

Is Valve Properly Installed and Piped to Termination? ☐ Yes ☐ No

If No, Explain: _____

Vessel Liquid Level Indicator

☐ Gauge ☐ Float Actuated ☐ Armored Bullseye ☐ High Pressure Industrial ☐ None

IIAR Bulletin No. 109

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐
_____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol: _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

IIAR Standard 6

International Institute of Ammonia Refrigeration

iiar

Ammonia Refrigeration Safety Inspection Checklist

ID Number: _____

PRESSURE VESSELS

Plant Owner: _____

Address: _____

Contact: _____ Telephone: _____

Inspector: _____ Date: _____

Pressure Vessel

Vessel Location: _____

Vessel Identification Mark/No.: _____

Application

☐ High Pressure Receiver ☐ Intercooler ☐ Accumulator ☐ Oil Pot

☐ Pump Receiver, Low Temp ☐ Pump Receiver, High Temp ☐ Other (Describe) _____

Application Data

Normal Operating Pressure (psig): _____ Temperature (°F): _____

Vessel Size (Diam. x L/H, ft): _____ Normal Liquid Level (ft): _____

Normal Ammonia Inventory (cubic ft): _____

Design Capacity (Specify: Pumpdown, Surge Vol., TR, etc.): _____

Vessel Nameplate Data

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured: _____ Max. Design Working Pressure (psig): _____

Maximum Allowable Pressure (psig): _____ At (°F): _____

Minimum Design Metal Temperature (°F): _____ At (psig): _____

Test Pressure Applied (psig): _____

National Board No.: _____ ASME Certification Stamp? ☐ Yes ☐ No

Safety Relief Valve Data

Type: ☐ Dual ☐ Single ☐ None

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured or Recertified: _____ ASME Seal Unbroken? ☐ Yes ☐ No

Pressure Setting (psig): _____ Capacity (lbs. air/min): _____

Valve Connections: ☐ Inlet _____ ☐ Outlet _____ Pipe Size: ☐ Inlet _____ ☐ Outlet _____

Is Valve Properly Installed and Piped to Termination? ☐ Yes ☐ No

If No, Explain: _____

Liquid Level Indicator

☐ Gauge ☐ Flat Armored ☐ Armored Bullseye ☐ High Pressure Industrial ☐ None

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Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐
_____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol: _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

IIAR Standard 6

International Institute of Ammonia Refrigeration

iiar

Ammonia Refrigeration Safety Inspection Checklist

ID Number: _____

PRESSURE VESSELS

Plant Owner: _____

Address: _____

Contact: _____ Telephone: _____

Inspector: _____ Date: _____

Pressure Vessel

Vessel Location: _____

Vessel Identification Mark/No.: _____

Application

☐ High Pressure Receiver ☐ Intercooler ☐ Accumulator ☐ Oil Pot

☐ Pump Receiver, Low Temp ☐ Pump Receiver, High Temp ☐ Other (Describe) _____

Application Data

Normal Operating Pressure (psig): _____ Temperature (°F): _____

Vessel Size (Diam. x L/H, ft): _____ Normal Liquid Level (ft): _____

Normal Ammonia Inventory (cubic ft): _____

Design Capacity (Specify: Pumpdown, Surge Vol., TR, etc.): _____

Vessel Nameplate Data

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured: _____ Max. Design Working Pressure (psig): _____

Maximum Allowable Pressure (psig): _____ At (°F): _____

Minimum Design Metal Temperature (°F): _____ At (psig): _____

Test Pressure Applied (psig): _____

National Board No.: _____ ASME Certification Stamp? ☐ Yes ☐ No

Safety Relief Valve Data

Type: ☐ Dual ☐ Single ☐ None

Manufacturer, Name, Model, Serial No.: _____

Year Manufactured or Recertified: _____ ASME Seal Unbroken? ☐ Yes ☐ No

Pressure Setting (psig): _____ Capacity (lbs. air/min): _____

Valve Connections: ☐ Inlet _____ ☐ Outlet _____ Pipe Size: ☐ Inlet _____ ☐ Outlet _____

Is Valve Properly Installed and Piped to Termination? ☐ Yes ☐ No

If No, Explain: _____

Visual Liquid Level Indicator

☐ Tubular ☐ Flat Armored ☐ Armored Bullseye ☐ High Pressure Industrial ☐ None

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐
_____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol: _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other:

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

ID Number: _____

PRESSURE VESSELS

Requirement/Recommendation	Conforms	Recommended Action
a) Nameplate legible and complete?	☐ Yes ☐ No	
b) Operating within limitations:		
1) Maximum pressure?	☐ Yes ☐ No	
2) Minimum temperature?	☐ Yes ☐ No	
c) Vessel ASME stamp legible?	☐ Yes ☐ No	
d) Certification drawings on file?	☐ Yes ☐ No	
e) Manufacturer data report on file?	☐ Yes ☐ No	
f) Does vessel have known alterations/modifications?	☐ Yes ☐ No	
1) If yes, was vessel recertified?	☐ Yes ☐ No	
2) Is revised data report on file?	☐ Yes ☐ No	
g) Relief valve:		
1) Proper type?	☐ Yes ☐ No	
2) Correct setting?	☐ Yes ☐ No	
3) Capacity correct?	☐ Yes ☐ No	
4) Installation correct?	☐ Yes ☐ No	
5) Piping to termination correct?	☐ Yes ☐ No	
6) Relief valve replaced or recertified within last 5 years of service?	☐ Yes ☐ No	
7) ASME seal unbroken?	☐ Yes ☐ No	
h) Tubular linear liquid level indicator (sight glass):		
1) Protected from traffic hazards?	☐ Yes ☐ No	
2) 360° guards?	☐ Yes ☐ No	
3) Internal check shutoff valves?	☐ Yes ☐ No	
i) Vessel properly identified? (Name, pressure level per IIAR Bulletin 114)	☐ Yes ☐ No	
j) Vessel condition (check one):	☐ no visible corrosion ☐ slight visible corro	
k) Insulation condition (check one):	☐ no vapor retarder leaks ☐ slight vapor re ☐ not insulated	
l) Relief valve condition (check one):	☐ clean, no visible corrosion ☐ slight extern	

Are there any other conditions that might negatively affect safe vessel operation? ☐

If yes, describe. _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE RELIEF SYSTEM

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

This checklist applies to all relief valves, relief vent systems, and ancillary components.

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) All pressure relief valves and rupture discs have a legible nameplate?	Yes ☐ No ☐ N/A ☐			
b) All components are suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
d) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
e) Adequate protection against traffic hazards?	Yes ☐ No ☐ N/A ☐			
f) All relief piping has markers per ANSI/IIAR 2 Recognized and Generally Accepted Good Engineering Practices (RAGAGEP)?	Yes ☐ No ☐ N/A ☐			
g) Are relief valves in good condition?	Yes ☐ No ☐ N/A ☐			
h) All pressure relief valve settings match the equipment MAWP?	Yes ☐ No ☐ N/A ☐			
i) All pressure relief valves have required discharge capacity?	Yes ☐ No ☐ N/A ☐			
j) All pressure relief valves have ASME seal intact?	Yes ☐ No ☐ N/A ☐			
k) Single or dual pressure relief valves are installed on all ASME certified pressure vessels, heat exchangers, oil pots, compressors, etc., as required by ANSI/IIAR 2 for the year installed (or latest edition)?	Yes ☐ No ☐ N/A ☐			
l) All atmospheric pressure relief valves are connected above the liquid level?	Yes ☐ No ☐ N/A ☐			
m) All inlet piping to pressure relief valves conforms to ANSI/IIAR 2 for the year installed (or latest edition)?	Yes ☐ No ☐ N/A ☐			
n) All discharge piping to pressure relief valves conforms to ANSI/IIAR 2 for the year installed (or latest edition)?	Yes ☐ No ☐ N/A ☐			

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

ID/Tag No..

Conforms	Safety Status	Recommended Action, or Comments	Target Date
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐			
Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
Yes ☐ No ☐ N/A ☐			

IIAR Bulletin No. 109

IIAR Standard 6

ID Number: _____

PRESSURE VESSELS

Requirement/Recommendation	Conforms	Recommended Action/Comments	Safety Status	Target Date
a) Nameplate legible and complete?	☐ Yes ☐ No			
b) Operating within limitations:				
1) Maximum pressure?	☐ Yes ☐ No			
2) Minimum temperature?	☐ Yes ☐ No			
c) Vessel ASME stamp legible?	☐ Yes ☐ No			
d) Certification drawings on file?	☐ Yes ☐ No			
e) Manufacturer data report on file?	☐ Yes ☐ No			
f) Does vessel have known alterations/modifications?	☐ Yes ☐ No			
1) If yes, was vessel recertified?	☐ Yes ☐ No			
2) Is revised data report on file?	☐ Yes ☐ No			
g) Relief valve:				
1) Proper type?	☐ Yes ☐ No			
2) Correct setting?	☐ Yes ☐ No			
3) Capacity correct?	☐ Yes ☐ No			
4) Installation correct?	☐ Yes ☐ No			
5) Piping to termination correct?	☐ Yes ☐ No			
6) Relief valve replaced or recertified within last 5 years of service?	☐ Yes ☐ No			
7) ASME seal unbroken?	☐ Yes ☐ No			
h) Tubular linear liquid level indicator (sight glass):				
1) Protected from traffic hazards?	☐ Yes ☐ No			
2) 360° guards?	☐ Yes ☐ No			
3) Internal check shutoff valves?	☐ Yes ☐ No			
i) Vessel properly identified? (Name, pressure level per IIAR Bulletin 114)	☐ Yes ☐ No			

j) Vessel condition (check one): ☐ no visible corrosion ☐ slight visible corrosion ☐ extensive corrosion ☐ unknown (insulated)

k) Insulation condition (check one): ☐ no vapor retarder leaks ☐ slight vapor retarder leaks ☐ extensive vapor retarder leaks ☐ not insulated

l) Relief valve condition (check one): ☐ clean, no visible corrosion ☐ slight external corrosion ☐ extensive corrosion

Are there any other conditions that might negatively affect safe vessel operation? ☐ Yes ☐ No

If yes, describe: _____

IIAR Bulletin No. 109

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

IIAR Standard 6

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐ _____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:


MAIN VALVE
HPL AMMONIA
HI PRESS RECEIVER
CAUTION AMMONIA
AMMONIA

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐ _____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: UNITED REFRIGERATION ID/Tag No.: HPR-1

Facility Owner: UNITED REFRIGERATION INC.

Address: 256 E. BUTTONWILLOW, REEDLEY, CA 93631

Contact: JAMES DAVIS Phone: 559.805.1238

Inspector: PETER THOMAS, P.E. Date: 8/24/22

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐ _____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Application:

High Pressure Receiver.....	☐	Oil Separator	☐	Horizontal	☐
Accumulator.....	☐	Oil Pot	☐	Vertical	☐
Recirculator.....	☐	Other (Describe).....	☐		
Intercooler.....	☐				
Transfer Drum.....	☐				

Application:

High Pressure Receiver.....	☑	Oil Separator	☐	Horizontal	☑
Accumulator.....	☐	Oil Pot	☐	Vertical	☐
Recirculator.....	☐	Other (Describe).....	☐		
Intercooler.....	☐				
Transfer Drum.....	☐				

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐ Oil Separator ☐

Accumulator ☐ Oil Pot ☐

Recirculator ☐ Other (Describe) ☐

Intercooler ☐ _____

Transfer Drum ☐

Orientation:

Horizontal ☐

Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated ☐			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol: _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Equipment Data and Limits:

Manufacturer: GLOBE ICE MACHINE CO Model #: N/A Serial #: 22731

ASME Cert. Stamp? ☑ Yes, ☐ No Year Mfg.: 1986 National Board #: NONE

MAWP (psig): 250 @ °F 200 MDMT (°F): -20 @ psig 250

Operating (psig /°F): 165.9 PSI / 90°F Normal Liquid Level: 12"

Total Internal Vol: 391.9 Cu. Ft. Normal Ammonia Inventory (lbs.): 2330.4

Material: ☑ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☑ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Equipment Data and Limits:

Manufacturer: GLOBE ICE MACHINE CO Model #: N/A Serial #: 22731

ASME Cert. Stamp? ☑ Yes, ☐ No Year Mfg.: 1986 National Board #: NONE

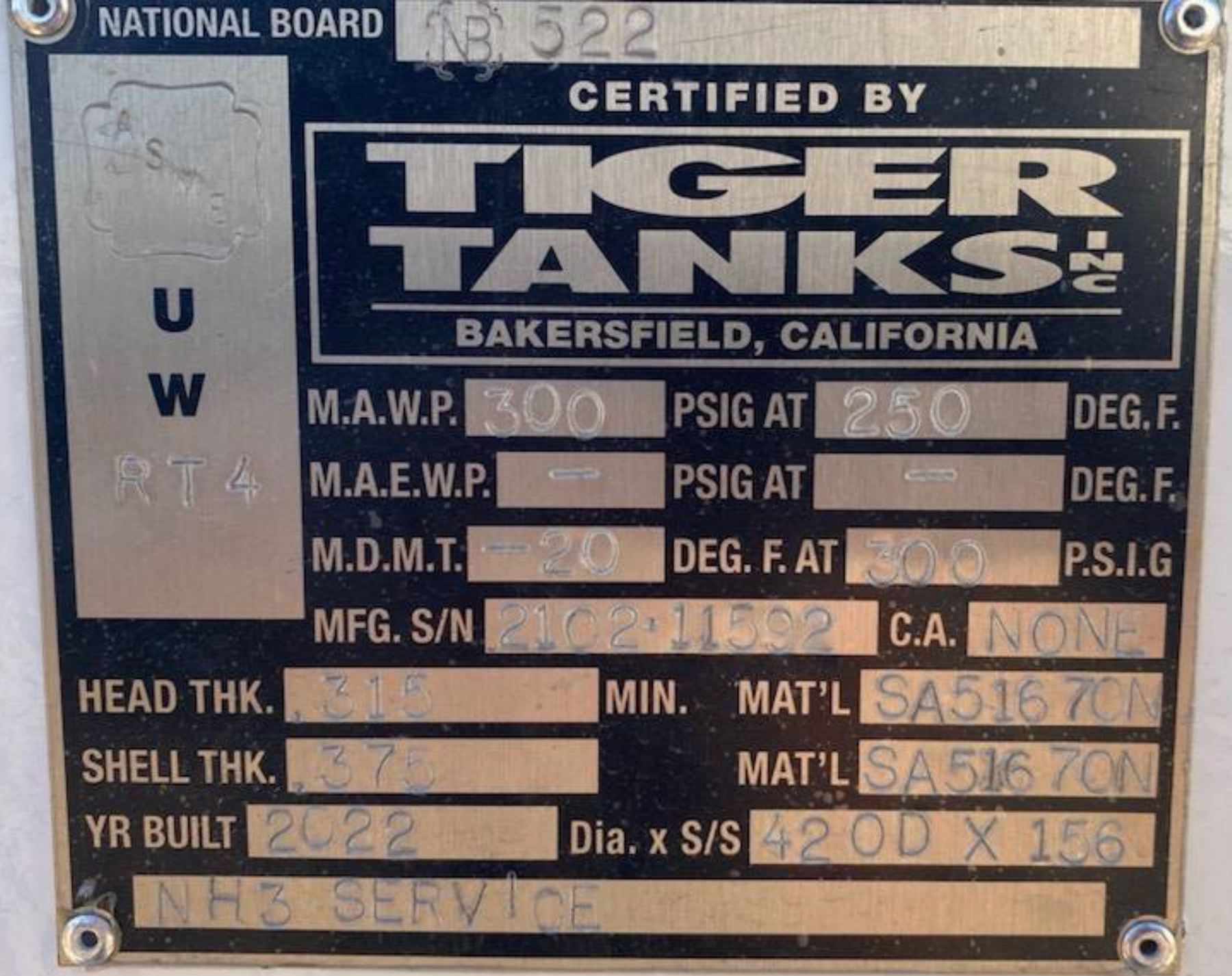
MAWP (psig): 250 @ °F 200 MDMT (°F): -20 @ psig 250

Operating (psig /°F): 165.9 PSI 90°F Normal Liquid Level: 12"

Total Internal Vol: 391.9 Cu. Ft. Normal Ammonia Inventory (lbs.): 2330.4

Material: ☑ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other:

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☑ Flat Armored,
☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level


NATIONAL BOARD NB 522

CERTIFIED BY

TIGER TANKS INC

BAKERSFIELD, CALIFORNIA

ASME

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W

RT 4

M.A.W.P.	300	PSIG AT	250	DEG. F.	
M.A.E.W.P.	—	PSIG AT	—	DEG. F.	
M.D.M.T.	-20	DEG. F. AT	300	P.S.I.G	
MFG. S/N	2102-11592	C.A.	NONE		
HEAD THK.	.315	MIN.	MAT'L	SA516 70N	
SHELL THK.	.375		MAT'L	SA516 70N	
YR BUILT	2022	Dia. x S/S	42 OD X 156		

NH3 SERVICE

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

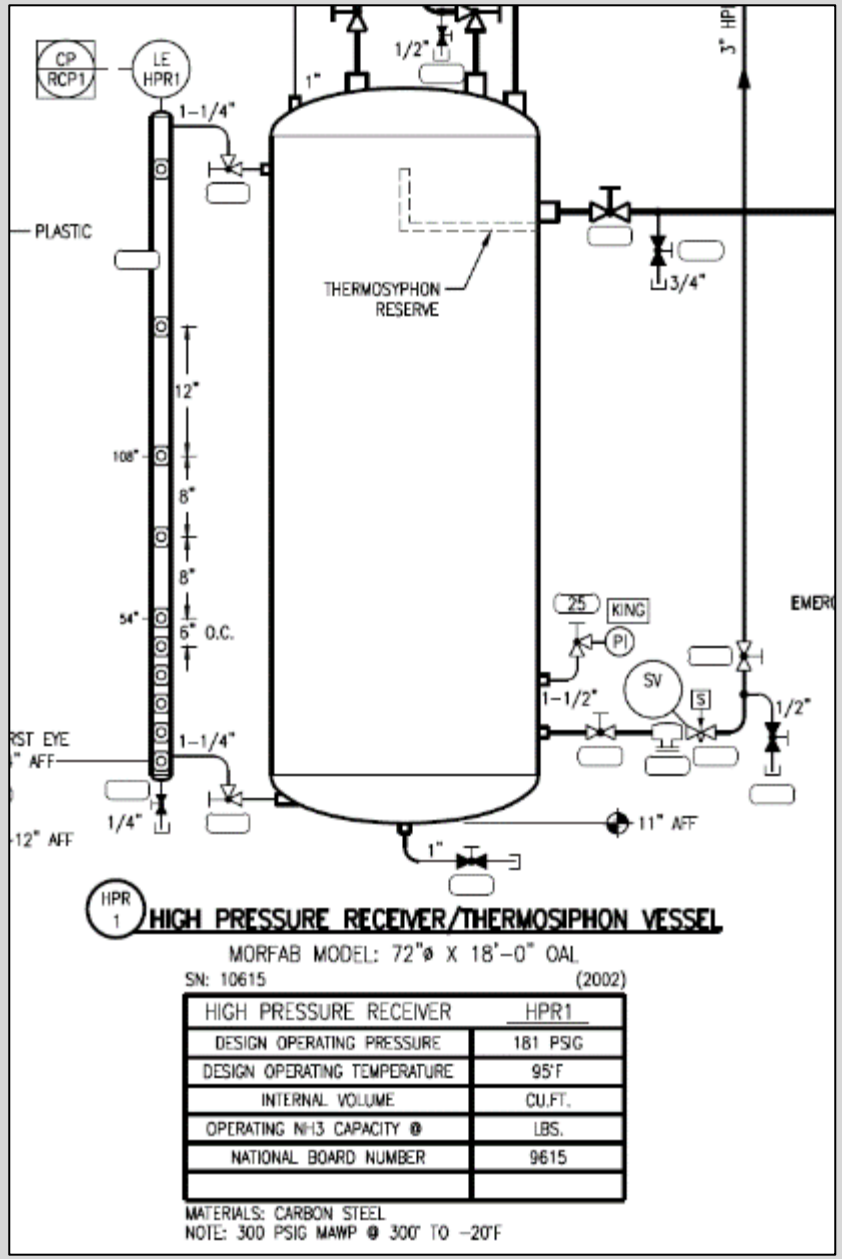
MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol: _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level



Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐ _____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Relief Valve Data:

Manufacturer: HANSEN Model: H5602 Year Installed: SEPT 2019

Assembly: ☑ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☑ External

Pressure Setting (psig): 250 Capacity (lbs. air per min/SCFM): 57.6 #/min

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐ _____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

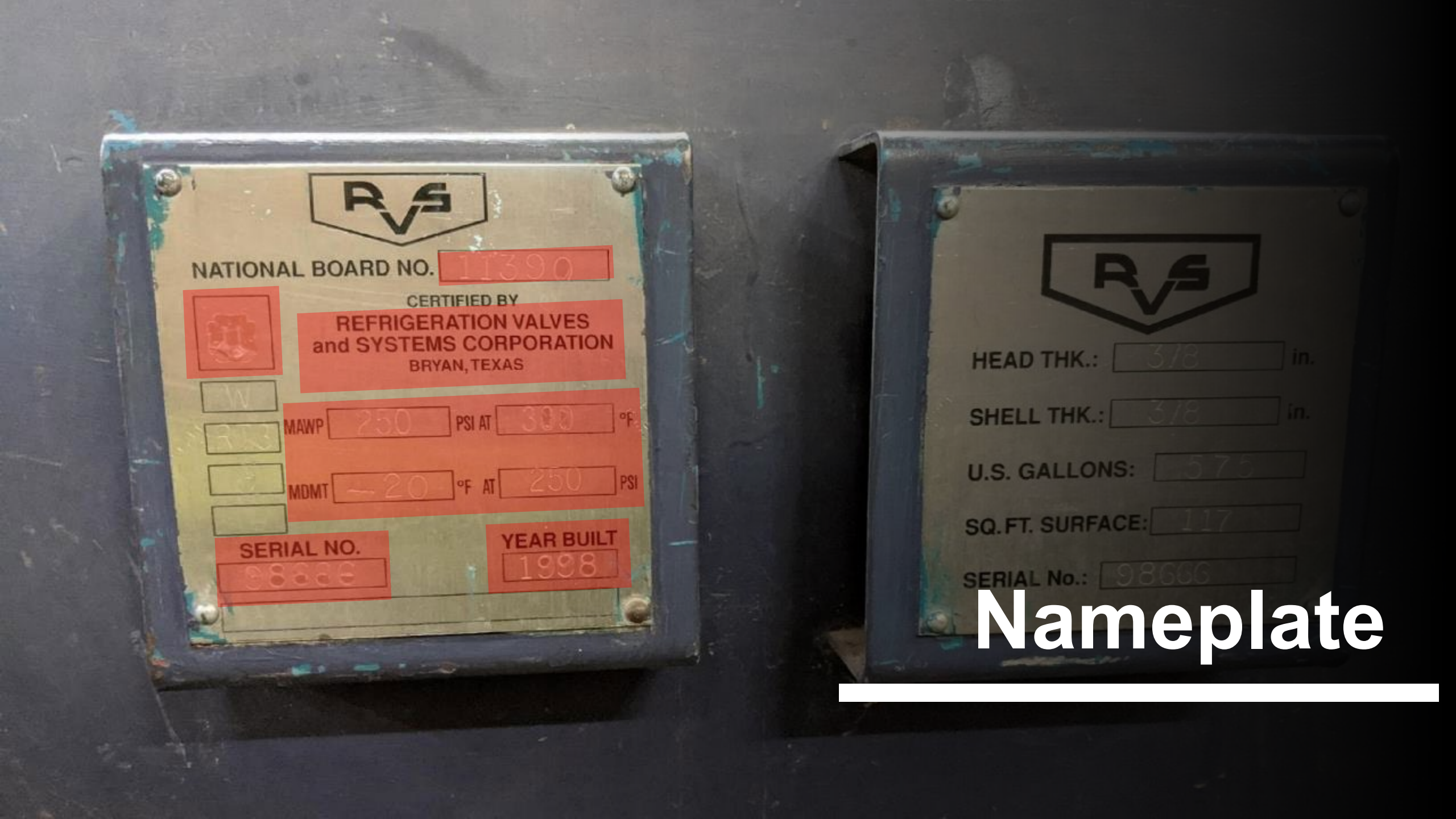
Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐

Inspection Items	Conforms
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☑ No ☐ N/A ☐


RVS
NATIONAL BOARD NO. 11390
CERTIFIED BY
REFRIGERATION VALVES
and SYSTEMS CORPORATION
BRYAN, TEXAS
MAWP 250 PSI AT 300 °F
MDMT -20 °F AT 250 PSI
SERIAL NO. 98666
YEAR BUILT 1998
RVS
HEAD THK.: 3/8 in.
SHELL THK.: 3/8 in.
U.S. GALLONS: 575
SQ.FT. SURFACE: 117
SERIAL No.: 98666

Nameplate


GLOBE ICE MACHINE CO.

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐
_____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐
c) Operating within limits?	Yes ☐ No ☐ N/A ☐

Inspection Items	Conforms
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐
c) Operating within limits?	Yes ☐ No ☐ N/A ☐

b) Suitable for ammonia?	Yes ☑ No ☐ N/A ☐		
c) Operating within limits?	Yes ☑ No ☐ N/A ☐		14" @ 150 psi


FIRST AID
EMERGENCY
SHOWER &
EYE WASH


3
3
0
RV

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐
_____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐

d) Fasteners tight, adequately anchored, and supported?	Yes ☑ No ☐ N/A ☐

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐
_____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐

e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☑ N/A ☐		CANNOT REACH KING VALVE FROM THE GROUND

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐ _____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐

f) Free of excessive ice buildup?	Yes ☑ No ☐ N/A ☐		HIGH-SIDE OF SYSTEM

Inspection Items	Conforms
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐


-45° RECIRCULATOR
-45°
-45° F RECIRCULATOR PACKAGE


XFR
XFR


ESSEX
HV
AMMONIA


USE NO HOOK
KEEP DRY


FLIR
FLIR

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐
_____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐
g) Free of abnormal sounds/vibration?	Yes ☑ No ☐ N/A ☐
h) Free of ammonia leaks?	Yes ☑ No ☐ N/A ☐

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐
_____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐
i) All piping has markers per ANSI/IIAR 2?	Yes ☑ No ☐ N/A ☐

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐ Oil Separator ☐

Accumulator ☐ Oil Pot ☐

Recirculator ☐ Other (Describe) ☐

Intercooler ☐ _____

Transfer Drum ☐

Orientation:

Horizontal ☐

Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

_____

_____

Inspection Items	Conforms
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐

j) Are valves in good condition?	Yes ☑ No ☐ N/A ☐		
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☑ N/A ☐		KING VALVE HAS COBWEBS AROUND HANDWHEEL

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐ _____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☑ No ☐ N/A ☐

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐
_____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐

m) Certification drawings on file?	Yes ☐ No ☑ N/A ☐		NO NB, DATA REPORT, OR DRAWING
n) Manufacturer data report on file?	Yes ☐ No ☑ N/A ☐		" " " "

FORM U-1 MANUFACTURER'S DATA REPORT FOR PRESSURE VESSELS

As Required by the Provisions of the ASME Code Rules, Section VIII, Division 1 P.O.# 1881

1. Manufactured and certified by REFRIGERATION VALVES & SYSTEMS, 1520 CROSSWIND DR., BRYAN, TX 77803
(Name and address of manufacturer)

2. Manufactured for _____
(Name and address of purchaser)

3. Location of installation CAMBRIA WINERY, 5475 CHARDONNAY LANE, SANTA MARIA, CA. 95453
(Name and address)

4. Type HORIZ. RECEIVER (Horiz. or vert., tank) | 91726 (Mfg's serial No.) | --- (CRN) | H0394 (Drawing) | 4072 (Nat'l. Bd. No.) | 1991 (Year built)

5. The chemical and physical properties of all parts meet the requirements of material specifications of the ASME Boiler and Pressure Vessel Code. The design, construction, and workmanship conform to ASME Rules, Section VIII, Division 1 1989 (Year)

REV.1

A90 (Addenda date) | ------- (Code Case No.) | ---------- (Special service per UG-120(d))

Items 6-11 incl. to be completed for single wall vessels, jackets of jacketed vessels, and inner chambers of heat exchangers

6. Shell: SA516-70 (Matl. (Spec. No., Grade)) | 3/4 (Nom. Thk. (in.)) | 0 (Corr. Allow. (in.)) | 72"O.D. (Diam. I.D. (ft & in.)) | 20'0" O.A. (Length (Overall) (ft & in.))

7. Seams: DBW (Long. (Dbl., Sngl.)) | SPOT(1) (R.T. (Spot or Full)) | 85 (Eff. (%)) | N/A (H.T. Temp. (°F))

N/A (Time) | SBW (Girth (Dbl., Sngl.)) | SPOT(2) (R.T. (Spot, Partial, or Full)) | 2 (No. of Courses)

8. Heads: (a) Matl. 3/4" NOM. SA516-70 (Spec. No., Grade) (b) Matl. SAME (Spec. No., Grade)

	Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	END	.608	0	---	---	2:1	---	---	---	CONCAVE
(b)	END	.608	0	---	---	2:1	---	---	---	CONCAVE

If removable, bolts used (describe other fastenings) --- (Matl., Spec. No., Gr., Size, No.)

9. Type of Jacket --- Proof Test ---

10. Jacket Closure --- (Describe as ogee & weld, bar, etc.) If bar, give dimensions --- If bolted, describe or sketch.

11. MAWP 300 psi at max. temp. +300 °F. Min. design metal temp. -20 °F at 300 psi.
Hydro., pneu., or comb. test press. 450 psi.

Items 12 and 13 to be completed for tube sections

12. Tubesheets: --- (Stationary Matl. (Spec. No., Gr.)) | --- (Diam. (in.) (Subject to pressure)) | --- (Nom. Thk. (in.)) | --- (Corr. Allow. (in.)) | --- (Attach. (Welded, Bolted))

--- (Floating Matl. (Spec. No., Gr.)) | --- (Diam. (in.)) | --- (Nom. Thk. (in.)) | --- (Corr. Allow. (in.)) | --- (Attach.)

13. Tubes: --- (Matl. (Spec. No., Gr.)) | --- (O.D. (in.)) | --- (Nom. Thk. (in. or Gauge)) | --- (Number) | --- (Type (Straight or "U"))

Items 14-17 incl. to be completed for inner chambers of jacketed vessels or channels of heat exchangers

14. Shell: --- (Matl. (Spec. No., Grade)) | --- (Nom. Thk. (in.)) | --- (Corr. Allow. (in.)) | --- (Diam I.D. (ft & in.)) | --- (Length (Overall) (ft & in.))

15. Seams: --- (Long. (Dbl., Sngl.)) | --- (R.T. (Spot or Full)) | --- (Eff. (%)) | --- (H.T. Temp. (°F))

--- (Time) | --- (Girth (Dbl., Sngl.)) | --- (R.T. (Spot, Partial, or Full)) | --- (No. of Courses)

16. Heads: (a) Matl. --- (Spec. No., Grade) (b) Matl. --- (Spec. No., Grade)

	Location (Top, Bottom, Ends)	Minimum Thickness	Corrosion Allowance	Crown Radius	Knuckle Radius	Elliptical Ratio	Conical Apex Angle	Hemispherical Radius	Flat Diameter	Side to Pressure (Convex or Concave)
(a)	---	---	---	---	---	---	---	---	---	---
(b)	---	---	---	---	---	---	---	---	---	---

If removable, bolts used (describe other fastenings) --- (Matl., Spec. No., Gr., Size, No.)

17. MAWP --- psi at max. temp. --- °F. Min. design metal temp. --- °F at --- psi.
Hydro., pneu., or comb. test press. --- psi.

(12/87) This Form (E00108) may be obtained from the ASME Order Dept., 22 Law Drive, Box 2300, Fairfield, NJ 07007-2300

Form U-1 (Back)

18. Nozzles, Inspection and Safety Valve Openings:

Purpose (Inlet, Outlet, Drain, etc.)	No.	Diam. or Size	Type	Matl.	Nom. Thk.	Reinforcement Matl.	How Attached	Location
SUMP	1	12(3)	PIPE	SA106B	3/8	SA516-70	WELDED	SHELL
IN	1	4	PIPE	SA106B	S/40	SA516-70	WELDED	SHELL
OUT	1	2	PIPE	SA106B	S/40	INHERENT	WELDED	SHELL
COLUMN	2	1 1/4	PIPE	SA106B	S/80	INHERENT	WELDED	SHELL
RELIEF	1	3/4	PIPE	SA106B	S/80	INHERENT	WELDED	SHELL
DRAIN	1	3/4	PIPE	SA106B	S/80	INHERENT	WELDED	12" NOZZ.
LIQ.OUT	1	1 1/4	CPLG	SA105	3000#	INHERENT	WELDED	12" NOZZ.
DRAIN	1	3/4	CPLG	SA105	3000#	INHERENT	WELDED	12" HEAD

19. Supports: Skirt NO (Yes or no) Lugs 0 (No.) Legs 0 (No.) Other 2 SADDLES (Describe) Attached WELDED TO SHELL (Where and how)

20. Remarks: Manufacturer's Partial Data Reports properly identified and signed by Commissioned Inspectors have been furnished for the following items of the report: N/A (Name of part, item number, mfg'r's name and identifying stamp)

EXEMPT FROM IMPACT TESTING UG-20-f. (1) UW-11-b. (2) UW-11-a-5-b. (3) INCLUDES 5/16" NOM. SA516-70 ASME SMLS 2:1 ELLIP. HEAD. FOR NON-LETHAL, NON-CORROSIVE SERVICE. PRESSURE RELIEF DEVICE SUPPLIED BY OTHERS.

CERTIFICATE OF SHOP COMPLIANCE

We certify that the statements made in this report are correct and that all details of design, material, construction, and workmanship of this vessel conform to the ASME Code for Pressure Vessels, Section VIII, Division 1.

"U" Certificate of Authorization No. 18912 expires OCTOBER 10 19 91

Date 9-12-91 Co. name REFRIGERATION VALVES & SYSTEMS (Manufacturer) Signed [signature] (Representative)

CERTIFICATE OF SHOP INSPECTION

Vessel constructed by REFRIGERATION VALVES & SYSTEMS at 1520 CROSSWIND DR., BRYAN, TX

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of TEXAS and employed by COMMERCIAL UNION INSURANCE COMPANY of BOSTON, MA have inspected the pressure vessel described in this Manufacturer's Data Report on 8-28, 19 91, and state that, to the best of my knowledge and belief, the Manufacturer has constructed this pressure vessel in accordance with ASME Code, Section VIII, Division 1. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in the Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this Inspection.

Date 9-12-1991 Signed [signature] (Authorized Inspector) Commissions NB10923 TX 1388 (Nat'l Board, State, Province and No.)

CERTIFICATE OF FIELD ASSEMBLY COMPLIANCE

We certify that the field assembly construction of all parts of this vessel conforms with the requirements of Section VIII, Division 1 of the ASME Boiler and Pressure Vessel Code.

"U" Certificate of Authorization No. _____ expires _____, 19 _____.

Date _____ Co. name _____ (Assembler that certified and constructed field assembly) Signed _____ (By Representative)

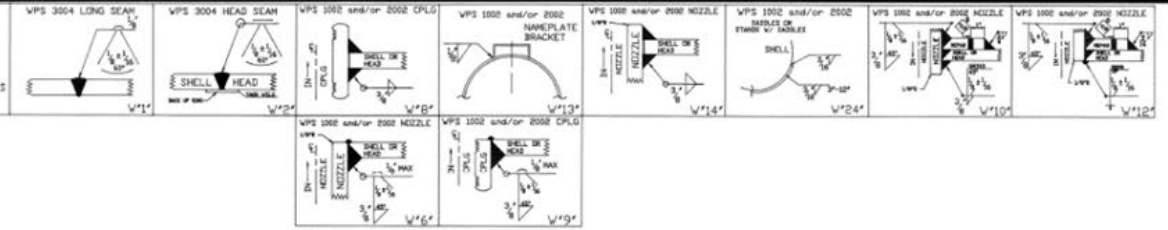
CERTIFICATE OF FIELD ASSEMBLY INSPECTION

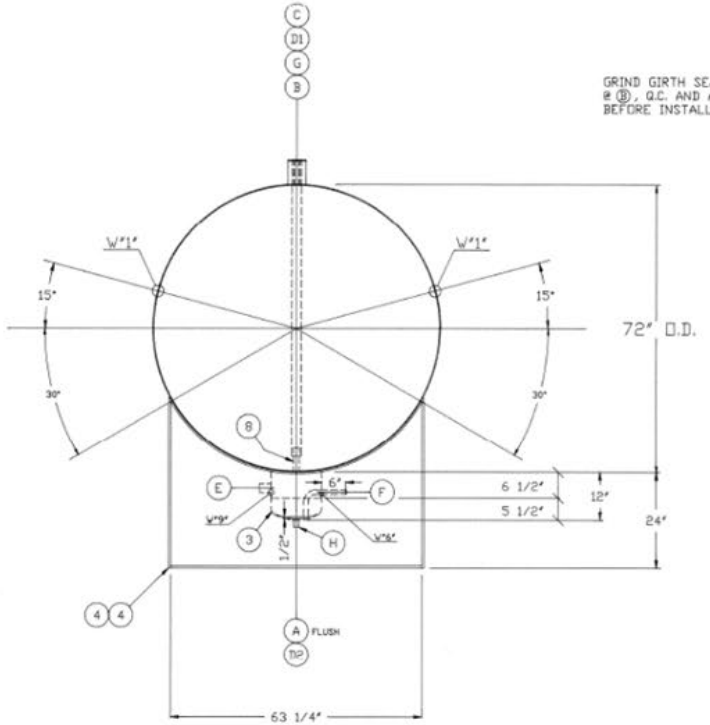
I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and/or the State or Province of _____ and employed by _____ of _____ have compared the statements in this Manufacturer's Data Report with the described pressure vessel and state that parts referred to as data items _____, not included in the certificate of shop inspection, have been inspected by me and that, to the best of my knowledge and belief, the Manufacturer has constructed and assembled this pressure vessel in accordance with ASME Code, Section VIII, Division 1. The described vessel was inspected and subjected to a hydrostatic test of _____ psi. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the pressure vessel described in this Manufacturer's Data Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this Inspection.

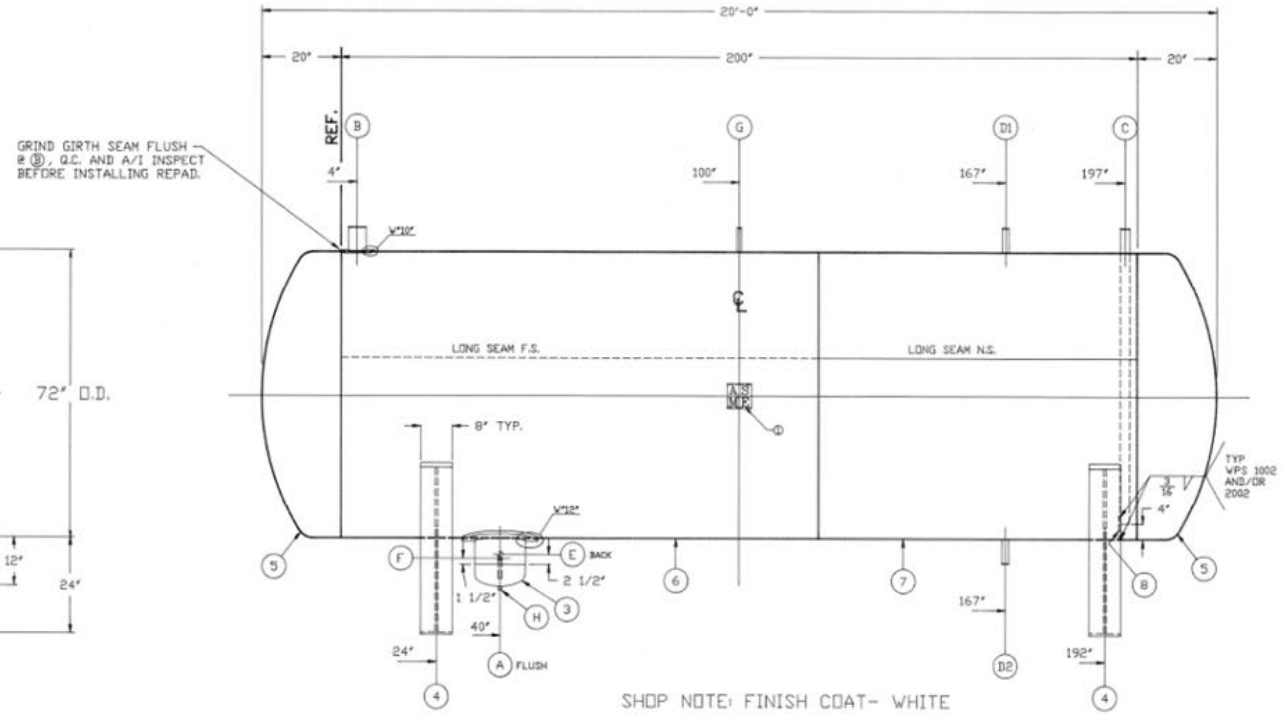
Date _____ Signed _____ (Authorized Inspector) Commissions _____ (Nat'l Board (incl. endorsements), State, Prov., and No.)

GENERAL NOTES

1) ALL PIPE NOZZLES EXTEND 6" OUTSIDE SHELL UNLESS INDICATED OTHERWISE
2) W "2" IS TYPICAL FOR ALL HEAD SEAM WELDS
3) W "3" IS TYPICAL FOR ALL PIPE TO PIPE AND PIPE TO BUTT WELD FITTING WELDS
4) W "14" IS TYPICAL FOR ALL PIPE NOZZLES UNLESS INDICATED OTHERWISE
5) W "8" IS TYPICAL FOR ALL CPLG'S UNLESS INDICATED OTHERWISE
6) SA516-70 MAY BE SUBSTITUTED FOR SA36
7) ROUND AND LONG SEAM ALIGNMENT TOLERANCE IS 1/4t UP TO 1/2" THK SHELLS AND 1/8" UP TO 2" THK SHELLS
8) ALL PIPE SPECIFIED AS SA53B IS SEAMLESS UNLESS NOTED AS ERW
9) SA106B PIPE MAY BE SUBSTITUTED FOR SA53B SEAMLESS AND VICE VERSA







CUSTOMER	IRAPP
P.O. NO.	1881

TEST WITH WATER

ASME DATA PLATE

Refrigeration Valves and Systems Corp.
NATIONAL BOARD NO.
CERTIFIED BY REFRIGERATION VALVES AND SYSTEMS CORPORATION
BRYAN, TEXAS
W
RT4
MAWP 300 PSI AT 300 °F
MDMT -20 °F AT 300 PSI
SERIAL NO. 91726
YEAR BUILT 1991

BILL OF MATERIALS

NOZZLE SCHEDULE

ITEM	QTY	SIZE	TYPE	RATING	MATERIAL	SERVICE	LGTH	REINFORCEMENT
Q								
P								
O								
N								
M								
L								
K								
J								
H	1	3/4"	CPLG	3000#	SA105	OIL DRAIN		
G	1	3/4"	PIPE	S/80	SA106B	RELIEF	7"	T.O.E.
F	1	3/4"	PIPE	S/80	SA106B	OIL DRAIN	12 1/2"	T.O.E.
E	1	1 1/4"	CPLG	3000#	SA105	LIQUID OUT		
D	2	1 1/4"	PIPE	S/80	SA106B	LEVEL COLUMN	7"	
C	1	8"	PIPE	S/40	SA106B	OUTLET	7"	
B	1	4"	PIPE	S/40	SA106B	INLET	7"	R 3/8" x 8 1/8" SA516-70
A	1	12 3/4"	PIPE	S/STD	SA106B	SUMP	8 1/2"	R 3/8" x 19" SA516-70

SHELL, HEADS, INTERNALS, SUPPORTS

ITEM	QTY	DESCRIPTION	MATERIAL
16			
15			
14			
13			
12			
11			
10			
9			
8	1	PLATE 5/16" THK x 1 1/2" WIDE x 6" DEEP	SA36
7	1	72" O.D. x 3/4" THK ROLLED SHELL x 80" LNG	SA516-70
6	1	72" O.D. x 3/4" THK ROLLED SHELL x 120" LNG	SA516-70
5	2	72" O.D. x 3/4" THK 2:1 ELLIP HEADS	SA516-70
4	1	SET STD 72" O.D. STANDS 84 x 24" HIGH	SA36
3	1	12 3/4" O.D. x 5/16" THK 2:1 ELLIP HEAD	SA516-70
2	2	FB 1/8" THK x 1 1/2" WIDE BACKING STRIP	SA36
1	1	STD ASME DATA BRKT x 2" SCDP	SA36

VESSEL DESIGN SPECIFICATIONS

DESIGN & CONSTRUCTION IN ACCORDANCE WITH SECTION VIII DIV.1 ASME CODE FOR PRESSURE VESSELS 1989 EDITION & ADDENDA TO A90

SHELL	SA516-70	3/4"	(720" MIN.)	HEADS	SA516-70	3/4"	(608" MIN.)
RT	SEAM SPOT / HEADS SPOT			NB		CA	0
M.A.W.P.	300 PSI			HT	-20 °F	TO	300 °F
HYDROTEST	450 PSI			PAINT	SHOP PRIMER / TOP COAT WHITE	EMPTY WEIGHT	14,280 Lbs

REVISIONS

NO	DATE	BY	DESCRIPTION
1	8-23-91	WMH	MOVED STAYBOLTS
2			
3			
4			
5			
6			

TITLE 72" O.D. x 20'-0" HORIZ 300# ASME H.P. RECEIVER

CAD

Refrigeration Valves and Systems Corp. PRECISION
1520 CROSSWIND DRIVE BRYAN, TEXAS 77803

DRAWN BY WMH | SERIAL NO. 91726 | SCALE 3/4"=1'-0"
CHECKED BY 8-23-91 | TO SHOP 8-23-91 | DATE 7-30-1991
DRAWING NO. H0394 Rev 1

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐ _____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐

o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐		?UNKNOWN. NEED DATA REPORT	
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			


NAT'L BD.
CERTIFIED BY:
RANSOME
MANUFACTURING
FT. BSNO, CALIFORNIA
T2
PSIG AT
°F
PSIG
S/N
YEAR BUILT
CROSS VOLUME, US GALLONS
I.D. IN.
O/L, IN.
OUTSIDE SURF. AREA, SQ. FT.
HEAD, IN.
MAT'L SA516-70
SHELL, IN.
MAT'L SA516-70
X-RAY SHL.
FULL
ONLY


REPAIRED BY
RANSOME
MANUFACTURING
MAWP 250 PSI AT 300 F
NB-4697 DATE 1-13-15

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐ Oil Separator ☐

Accumulator ☐ Oil Pot ☐

Recirculator ☐ Other (Describe) ☐

Intercooler ☐ _____

Transfer Drum ☐

Orientation:

Horizontal ☐

Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☑ No ☐ N/A ☐


KING
VALVE
ANHYDROUS AMMONIA

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐ Oil Separator ☐

Accumulator ☐ Oil Pot ☐

Recirculator ☐ Other (Describe) ☐

Intercooler ☐ _____

Transfer Drum ☐

Orientation:

Horizontal ☐

Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ ☐ Not insulated

r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☑ Slight ☐ Extensive ☐ ☑ Not insulated

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐
Accumulator ☐
Recirculator ☐
Intercooler ☐
Transfer Drum ☐
Oil Separator ☐
Oil Pot ☐
Other (Describe) ☐ _____

Orientation:

Horizontal ☐
Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

Inspection Items	Conforms
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐

s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☑ N/A ☐ Slight ☑ Extensive ☐		SEVERAL SCRATCHES HAVE REMOVED PAINT


FS03
CH01


G.R.L. GAGE CO.
269-465-5750
1/8" POR
1/16" SCALE

ANSI/IIAR 6-2019 TABLE A.11.1.1.1.3.1

Table A.11.1.1.3.1
Piping Sizes, Schedules, and Thicknesses (Carbon Steel Only)

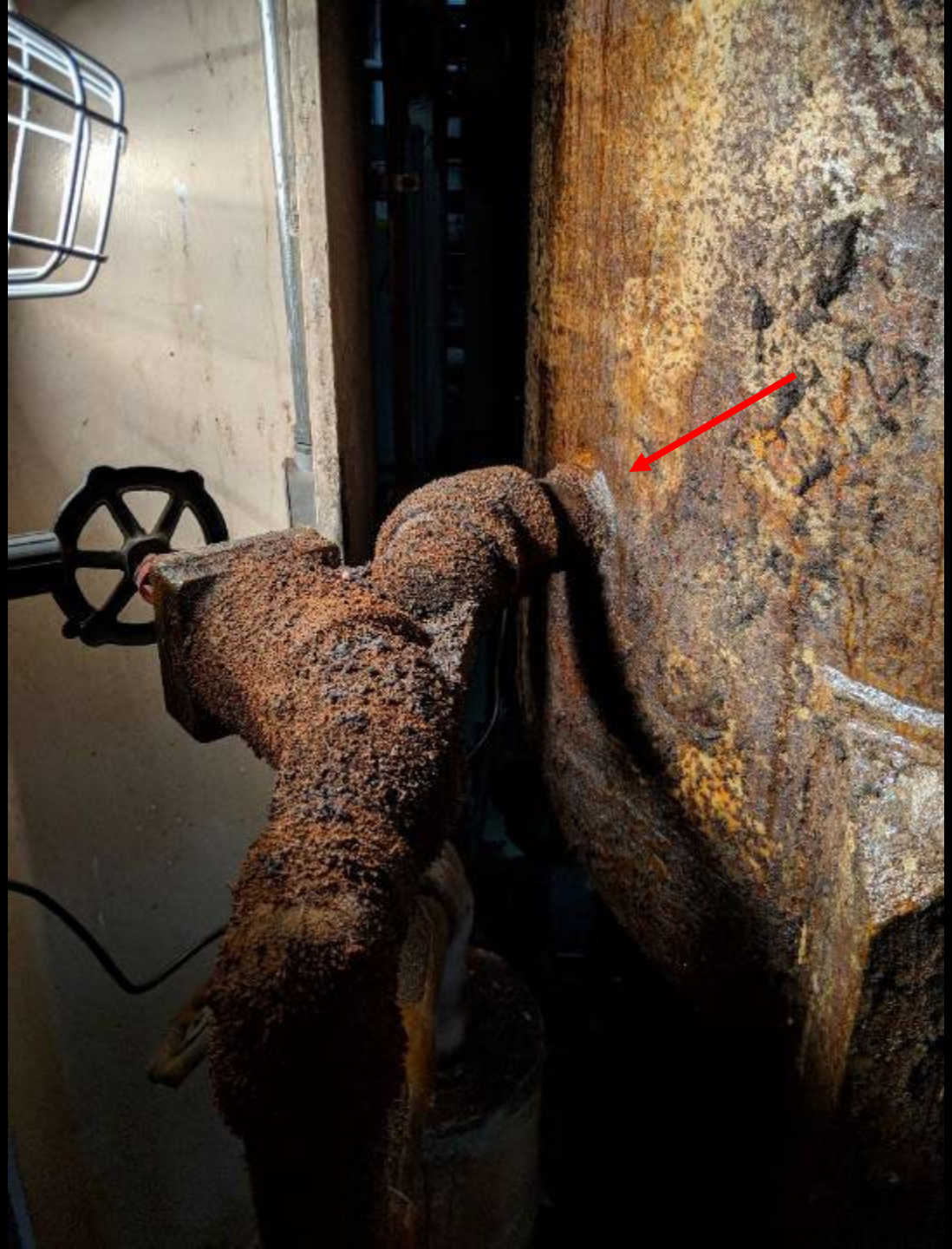
Pipe Size (in.) (OD)	Pipe Schedule	Nominal Thickness (in.)	*Mill Tolerance Thickness (in.)	Alert Thickness (in.)	Remaining Percentage from Nominal	Replacement Thickness (in.)	Remaining Percentage from Nominal	**Pressure T_{min} (in.)
0.5 (0.840)	80	0.147	0.129	0.080	54%	0.044	30%	0.011
0.75 (1.050)	80	0.154	0.135	0.080	52%	0.046	30%	0.013
1 (1.315)	80	0.179	0.157	0.080	45%	0.054	30%	0.017
1.25 (1.660)	80	0.191	0.167	0.080	42%	0.057	30%	0.021
1.5 (1.900)	80	0.200	0.175	0.090	45%	0.060	30%	0.024
2 (2.375)	80	0.218	0.191	0.100	46%	0.065	30%	0.030
2 (2.375)	40	0.154	0.135	0.100	65%	0.046	30%	0.030
2.5 (2.875)	40	0.203	0.178	0.100	49%	0.061	30%	0.036
3 (3.500)	40	0.216	0.189	0.110	51%	0.065	30%	0.044
3.5 (4.000)	40	0.226	0.198	0.120	53%	0.068	30%	0.051
4 (4.500)	40	0.237	0.207	0.120	51%	0.071	30%	0.057
5 (5.563)	40	0.258	0.226	0.120	47%	0.081	31%	0.071
6 (6.625)	40	0.280	0.245	0.130	46%	0.094	34%	0.084
8 (8.625)	40	0.322	0.282	0.131	41%	0.119	37%	0.109
10 (10.750)	40	0.365	0.319	0.164	45%	0.146	40%	0.136
12 (12.750)	ST	0.375	0.328	0.194	52%	0.172	46%	0.162
14 (14.000)	ST	0.375	0.328	0.213	57%	0.188	50%	0.178
16 (16.000)	ST	0.375	0.328	0.244	65%	0.213	57%	0.203
18 (18.000)	ST	0.375	0.328	0.274	73%	0.238	64%	0.228
20 (20.000)	ST	0.375	0.328	0.305	81%	0.264	70%	0.254
24 (24.000)	ST	0.375	0.328	0.326	87%	0.315	84%	0.305

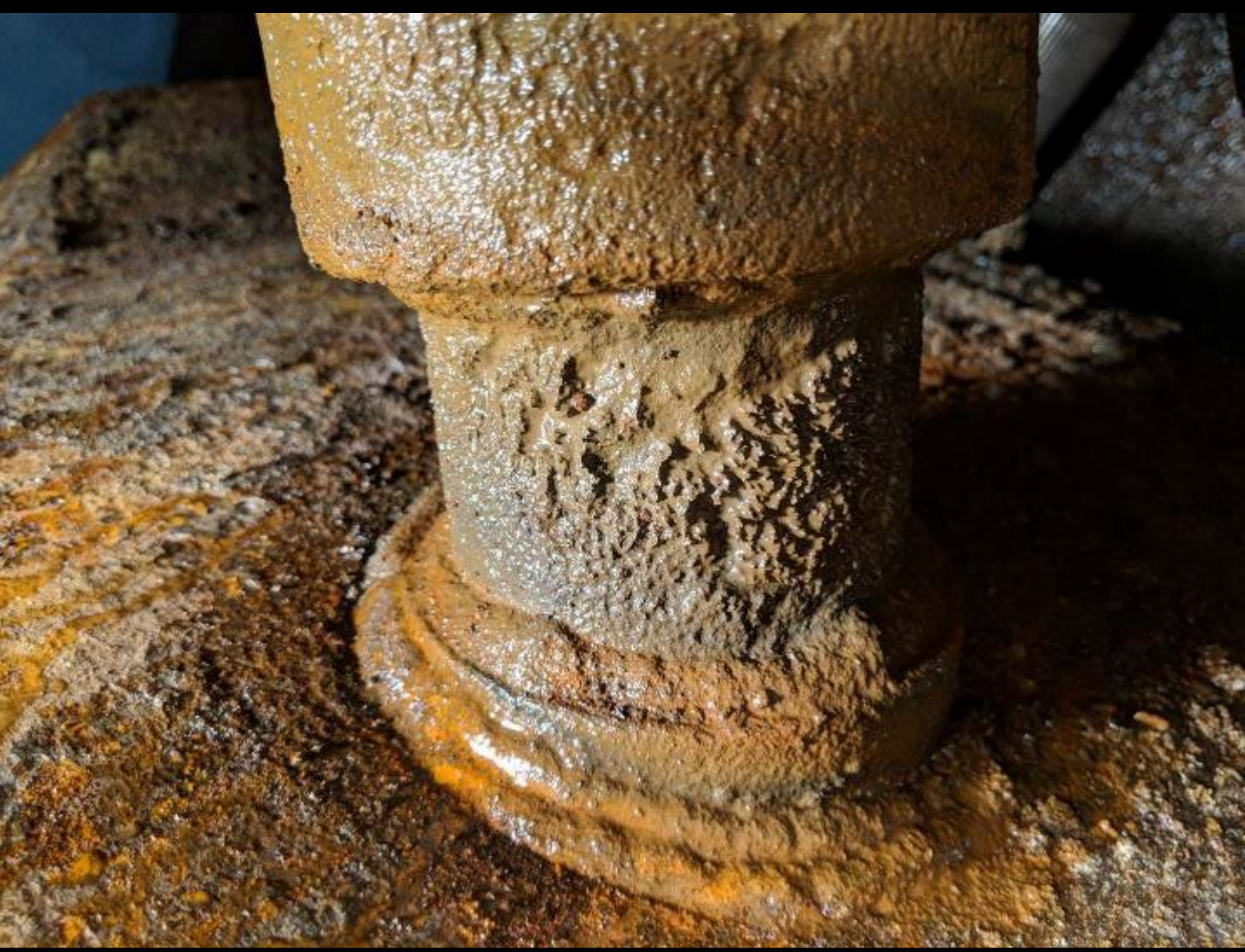
Adapted from *Principles and Practices of Mechanical Integrity Guidebook for Industrial Refrigeration Systems.*
*Mill Tolerance Thickness is 12.5% less than Nominal Thickness in accordance with ASME B31.5 and ASTM specifications.
**Pressure T_{min} is in accordance with ASME B31.5 (300 psi, A53 Gr A ERW, temperatures at or above -20 °F).


CONTROL
PRESSURE
RECIEVER


DUPLICATE - TAG
USS
Trademark
RT 4
W
250
650
SERIAL NO. 134158
79
1/2"
.547" MIN.
SURFACE AREA 237
1961
SERVICE DUPLICATE TAG
NEVINS CO
P.O. 7611


KING
VALVE
Oil-Free Air





Nominal Thickness of a 3” Sch 80 Pipe is 0.300

60% Material Loss

Table A.11.1.1.3.1
Piping Sizes, Schedules, and Thicknesses (Carbon Steel Only)

Pipe Size (in.) (OD)	Pipe Schedule	Nominal Thickness (in.)	*Mill Tolerance Thickness (in.)	Alert Thickness (in.)	Remaining Percentage from Nominal	Replacement Thickness (in.)	Remaining Percentage from Nominal	**Pressure T_{min} (in.)
0.5 (0.840)	80	0.147	0.129	0.080	54%	0.044	30%	0.011
0.75 (1.050)	80	0.154	0.135	0.080	52%	0.046	30%	0.013
1 (1.315)	80	0.179	0.157	0.080	45%	0.054	30%	0.017
1.25 (1.660)	80	0.191	0.167	0.080	42%	0.057	30%	0.021
1.5 (1.900)	80	0.200	0.175	0.090	45%	0.060	30%	0.024
2 (2.375)	80	0.218	0.191	0.100	46%	0.065	30%	0.030
2 (2.375)	40	0.154	0.135	0.100	65%	0.046	30%	0.030
2.5 (2.875)	40	0.203	0.178	0.100	49%	0.061	30%	0.036
3 (3.500)	40	0.216	0.189	0.110	51%	0.065	30%	0.044
3.5 (4.000)	40	0.226	0.198	0.120	53%	0.068	30%	0.051
4 (4.500)	40	0.237	0.207	0.120	51%	0.071	30%	0.057
5 (5.563)	40	0.258	0.226	0.120	47%	0.081	31%	0.071
6 (6.625)	40	0.280	0.245	0.130	46%	0.094	34%	0.084
8 (8.625)	40	0.322	0.282	0.131	41%	0.119	37%	0.109
10 (10.750)	40	0.365	0.319	0.164	45%	0.146	40%	0.136
12 (12.750)	ST	0.375	0.328	0.194	52%	0.172	46%	0.162
14 (14.000)	ST	0.375	0.328	0.213	57%	0.188	50%	0.178
16 (16.000)	ST	0.375	0.328	0.244	65%	0.213	57%	0.203
18 (18.000)	ST	0.375	0.328	0.274	73%	0.238	64%	0.228
20 (20.000)	ST	0.375	0.328	0.305	81%	0.264	70%	0.254
24 (24.000)	ST	0.375	0.328	0.326	87%	0.315	84%	0.305

Adapted from *Principles and Practices of Mechanical Integrity Guidebook for Industrial Refrigeration Systems*.
*Mill Tolerance Thickness is 12.5% less than Nominal Thickness in accordance with ASME B31.5 and ASTM specifications.
**Pressure T_{min} is in accordance with ASME B31.5 (300 psi, A53 Gr A ERW, temperatures at or above -20 °F).

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: _____ ID/Tag No.: _____

Facility Owner: _____

Address: _____

Contact: _____ Phone: _____

Inspector: _____ Date: _____

Application:

High Pressure Receiver ☐ Oil Separator ☐

Accumulator ☐ Oil Pot ☐

Recirculator ☐ Other (Describe) ☐

Intercooler ☐ _____

Transfer Drum ☐

Orientation:

Horizontal ☐

Vertical ☐

Equipment Data and Limits:

Manufacturer: _____ Model #: _____ Serial #: _____

ASME Cert. Stamp? ☐ Yes, ☐ No Year Mfg.: _____ National Board #: _____

MAWP (psig): _____ @ °F _____ MDMT (°F): _____ @ psig _____

Operating (psig /°F): _____ / _____ Normal Liquid Level: _____

Total Internal Vol. _____ Cu. Ft. Normal Ammonia Inventory (lbs.): _____

Material: ☐ Carbon Steel, ☐ Stainless Steel, ☐ Aluminum, ☐ Other: _____

Level Indicator Type: ☐ None, ☐ Armored Bullseye, ☐ Level Column w/Bullseye, ☐ Flat Armored, ☐ Level Column Only, ☐ Level Column w/ Veri/Techni Level

Relief Valve Data:

Manufacturer: _____ Model: _____ Year Installed: _____

Assembly: ☐ Dual w/change over valve, ☐ Single Type of Relief Valve: ☐ Internal, ☐ External

Pressure Setting (psig): _____ Capacity (lbs. air per min/SCFM): _____ / _____

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☐ No ☐ N/A ☐			
c) Operating within limits?	Yes ☐ No ☐ N/A ☐			
d) Fasteners tight, adequately anchored, and supported?	Yes ☐ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☐ N/A ☐			
f) Free of excessive ice buildup?	Yes ☐ No ☐ N/A ☐			
g) Free of abnormal sounds/vibration?	Yes ☐ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☐ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☐ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☐ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☐ N/A ☐			
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☐ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☐ N/A ☐			
n) Manufacturer data report on file?	Yes ☐ No ☐ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐			
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☐ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☐ N/A ☐ Slight ☐ Extensive ☐			
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐			

If No, describe:

_____

_____

Inspection Items	Conforms
t) Free of any other conditions that negatively affect safe operation?	Yes ☐ No ☐ N/A ☐
If No, describe: _____ _____	

t) Free of any other conditions that negatively affect safe operation?	Yes ☑ No ☐ N/A ☐
If No, describe: _____ _____	

Ammonia Refrigeration Safety Inspection Checklist

PRESSURE VESSELS

Location: ID/Tag No.:

Inspection Items	Conforms	Safety Status	Recommended Action, or Comments	Target Date
a) Equipment is labeled and the nameplate and ASME # are legible and secure per ANSI/IIAR 2?	Yes ☑ No ☐ N/A ☐			
b) Suitable for ammonia?	Yes ☑ No ☐ N/A ☐			
c) Operating within limits?	Yes ☑ No ☐ N/A ☐		14" @ 150 PSI	
d) Fasteners tight, adequately anchored, and supported?	Yes ☑ No ☐ N/A ☐			
e) Safe access for Inspection, Testing, and Maintenance (ITM)?	Yes ☐ No ☑ N/A ☐		CANNOT REACH KING VALVE FROM THE GROUND	
f) Free of excessive ice buildup?	Yes ☑ No ☐ N/A ☐		HIGH-SIDE OF SYSTEM	
g) Free of abnormal sounds/vibration?	Yes ☑ No ☐ N/A ☐			
h) Free of ammonia leaks?	Yes ☑ No ☐ N/A ☐			
i) All piping has markers per ANSI/IIAR 2?	Yes ☑ No ☐ N/A ☐			
j) Are valves in good condition?	Yes ☑ No ☐ N/A ☐			
k) Are critical manual and control valves tagged, exercised, and stems lubricated?	Yes ☐ No ☑ N/A ☐		KING VALVE HAS COBWEBS AROUND HANDWHEEL	
l) Sufficient pressure/temperature gauges and/or transducers are present and functioning adequately?	Yes ☑ No ☐ N/A ☐			
m) Certification drawings on file?	Yes ☐ No ☑ N/A ☐		NO NB, DATA REPORT, OR DRAWING	
n) Manufacturer data report on file?	Yes ☐ No ☑ N/A ☐			
o) Free of modifications, alterations, damage, or repairs such that casing integrity is or has been affected?	Yes ☐ No ☐ N/A ☐		?UNKNOWN. NEED DATA REPORT	
p) If No, has it been recertified and documentation filed?	Yes ☐ No ☐ N/A ☐			
q) Are tubular linear liquid level sight glasses protected from traffic with 360° guards and internal check shutoff valves?	Yes ☑ No ☐ N/A ☐			
r) Insulation free of damage, moisture, frost, vapor retarder leaks, etc.? a. If No, note damage level:	Yes ☐ No ☐ N/A ☑ Slight ☐ Extensive ☐ ☑ Not insulated			
s) Free of pitting and surface damage? a. If No, note damage level:	Yes ☐ No ☑ N/A ☐ Slight ☑ Extensive ☐		SEVERAL SCRATCHES HAVE REMOVED PAINT	
t) Free of any other conditions that negatively affect safe operation?	Yes ☑ No ☐ N/A ☐			

If No, describe:

Questions?

pthomas@resourcecompliance.com