

**Integrity Management Requirements
For
Mechanical Refrigeration Systems
Containing Ammonia**

AB-538

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FOREWORD

As provided for under Section 37 of the Pressure Equipment Safety Regulation (PESR), the Administrator in the pressure equipment discipline has established that ABSA document AB-538 defines requirements for integrity management systems to be met by owners and operators who operate mechanical refrigeration systems containing ammonia in the province of Alberta.

The first reaffirmation date for this document will be April 27, 2021.

1.0 INTRODUCTION

To ensure the safe operation and reliability of pressure equipment and compliance to the Safety Codes Act (SCA) and its Regulations, owners must have effective systems for managing the integrity of their pressure equipment throughout its full life cycle: from design, construction and installation, throughout its service life (i.e. operation, maintenance, repairs, alterations, integrity assessments, and decommissioning). An effective integrity management system will reduce plant downtime, ensure appropriate control of all pressure equipment assets, and will enable inspection (integrity assessment) and other resources to be optimized. AB-538, Integrity Management Requirements for Mechanical Refrigeration Systems Containing Ammonia, addresses the owner's responsibilities under each phase of the refrigeration system's life cycle.

This document is intended primarily for ammonia refrigeration systems installed in recreational facilities (rinks, arenas etc.) or food processing/storage plants. It is not intended for large scale industrial facilities related to the oil & gas or petrochemical industries and does not replace any existing registered owner-user pressure equipment integrity management system or supersede any requirements established by AB-512.

CSA B52 Mechanical Refrigeration Code describes requirements for mechanical refrigeration installations and is adopted by the *Pressure Equipment Safety Regulation* under the *Safety Codes Act*. There are requirements in CSA B52 not addressed in this document such as electrical requirements, mechanical room requirements, and those related to gas detectors etc. The owner must comply with CSA B52 requirements in its entirety.

AB-615 Guidelines for Care and Operation of Mechanical Refrigeration Systems Containing Ammonia is available at www.absa.ca. This placard may be used as a guide to assist owners in developing their integrity management system.

To ensure this document remains relevant and of value to Alberta stakeholders, it shall be reviewed periodically to confirm that it is aligned with current industry best practices and policies. Any suggestions for improvement are welcome. Please provide comments to inspections@absa.ca.

2.0 DEFINITIONS

For the purpose of this AB-538 document, the following definitions apply. Relevant definitions from the Alberta Safety Codes Act and Pressure Equipment Safety Regulation are also included in this section.

ABSA - is the organization delegated by the Government of Alberta to administer the pressure equipment safety legislation under the Safety Codes Act.

ABSA Safety Codes Officer - means a safety codes officer, designated under the Act, in the pressure equipment discipline. [PESR 1(1)(ee)]

Administrator - means the Administrator in the pressure equipment discipline appointed under the Act. [PESR, 1(1)(b)]

Alteration - means any change to an item of pressure equipment as described in the original manufacturer's data report that requires a change of design calculations or otherwise affects the pressure-containing capabilities of the item of pressure equipment. (PESR 1(1)(d))

Non-physical changes such as a change in the maximum allowable working pressure or design temperature of a boiler or pressure vessel pressure-retaining item are considered alterations, as are reductions, such as a reduction in minimum temperature.

Note: For the purpose of this AB-538, a change in a system refrigerant is also considered an alteration.

Certificate of Authorization Permit (CAP) - means a permit issued pursuant to section 44 of the Act, authorizing a person to carry out the activities stated on the certificate of authorization permit. [PESR 1(1)(g)]

Competent - in relation to a person, means possessing the appropriate qualifications, knowledge, skill, and experience to perform the work safely and in accordance with the Act. [PESR 1(1)(i)]

Inspection plan - means a documented plan and strategy for detailing the scope, methods, and timing of the examination and inspection activities for pressure equipment.

Integrity assessment - means an examination of an item of pressure equipment, related processes, and documentation to determine its conformity to the requirements established by the Safety Codes Act and the regulations. [PESR 1(1)(q)]

Integrity management system (IMS) - means a system for ensuring that pressure equipment is designed, constructed, installed, operated, maintained, and decommissioned in accordance with the Pressure Equipment Safety Regulation. [PESR 1(1)(s)]

Management of Change (MOC) - is a documented management system that ensures that any physical or operational changes to pressure equipment, changes to procedures and standards, and organizational changes do not adversely affect the integrity of the pressure system.

Non-destructive examination (NDE) - means any number of techniques that can be used to examine a material, component, or system without causing damage. Common

techniques include visual, ultrasonic, magnetic particle, liquid penetrant, radiographic, and eddy-current testing.

Public occupancy - means any facility where members of the general public are likely to be present. This would include schools, offices, shopping malls, stores, arenas, pools, restaurants, hotels, etc.

Repair - is work necessary to restore an item of pressure equipment to a safe and satisfactory operating condition, provided that there is no deviation from the original registered design. Note: "Original design" includes previously registered design alterations.

3.0 GOVERNING LEGISLATION

Legislation that governs the pressure equipment discipline includes the following:

- Safety Codes Act (SCA)
- Pressure Equipment Exemption Order (Alberta Regulation 56/2006)(PEEO)
- Pressure Equipment Safety Regulation (Alberta Regulation 49/2006)(PESR)
- Power Engineers Regulation (Alberta Regulation 85/2003)(PER)
- Pressure Welders Regulation (Alberta Regulation 169/2002)(PWR)
- Administrative Items Regulation (Alberta Regulation 16/2004)

Note: The Pressure Equipment Safety Regulation User Guide (AB-516) provides valuable information to assist stakeholders in meeting the requirements of the Pressure Equipment Safety Regulation and in assuring the safe operation of their pressure equipment.

Guidance Notes:

It's important to note the hierarchy of requirements specific to pressure equipment in refrigeration systems in Alberta. They are in descending order:

- Safety Codes Act (SCA)
- Pressure Equipment Safety Regulation (PESR)
 - Applicable ABSA AB-500 series documents
- CSA B52 Mechanical Refrigeration Code
- ASME B31.5 Refrigeration Piping and Heat Transfer Components

4.0 REFERENCED PUBLICATIONS

The following referenced ABSA documents have been approved by the Administrator to establish the requirements that must be met for in-service pressure equipment under the PESR. The requirements documents shown below as well as other ABSA requirements documents and guidelines are available at www.absa.ca.

AB-506 Inspection & Servicing Requirements for In-Service Pressure Equipment

This document specifies requirements for integrity assessments (in-service inspection) of pressure equipment and pressure relief valve servicing.

AB-513 Pressure Equipment Repair and Alteration Requirements

This covers inspection and certification and other requirements for repairs and alterations to pressure equipment.

AB-518 Pressure Piping Construction Requirements Document

This document specifies quality management system requirements for companies that are required to hold a Certificate of Authorization Permit to construct pressure piping under the PESR.

AB-615 Guidelines for Care and Operation of Mechanical Refrigeration Systems Containing Ammonia

The following documents are declared in force under the PESR:

CSA B51 Boiler, Pressure Vessel, and Pressure Piping Code

CSA B52 Mechanical Refrigeration Code

Additional useful information may be found from the International Institute of Ammonia Refrigeration - ANSI/IIAR 6-2019 – *Guidelines for Startup, Inspection, and Maintenance of Ammonia Mechanical Refrigeration Systems*.

5.0 OWNER RESPONSIBILITIES PESR SECTION 37

General

An owner is defined as a lessee, a person in charge, a person who has care and control, and a person who holds out that the person has the powers and authority of ownership or who for the time being exercises the powers and authority of ownership. [SCA, 1(1)(v)]

An effective integrity management system can optimize on-stream run-time and is indispensable for the safe operation of pressure equipment. However, pressure equipment safety cannot be assured unless the owner has an effective management system that covers the full lifecycle of their pressure equipment, encompassing design, construction, installation, operation, maintenance, inspection, and decommissioning.

The Pressure Equipment Safety Regulation (PESR) requires every owner to maintain an effective integrity management system for their pressure equipment. Accordingly, this must be appropriate for their organization as well as for the type of facility and equipment.

All pressure equipment located in facilities deemed as public occupancy shall be inspected and certified by an ABSA Safety Codes Officer regardless of any other inspections conducted. This includes all installation, in-service, and repair/alteration inspections of pressure equipment.

Guidance Notes:

The owner of the refrigeration facility is responsible to ensure the safe operation of the pressure equipment. An integrity management system is simply all of the associated tasks involved with operating and maintaining the facility to ensure safety to people, property and environment. The integrity management system shall address the following elements.

- | | |
|-----------------|--|
| 1. Design | 6. Repairs and Alterations |
| 2. Construction | 7. Integrity Assessments |
| 3. Installation | 8. Decommissioning |
| 4. Operations | 9. Program Review |
| 5. Maintenance | 10. Unsafe Conditions, Accidents and Fires |

It's important to note that none of the requirements in this document or the regulations are new to Alberta and ABSA will assist owners in navigating the safety requirements.

Please contact your local ABSA Safety Codes Officer for more information.

5.1 Design PESR Section 14(1)

A refrigeration system includes compressors, pumps, brine tanks and pressure equipment. The refrigeration system pressure equipment typically includes, pressure vessels to store liquid refrigerant, evaporators, condensers, piping, fittings, and safety valves. The design of each item of pressure equipment shall be registered for use in

Alberta and have a CRN (Canadian Registration Number) number assigned. Manufacturers of the pressure equipment are responsible for obtaining the CRN and for demonstrating compliance to the appropriate code of construction. Owners must verify this requirement. Boilers, vessels, heat exchangers, and safety valves will have the CRN stamped on the nameplate. Verification of this number is required prior to the operation of the pressure equipment. Pressure piping, depending on its system volume, may be exempt from design registration. Design registration is achieved by submitting the appropriate design information to the ABSA design survey department. Details on how to submit the request for a design registration may be found at www.absa.ca.

Owners may also consult with the system designer, installer, or maintenance contractor for guidance on pressure equipment design registration.

Guidance Notes:

Ammonia refrigeration plant pressure equipment can include tanks, vessels, chillers, piping etc. To ensure they are designed and constructed to a recognized safety standard, the designs must be registered with ABSA. This will greatly increase the overall safety of the equipment and align with the practices in other provinces in Canada.

A valid CRN for Alberta will be a combination of letters and numerals with a numeral 2 on the right side of the decimal. E.g. A1234.2, 0G6789.52.

5.2 Construction PESR 25

The owner must select a manufacturer or contractor that holds a Certificate of Authorization Permit for the construction of the pressure equipment. The requirement for a Certificate of Authorization Permit applies to both shop and field construction. The owner should request a copy of the manufacturer or contractor's Certificate of Authorization Permit to be part of the quality control file for the refrigeration system. The local Safety Codes Officer requires a copy of the Manufacturer's Data Report for any pressure vessels prior to the final installation inspection. AB-275, General Requirements for Mechanical Refrigeration Systems, shall be completed by the designer, signed, and presented to the local Safety Codes Officer. The completed AB-275 becomes part of the equipment records.

Guidance Notes:

To ensure refrigeration equipment meets minimum safety standards, plant equipment must be built by a company with the proper certification issued by ABSA. This includes brazed, welded or threaded piping containing refrigerant. Any equipment built in Alberta must be by a company with an ABSA issued Certificate of Authorization Permit. This is commonly known as an 'AQP' for Alberta Quality Program.

When purchasing pressure equipment, the owner should be aware that they assume responsibility for ensuring that all requirements of the Safety Codes Act are met, and that

the pressure equipment is maintained and operated in compliance with the regulations.

Equipment imported from outside of Alberta must have the proper documentation which must be retained by the owner for as long as the equipment is in service.

In Alberta, companies using brazing or welding are to ensure the individuals performing these tasks are qualified in accordance with ASME Section IX and the welding/brazing procedures are registered with ABSA.

5.3 Installation PESR Section 28(1)

A final construction inspection of the refrigeration system shall be performed by the owner's representative and the ABSA Safety Codes Officer after the equipment has been installed and prior to commissioning/re-commissioning in order to initiate plant inspection records for the equipment and to verify that the equipment meets the Safety Codes Act, PESR, and CSA B-52.

The installation inspection shall include, but is not limited to,

- verifying adequate safety relief device installation,
- visual inspections of all pressure equipment,
- pressure testing of the refrigeration system,
- registration of pressure vessels in the system for the issuance of a Certificate of Inspection Permit, and
- verification of the plant capacity for the plant registry.

Additional installation inspections may consist of

- baseline thickness readings of piping and pressure vessels subject to corrosion,
- internal inspections of vessels,
- checking for proper pipe supports, and
- checking that all flange bolts are properly torqued.

The owner should have a check list or have a qualified contractor perform these verifications. Safe operating limits must be established for the system, and control devices must be verified to ensure the proper operation within the pressure equipment operating limits. The applicable requirements of CSA B52 shall be met.

The owner must involve a qualified contractor familiar with refrigeration system instrumentation, electrical, pipefitting, and inspection. An ABSA Safety Codes Officer must also be present when performing these inspections. The ABSA Safety Codes Officer will request a copy of the AB-275 at this time.

Guidance Notes:

To ensure the refrigeration equipment is installed to permit safe operation, installation inspections must be conducted by ABSA and the owner. If the owner does not have enough experience, they can designate an experienced and properly qualified contractor. Reputable refrigeration equipment installation and maintenance companies have knowledgeable personnel to conduct these inspections.

ABSA works with the owner and installer/maintenance company to ensure the equipment is safe to operate by conducting visual inspections of the equipment to ensure:

- *the safety valves have the correct set pressure, capacity and are piped to a safe location*
- *the proper safety control devices are installed and in good working order*
- *the equipment is free from damage and meets the minimum safety standards for design and construction*
- *the equipment is issued and stamped with an Alberta Identification Number (e.g. it will look like this @789456). This will make sure that all records for that specific item are available if the owner misplaces them or any repairs are required in the future or if the equipment is sold etc.*
- *the owner is in possession of the proper documentation for the refrigeration plant pressure equipment*

The owner may choose additional inspections at the advice of a reputable refrigeration installer or maintenance company.

Please note that the AB-275 form may require a pressure test to be witnessed by the ABSA Safety Codes Officer prior to being placed into service. Where applicable, this form shall be completed prior to the commencement of operations.

5.4 Operation PESR Section 33(1)

Operation is a critical responsibility for owners. The duties are short-term and long-term, which means they are to be performed daily, monthly, end of-season, and pre-start-up. AB-615 lists, as a guide, what this might look like. AB-615 is a minimum guide, and the operating instructions must be modified for each specific system. See Appendix 1 at the end of this document for a suggested list of tasks and duties.

Owners shall follow manufacturer's instructions and ensure that equipment operates within its safe operating limits. Training of operations personnel is a critical component to ensure the safety of the facility. SOPEEC (Standardization of Power Engineer Examinations Committee) has developed an examination for refrigeration plant operator certification. Although this certification is not mandatory in the province of Alberta, the owner may choose to have its operating staff write this exam as a means of demonstrating knowledge. Refer to the ABSA website (www.absa.ca) Information Bulletin IB19-011 for details and to see how this exam is recognized.

The owner shall ensure that operating staff are appointed and are competent in the daily operation of the system. In brief, competency may be verified by having the operator demonstrate their knowledge of the hazards associated with operating an ammonia refrigeration system, the appropriate response to an ammonia leak, as well as demonstrate the ability to both start and shutdown the system, to take daily operating readings, and to understand the operating limits of various components. Operators must be aware of the location of safety equipment, such as safety shutdowns switches, respirators, evacuation fan switches, and the emergency dump

valve. They should also know the location of the SDS (Safety Data Sheet) for the various chemicals on site (and be familiar with their contents) as well the location of emergency contact phone numbers, such as fire and rescue, the maintenance contractor, and owner representative.

The owner shall ensure that the brine is tested for pH, residual inhibitor, and iron content two times per year, at minimum. These tests are normally accomplished by sending a small sample to a lab. The pH testing of brine is done to indicate the presence of ammonia in the brine and may be done on site with pH test sticks. Frequency of testing shall be increased should the system require the addition of ammonia or if there is a loss of brine. A change in pH or loss of inhibitor requires immediate follow-up, as this may indicate a loss of containment. When requested, results of the brine analysis shall be presented to the Safety Codes Officer. A reputable refrigeration service company can provide guidance on brine testing.

Any loss of containment (e.g. an ammonia leak) is considered a reportable incident to ABSA. See Section 5.10 for details on reporting these types of incidents.

As part of operating preparedness, the owner should contact the local fire department and municipal representatives to ensure that emergency procedures and staff training are in place in case of an incident (such as an ammonia release). Owners, operating staff, and local emergency response personnel should be familiar with mechanical room exists, ventilation system, ammonia dump valve(s), emergency shutdowns of electrical equipment, storage of respirators and how to use them, evacuation plans of the facility, etc.

Guidance Notes:

Ammonia is hazardous, but working with it does not have to be. It's important to follow the refrigeration system manufacturer's instructions. Additionally, owners must provide training to staff responsible for the operation and maintenance of ammonia refrigeration facilities. This training must include all of the routine tasks that must be completely to maintain a safe facility. Certification for refrigeration plant operators is not mandatory in Alberta, but training of operators is. Owners who don't have the experience to train their operators can engage external training providers to fill that gap. During ABSA's periodic inspections, the Safety Codes Officer may request details of training provided to operations staff.

What is the role of Brine in Ice Plants?

Ice plants use 'brine' and 'Ammonia' as refrigerants. The function of an ice plant or ice factory is to make or form ice in large quantities.

Brine is the secondary refrigerant which takes heat from the water and produces ice. Brine is in the tubing underneath an ice sheet, not ammonia. The ammonia should never leave the machine room.

Brine is a highly concentrated solution of sodium chloride (NaCl). Since (NaCl) comes from a strong hydrochloric acid (HCl) and a strong base of sodium hydroxide (NaOH) through a neutralization reaction, then an aqueous solution of this salt will be neutral with a pH=7. Brine pH tests higher than 7 may indicate the presence of ammonia.

Refrigeration plants must have their brine tested at least twice a year. The brine is tested

to detect any changes to the pH and can determine whether ammonia is leaking into the brine side of the system which could lead to a dangerous situation and make the system potentially less efficient. Ammonia is not intended to be in the brine. If an owner detects ammonia leaking into the brine, the ABSA Safety Codes Officer must be notified.

To be ready for emergencies, it's very important to notify the local fire department and municipality to ensure they are aware that the facility contains ammonia. This is important to ensure they have the proper equipment and training or trained to handle emergencies, such as an ammonia leak. Contacting them early will allow them time to prepare for such an emergency.

5.5 Maintenance PESR Section 37(c)

Maintenance must be performed by competent, qualified personnel, whether this is done by in-house staff or a qualified contractor hired by the owner. Maintenance performed by unqualified personnel may lead to unsafe conditions. Therefore, the owner shall have documented procedures as to how in-house maintenance personnel are trained and evaluated. Any replacement of pressure components such as pipe, pipe fittings and valves, must be of the same grade and specification as the original code of construction. Documentation of repairs and alterations must be kept on file for the life of the equipment. The owner must also ensure that safety interlocks, control systems, and safety shutdowns are identified and calibrated annually. These inspections must be documented and kept as part of the equipment file records.

Guidance Notes:

To prevent refrigeration equipment from operating unsafely, maintenance must only be conducted by trained staff, whether they are in-house or contracted. In addition, the owner must have procedures for the maintenance of the equipment. For large facilities, the procedures may be complex and require staff to update and maintain them, however; for small facilities, the manufacturer's recommended maintenance procedures may be sufficient. Regardless of the size and complexity of the facility, maintenance record must be retained by the owner.

It is important that personnel do not engage in activities for which they are not properly trained. In the case of emergencies, the operators shall be able to respond appropriately. Engaging outside contract assistance may be necessary when commencing these activities which operators are not trained or suited for.

5.6 Repairs and Alterations Section PESR 40 (1-8)

Owners must also refer to AB-513 (Pressure Equipment Repair and Alteration Requirements) for guidance on pressure equipment repairs. Companies that perform repairs to pressure vessels and/or piping must hold a Certificate of Authorization Permit issued by ABSA for the code of construction to which the vessel and/or piping were manufactured. Welders must hold a valid pressure welder Certificate of Competency and work under a qualified company that has the proper welding

procedures. These qualification documents shall form part of the repair file. Owners who are not familiar with these requirements shall employ a representative/contractor coordinator for the repair.

The scope of a proposed alteration must be presented to the local ABSA Safety Codes Officer prior to starting the alteration. Refer to the definition section of this document for the definition of an alteration. Depending on the scope of the alteration, submission to the ABSA Design Survey department for review and acceptance may be required. A change of type of refrigerant is considered an alteration that must be submitted to ABSA's Design Survey department for registration.

Guidance Notes:

To ensure that equipment is safe to operate, repairs and alterations to refrigeration plant pressure equipment (chillers, evaporators, tanks, piping etc.), must be conducted by a company holding an ABSA certificate and follow all of the requirements of the AB-513 document. This includes welded, brazed and threaded piping. Welders/Brazers must have the appropriate qualifications and follow a registered procedure.

5.7 Integrity Assessments (Inspections) Section PESR 41

The owner's pressure equipment integrity assessment program shall include all pressure equipment: pressure vessels, condensers, evaporators, heat exchangers, piping, safety valves, and instrumentation. The owner shall refer to AB-506 (Inspection and Servicing Requirements for In-Service Pressure Equipment), which is available at www.absa.ca. An integrity assessment program should also ensure that all fluids in the system are within their recommended specification. Contamination of one fluid by another may lead to a dangerous condition, including catastrophic failure of equipment or release of ammonia.

Inspections of pressure equipment in a public occupancy facility shall be performed by an ABSA Safety Codes Officer. Owners shall follow up on all recommendations and assessment findings that show deviation from original specifications.

Guidance Notes:

All refrigeration plant pressure equipment needs to be periodically inspected to ensure it is safe for continued operation. The type and extent of inspection depends on the equipment and the manufacturer's recommendations.

All refrigeration pressure equipment installed in rinks, arenas, recreation facilities, food processing plants, cold storage facilities etc. must be inspected by an ABSA Safety Codes Officer regardless of any other inspections conducted.

5.8 Decommissioning PESR 36

Pressure equipment that is decommissioned must be left in a condition that presents no risk to the public. Equipment must be properly vented and purged of any process fluid. Pressure equipment that is taken out of service as a result of its condition must

be left in an unpressurized state and isolated from any process that may cause it to be pressurized. ABSA must be notified of the decommissioning of the equipment. This notification may be made using form AB-10 (Status Report), which can be obtained from the ABSA website: www.absa.ca.

Guidance Notes:

When refrigeration plant equipment is removed from service or scrapped, notify the ABSA Safety Codes Officer.

5.9 Program Review

Owners shall perform annual reviews (self audits) of their integrity management system to ensure that all the elements of this AB-538 are addressed. Internal audits provide the opportunity to identify gaps and are an important part of ensuring facility safety. Any such review must be documented suitably to ensure findings and so that recommendations are not lost. If owners are not familiar with all the requirements, they should employ a consultant or contractor to perform this review. ABSA will audit the integrity management program periodically to ensure compliance to this AB-538 requirement document.

Guidance Notes:

At least once a year, the owner must review whether they are conducting all the necessary tasks and nothing is being missed. This is to ensure that the integrity management system the owner has in place is effective and continues to operate the refrigeration equipment in a safe manner. This will also make sure that proper adjustments can be made to training or equipment etc.

This review should be documented and any findings shall be addressed.

During ABSA's periodic inspections of refrigeration plant pressure equipment, the Safety Codes Officer will audit the owners integrity management system.

5.10 Unsafe Conditions, Accidents and Fires PESR Section 35(1-3)

Owners shall report unsafe conditions, accidents, and fires to the nearest ABSA office. ABSA offices and contact telephone numbers are listed on the ABSA website. Examples would be the release of ammonia, leak or failure of piping or piping components, failure of pressure vessels, leaking of evaporator tubes, which can cause ammonia to be released via the brine system, etc. Owners shall have detailed procedures and take immediate action should safety interlocks become impaired.

Information Bulletin IB18-004 (Reporting Unsafe Conditions, Accidents and Fires) was issued by the Administrator to clarify these requirements.

Guidance Notes:

Report any leaks or other unsafe conditions and incidents to the ABSA Safety Codes Officer. This will help ABSA share common problems with the public that may affect the safety of refrigeration plant equipment.

6.0 EQUIPMENT RECORDS PESR SECTION 41(A)

The owner must maintain a current inventory of all pressure equipment items that are owned or operated by the company. The equipment records shall include design information, data reports, inspection plans, integrity assessment reports, repair and alteration records, Certificate of Inspection Permits, pressure relief valve servicing records, annual interlock checks, and other relevant maintenance, servicing, and test records.

Owners and vendors who sell equipment must ensure that the equipment records are provided to the new owners. The owner who acquires the equipment must ensure that relevant equipment history and other equipment records are requested, and they must assess the integrity of all purchased assets. This would include reviewing all historical data and performing inspections when required (refer to PESR Section 36).

The seller must ensure that ABSA is notified when there is a change of ownership or location. This notification is required for all items that are identified with an Alberta A number (refer to PESR Section 36).

ABSA form AB-10 may be used to notify ABSA when there is a change of ownership or location or other status changes. This form may be obtained from www.absa.ca.

Guidance Notes:

The owner must maintain all records for all refrigeration plant equipment (including when any of them are removed from service, inspected or serviced by a maintenance provider). This will help the owner if there are any issues arising from the operation of the equipment.

APPENDIX 1 – TASKS AND DUTIES

The following is a list of suggested tasks and duties that should be completed and documented (see AB-615 for more information):

- an up-to-date log of activities and condition readings two times per day while the unit is in operation
- brine temperature and pressure
- compressor(s) discharge temperature and pressure
- compressor suction pressure
- oil level and pressure
- refrigerant level
- brine level
- hour meters
- outside air temperature

Also:

- Ensure that ammonia detectors are operational.
- Ensure that doors are kept closed and sealed properly.
- Check brine circulation pump(s).
- Check if condenser fan is operational.
- Check for ice buildup on the condenser.
- Check room exhaust fan.
- Log all personnel entering and leaving the mechanical room.
- Owners shall ensure the brine is tested for ammonia, iron, and pH.
- Keep the mechanical room clean and free of all combustible material.

7.0 REVISION LOG

Edition #	Rev #	Date	Description
1 st Edition issued 2020-04-27			