

# CHAPTER 7

## ACTIONS DURING AND AFTER COMPLETION OF LOADING PERISHABLE PRODUCTS INTO REFRIGERATED SPACES FOR EXPORT

### 1. CONTAINERISED SHIPMENTS

Containerised sea shipments from South Africa is done by way of the integral refrigerated container system (also known as reefer containers), following the demise of the ducted (porthole system) during 2004. The information in this chapter therefore deals with integral containers and not with ducted containers. The integral unit must be technically prepared (pretipped) prior to every loading that takes place.

#### 1.1 Loading of refrigerated containers

##### 1.1.1 Verification of loading documents

Two types of container loading documents are being used. These are:

- CTO or the container terminal order used for container loading in the port area.
- TPD or the transport document used for container loading at various inland loading depots.

These transport documents are very important because it contains all relevant information on the cargo, cargo temperature requirement (reefer code), fresh air ventilation and loading detail as well as linking this information with an identified container. This information is used along the total supply cold chain and must therefore be absolutely correct. It is therefore important that:

- No container shall be loaded without a valid CTO or TPD.
- No changes must be entered in writing on the document.
- Only original transport documents issued by the shipping line are acceptable.

The person in charge of container loading must verify that all the relevant information is entered on the document and that the information is correct. The following aspects need special attention:

- The container temperature set point must be according to the information on the CTO or TPD.
- The stickers confirming that the container passed a cleanliness and pretrip inspection (PTI) on the cooling unit must be intact.
- The fresh air ventilation must be set according to the CTO or TPD by the container depot.
- The product specified in the loading documents must be loaded into the correct containers identified in the loading documents. It is important never to switch cargo and containers.

Only the shipping line may make changes to the transport documents or change the container settings. The container must therefore not be loaded if a discrepancy is detected and the shipping line must be requested to rectify the problem.

##### 1.1.2 Installation of special equipment

Special carrying conditions such as controlled atmosphere (CA) and in-transit cold treatments require the installation and calibration of special instruments. Only authorized technicians of the CA supplier may install CA equipment. In the case of in-transit cold treatments, the total cold chain process including the calibration and installation of temperature sensors and recording devices is under the personal supervision of an authorized PPECB official.

##### 1.1.3 Product loading

It is important to ensure that the specification in the PPECB product handling procedures is applied:

- The product must be precooled to the carrying temperature unless otherwise indicated in written documentation.
- Product temperatures must be taken during the loading process and recorded in the prescribed documents as defined in the PPECB ISO 9001-2000 Handling Protocols.
- The maximum loading temperature tolerances must not be exceeded. PPECB shall reject all cargo that is outside the temperature specification.
- Only square and stable pallets must be loaded into containers. No openings on the floor between pallets are permissible and must be covered to minimize the short circuiting of cold air.
- No cargo shall extend beyond the horizontal (ceiling) and vertical (door) red load lines.
- Container loading must be completed within 30 minutes to reduce temperature increases and the formation of condensation on the product and packaging material.

##### 1.1.4 Commencement of recooling

Loaded integral containers must be connected to a power source as soon as possible after loading. The maximum Time Temperature Tolerances (TTT's) must never be exceeded (see Chapter 8 par 3). It is important

to note that a TTT of 6 hours for example does not mean that each break in the cold chain can be 6 hours. The TTT is a cumulative figure and can be broken down as follows for a specific situation:

From cold store to completion of loading	1 hour
Transport of container to the port terminal	2 hours
Port handling of container	1 hour
Port terminal to cooling on vessel	2 hours
<b>Total</b>	<b>6 hours</b>

From the above it is clear that the transport of containers with perishable products without cooling to the port must not be more than 2 hours. Power generators (Gensets) must be used if the transport time exceeds 2 hours. Deviations from this requirement are possible only under very special conditions and with specific products. TTT's are designed to support product quality and not to accommodate logistical problems and only PPECB can approve a deviation from the TTT after all relevant product quality factors are considered. Immediate recooling must be applied as soon as the container arrives in the port terminal and again as soon as the container is taken on board.

## 1.2 Loading of ventilated containers

Different types of ventilated containers are discussed in Chapter 4 par 7. It must however always be remembered that ventilated shipping of perishable products has certain risks attached. An important factor to keep in mind is that product characteristics and environmental conditions constantly change from season to season. Consistent results can therefore never be guaranteed.

### 1.2.1 Products that can be shipped ventilated

Ventilated shipping is restricted to voyages not more than 12 days, which includes destinations such as West and East Africa and the Indian Ocean Islands. Only some products can be shipped ventilated. These are:

- Onions and garlic can be shipped as far as Western Europe (18 day voyage) provided that the waste potential (especially neck rot and sooty mould) is very low and that positive air circulation is applied.
- Potatoes packed in knitted jute or polypropylene bags can be shipped to the Indian Ocean Islands and West Africa.
- Early season oranges and lemons (not soft citrus or grapefruit) can be shipped to the Indian Ocean Islands and West Africa. Ventilated shipment of citrus is not recommended and will only be allowed until end October at the latest.
- Some pumpkin varieties may be shipped ventilated.

**Note:** Eggs may not be shipped ventilated.

### 1.2.2 Loading patterns

It is essential to allow for maximum fresh air circulation throughout the total load to maintain the product temperature in equilibrium with ambient conditions. Horizontal and vertical air plenums (chimneys) must be provided to assist in convection air circulation. In this way hot spots and condensation are reduced. Some important considerations are:

- The cargo must preferably be palletized or if loaded break bulk, a layer of pallets must be placed on the floor. Forklift openings must run lengthwise to ensure an unobstructed air plenum to the bulkhead.
- Dunnage of at least 100mm can be used instead of pallets. Unobstructed air passages must be provided lengthwise (door to the bulkhead).
- Wooden pallets can be placed vertically against the bulkhead, to ensure vertical movement of air from the floor to the ceiling.
- A horizontal layer of wooden pallets more or less in the middle of the cargo load is strongly recommended to create an air plenum for fresh air circulation and to avoid a heat build-up in the center of the load.
- An opening of at least 200mm must be left between the top of the cargo and ceiling. This air accumulation plenum is very important, because it creates a chimney effect assisting vertical air movement.
- The maximum permissible mass must not be exceeded to prevent rejection at the point of crane handling.
- All containers with ventilated cargo must be stored under cover with doors open. Provision must be made for maximum fresh air circulation in the storage space to minimize condensation on the product.

### 1.2.3 Cargo protection

The cargo must be well protected and sufficient fresh air ventilation applied during storage, handling, transport and shipping of open door containers. The following requirements must be adhered to:

- Loaded containers must be stored under cover awaiting transport. The doors must be kept open and the storage area must be very well ventilated.
- Loaded open door containers, may not be stored for more than four (4) days prior to the departure of the vessel. This is to ensure that the maximum storage period of 14 days (preshipment plus voyage) in the container is not exceeded.
- Containers must be stored under cover with the doors open.

- Water must never be allowed to enter the container. Container doors must be closed when exposed to rainy or inclement weather during storage, transport and the voyage. The doors must be opened immediately when danger of water ingress disappears.
- Open door containers will only be allowed under deck, if the PPECB is satisfied that there is at least one complete fresh air change per hour and at least 90 air circulations per hour, based on the empty volume of the deck.

### 1.3 Handling of refrigerated containers prior to shipment

Two types of container terminals can be distinguished. Containers can be loaded and kept at an inland depot or it can be taken to a port terminal. Containers kept inland also eventually moves via a port terminal to the vessel. The following recommendations apply to both situations:

#### 1.3.1 Container terminal checks

It is very important that recooling shall commence immediately on arrival of the container in the terminal and that the TTT specifications are applied. Other important aspects are:

- The requirements stipulated in the transport documents (CTO's and TPO's) must be verified.
- The temperature set points and fresh air ventilation must be checked.
- The container must be in a good condition without any external damage that could have occurred during transport to the terminal.
- The cooling unit must operate within the design parameters without making excessive noises or building up heat.
- The temperatures must be checked at least every four hours and recorded. These must be correlated with the specifications in the CTO and TPD documents.
- The authorized technician of the shipping line must be called in immediately to make the necessary adjustments or the repairs.
- The container must be left on cooling until pick-up for transport to the container terminal or vessel.

#### 1.3.2 Corrective actions

Any deviation in the functioning of the cooling unit or incorrect temperature and fresh air ventilation settings must be immediately reported to:

- Shipping line to rectify mechanical malfunctioning and correct the setting
- PPECB port office for corrective actions in collaboration of the owner of the perishable product

Containers handled and loaded incorrectly or not operating within the transport document specifications must not be shipped.

#### 1.3.3 Uncoupling prior to shipment

Containers must remain on cooling until ready for direct transfer to the vessel.

#### 1.3.4 Communication of information and records

Accurate records of container movements i.e. times and dates of arrival and departure, power supply (and failures) as well as temperature readings must be kept. These records may be required for insurance purposes. Temperature and other information must also be communicated to the PPECB. This information is used for temperature management during the voyage. (See Chapter 9 par 2). PPECB also has the responsibility to reject all containers that do not operate within the parameters or that were handled outside the specifications. PPECB must also inform the owner of the cargo, i.e. the producer of any discrepancies and formulate corrective actions when possible.

### 1.4 Handling of ventilated containers prior to shipment

Shipping perishable products in ventilated containers is a compromise and not necessarily within the optimum product requirements. The following actions will however minimize losses:

- The cargo must at all times be protected from the elements. Ventilated containers must be kept dry, in the shade and stored in such a way to allow maximum fresh air circulation through the load.
- The containers must be protected against any possible chemical, rodent and other pollution that may affect the food safety characteristics of the product.
- Containers with ventilated perishable products may not be stored for more than four (4) days in the terminal before it is shipped.
- Containers rejected because of possible contamination or over storage must be removed and the contents destroyed or sold on the local market if fit for human consumption.

### 1.5 On Board checks prior to departure

On board checks of containers, decks and cargo during and on completion of loading are very important actions. This is the final opportunity to make sure that all systems are functioning within specifications and to ensure that the cargo will be carried according to the specification. These checks allow the ships' personnel to do final adjustments and make last repairs. Some of the more important checks to ensure optimum carrying conditions include the following:

### 1.5.1 Refrigerated containers

- Integral refrigerated containers must be connected to a suitable power supply as soon as possible but in any event not more than one hour after landing the container on board.
- Carrying temperature instructions (reefer code) as audited by PPECB must be applied at all times. It is the responsibility of the Master to be in possession of the PPECB reefer code definitions (codified carrying temperature instructions) and to apply the correct carrying conditions.
- Verification of container settings according to the reefer code must be completed as soon as possible but in any event prior to sailing. The temperature set point, delivery air temperature (DAT) and the fresh air ventilation setting must be according to the reefer code. Only authorized personnel of the shipping line may make the necessary adjustments.
- All deviations and corrective actions must be logged and immediately reported to the PPECB. This will allow the PPECB to formulate corrective steps in consultation with the grower and the shipping line, taking into account product behaviour and requirement.

### 1.5.2 Controlled and Modified Atmosphere Containers

WARNING: The atmosphere in CA and MA containers do not sustain human life.

The internal atmosphere of controlled (CA) and modified (MA) containers differs from the normal atmosphere. Very special controllers control the gasses inside the containers. It is therefore very important to ensure that the fresh air intake valves are set according to the definition in the reefer code.

### 1.5.3 Ventilated containers

- Ventilated containers may only be stowed under deck if the air circulation rate is at least 90 but preferably 120 complete air changes per hour based on the empty volume of the deck.
- Ventilated containers stowed on deck must be stowed in such a way that it is protected against the sea spray and seawater that may wash over the deck.
- Ventilated containers must always be stowed in such a way that it is protected against the elements as well as any contamination from bunkers, diesel, exhaust and other gasses.
- An adequate supply of clean and cool fresh air is a requirement. Be careful not to stow ventilated containers next to integral refrigerated containers. Hot air off the cooling unit of the integral container may be blown into the ventilated cargo.
- Some ventilated containers are fitted with extraction fans. These fans must be connected to a suitable power supply.

## 2. CONVENTIONAL REFRIGERATED SHIPMENTS

Conventional shipments from South Africa can be grouped into three main categories. These are conventional refrigerated shipments, in-transit cold treatments in conventional decks and ventilated shipments under certain very specific conditions. In-transit cold treatments are actually an integral part of conventional refrigerated shipments except that more strict temperature maintenance specifications apply. Procedures for refrigerated conventional shipments will be discussed in the following paragraphs.

### 2.1 Loading plans

The loading of refrigerated decks must be planned taking into account the products and carrying temperature regimes.

- Products that must be shipped at the same temperature regime (reefer code) for the entire voyage may be stowed together in the same deck provided there are no taint risks. (See tables 8 and 9 Chapter 8).
- Products to be carried at different temperature regimes (reefer codes) must be shipped separately. This especially applies to products such as avocados, mangoes and plums.

### 2.2 Temperature maintenance during loading

#### 2.2.1 Temperature measurements

Temperature measuring instruments and methods are discussed in chapter 2. Taking a single temperature of a product to be shipped or during the loading process is useless because product temperature is in a continuous state of change. Product temperatures must therefore be taken as frequently as possible and in as many stages and positions as possible. Product temperatures of at least one out of every ten pallets (i.e. at least 20% of the total load) must be taken and recorded during the loading of a conventional refrigerated deck. This should include:

- Regular temperature checks of products in the cold store or pallets delivered to the quayside to ensure that only properly cooled produce is loaded into the deck. Select pallets directly exposed to wind and the sun and take the temperatures of the fruit on the outside (exposed position) of the pallet.

- Temperature checks during loading into decks must include checks via the thermocouple wire of the pallet core temperature as well as on the outsides of pallets. Warm fruit on the outside of pallets become warm fruit in the middle of the load as soon as pallets are tightly stowed.

#### 2.2.2 **Temperature increases**

Product temperatures must be recorded and only pallets with produce that are within the specified temperature tolerances must be loaded. Hatches must be closed and recooling started as soon as the temperature of the already stowed produce has increased to or above the temperature tolerance. It is a fact that product temperatures on the outside of pallets will increase during the loading process. The temperatures in the centers of pallets with produce packed in polyethylene bags should however never be allowed to increase during loading. Temperatures in the centers of ventilated cartons (e.g. stone fruits avocados and mangoes) may increase by a maximum of 3,0°C before cooling is recommenced (refer to the relevant PPECB product protocol and see also Chapter 8 par 3.4.2). All temperature deviations must be brought to the attention of the PPECB. This will allow the PPECB to, in consultation with the exporter and the shipping line, formulate a temperature management procedure to be applied by the Master.

#### 2.2.3 **Crane feeding rates**

Pallets with cooled produce must never be delayed on the quayside. The cranes must be fed at the same rate as the loading rate. In practice there should never be more pallets that can be handled by two crane swings. Pallets with cooled produce must be taken back immediately to the cold store for recooling in the case of equipment breakdown.

#### 2.2.4 **Recooling during breaks**

There must be no pallets in the air locks and on the quayside during tea and lunch breaks. Decks must be closed and cooling applied during loading breaks in excess of 30 minutes. It is important to realize that it is not product temperature only that affects product quality and food safety. The atmosphere in port areas is almost always very humid with RH levels in the order of 80% to 100%. This means that moisture will condensate very quickly on all cold surfaces. Moisture on perishable products is extremely conducive to microbiological spoilage whereas moisture in and on packaging material will result in carton collapse during the voyage.

#### 2.2.5 **Protection of cargo**

Perishable cargo must be protected against the elements and any possible pollution during and after loading. This not only applies for cargo on the quayside but also for produce already loaded into decks. Exposure to direct sun must be kept to an absolute minimum, but exposure to wind can be even more detrimental. Decks must therefore be loaded as quickly as possible, closed and cooling started immediately. The cargo must also be protected against any pollution or contamination that may affect the eating quality or safety of the product. Special care must be taken to avoid tainting by exhaust gasses, petroleum fumes or other cargo on the vessel or handled in the port area. No loading shall take place during rain or if the atmosphere contains dust or any chemicals.

### 2.3 **Stowage of refrigerated perishable products**

Stowage of refrigerated perishable products into conventional decks is not a straightforward operation but requires considerable organizational skills and knowledge. Some important factors that need constant consideration are:

#### 2.3.1 **Heat leakage and air circulation**

Certain decks and positions in decks are exposed to more heat leakage than other positions. Sufficient cold air circulation must be directed to these areas to remove the additional heat. Areas requiring special air circulation are:

- Decks directly on top of heated bunker tanks.
- Deck sides directly in contact with the engine room bulkhead.
- Deck areas in the narrow end of the bow.

Special care must be taken to ensure adequate air circulation in areas of more heat leakage. A vertical row of pallets bases for example stacked against the engine room bulkhead allows for additional vertical air circulation and usually takes care of any heat that may penetrate into the cargo area.

#### 2.3.2 **Loading configuration and air circulation**

Special care must be taken to ensure adequate air circulation through the load. **Important** however is to provide an unobstructed return air plenum for the circulating air to return to the cooler. No hard and fast rules can be given as the return air plenums may vary according to design, but the minimum height of the plenum shall be 150mm. It is also important to ensure that the pallet height does not exceed 2.1m at time of loading to ensure an efficient return air plenum. Cargo must never be loaded above the bottom level of the air return openings. This means that no cargo must be loaded into hatch comings if such comings are not fitted with air return openings. Special care must be taken to tightly stow pallets and to block all vertical openings between pallets. Air bags are very effective to stabilise the pallets and to block openings between pallets thereby forcing the cold air vertically through the load. Special care must also be taken to ensure that all pallet base openings of 2- way opening pallets face in the direction of the air supply. This is not a problem with 4-way entry pallets.

### 2.3.3 Damaged pallets and cartons

All broken pallets must be removed and fixed. A broken pallet destroys cargo and load stability resulting in damage to the cargo. Broken pallet bases also result in pallet and carton collapse that may affect air circulation and therefore temperature maintenance. Walking boards must be used when it is necessary to walk on pallets. It not only protects the cargo from damage but keep the cartons clean. A single footprint on cargo is a reason for rejection under the food safety regulations.

### 2.3.4 Traceability

Accurate records of pallet identification and stowage position must be kept at all times. These records are required to trace (back track) all treatments and conditions the cargo was exposed to in order to determine possible food safety and quality risks.

### 2.3.5 Sealing of hatches

Hatch covers must be replaced and cooling commenced immediately after completion of loading.

## 2.4 Reaching carrying conditions

### 2.4.1 Carrying conditions

The Master must ensure that the specified carrying conditions are correctly understood, correctly set and correctly applied. Important aspects:

- Temperature set point and air delivery temperature must be according to the carrying temperature specification (reefer code).
- Fresh air ventilation must be set to maintain the carbon dioxide concentration in the atmosphere below 0,5%.
- Controlled atmosphere conditions must be maintained as specified.
- All temperatures and other information related to the carrying conditions must be recorded.
- PPECB must be informed of any deviation from the carrying condition specification.

### 2.4.2 Recooling times

Recooling of cargo spaces and the cargo must commence immediately on completion of loading. The following guidelines can be given for the cargo to reach carrying conditions:

- |                     |                          |          |
|---------------------|--------------------------|----------|
| • Citrus fruit      | - all precooled          | 12 hours |
|                     | - all non-precooled      | 6 days   |
| • Deciduous fruit   | - packed in polibags     | 12 hours |
|                     | - not packed in polibags | 4 hours  |
| • Frozen produce    | - maximum                | 3 hours  |
| • Subtropical fruit | - maximum                | 4 hours  |

## 3. IN-TRANSIT COLD TREATMENT SHIPMENTS

An increasing number of countries require in-transit cold treatment procedures to eradicate quarantine insects present. These requirements differ between different countries and the quarantine insect. Cold treatment specifications are agreed bilaterally between the Departments of Agriculture of both the exporting and importing countries. All cold treatments of citrus and deciduous fruit require a maximum treatment temperature of 0,0% or colder for a minimum period of 12 days. It is also a requirement that the total precooling, loading and transport process as well as the cold chain is supervised and certified by an independent organization. In the case of South African exports, the National Department of Agriculture authorized the PPECB as the local supervising and certification authority to ensure that the agreements are **adhere to**. All the cold chain temperature and shipping requirements discussed in this and previous chapters also apply to in-transit cold treatment procedures. The following are some of the more important requirements.

### 3.1 Temperature specifications

Temperature requirements for in-transit cold treatments are not only very strict, but no deviations are allowed. All countries require product temperatures of 0,0°C or colder but different treatment times may apply depending on the quarantine insect. Cold treatments also require that:

- The total load is precooled to below minus 0,5°C prior to loading.
- Product temperature increases during handling and loading is limited to a maximum of plus 2°C.
- The treatment only starts when the specified product temperature is reached.
- The treatment is cancelled when the product temperature increase to above requirements of the specific importing country and treatment must be started from the beginning again.
- Some countries also specify maximum air temperatures and defrost conditions.

### 3.2 Treatment duration

The cold treatment period varies from a minimum of 12 days up to 22 days depending on the insect to be eradicated. Some countries apply a sliding temperature and time scale formula for small temperature increases mainly during defrosting periods.

### **3.3 Temperature recooling requirements**

Product and air temperatures must be recorded on a continuous basis. Final approval of the treatment is based on the treatment temperature data. This requires that:

- Approved temperature measuring and recording devices must be used.
- The temperature devices must be accurately calibrated by an authorized organization.
- The temperature sensors must be installed in specified position.

### **3.4 Temperature checks prior to sailing**

All temperatures, temperature recorders, temperature settings must be checked prior to sailing. This will allow last minute adjustments and prevent rejections by the quarantine authorities of the importing country.

### **3.5 Certificates required**

The following are the basic certificates issued by the PPECB:

- Cold store registration certificate
- Precooling certificate
- Instrument calibration certificate
- Product loading temperature certificate

Some countries may require additional certificates. The PPECB is authorized and has the ability to issue these certificates. It is however very important that the certificates are delivered to the quarantine inspection authorities before the products arrive in the importing country. It is the responsibility of the exporter to ensure that the required certificates are delivered in time.

## **4. VENTILATED SHIPMENTS OF PERISHABLE PRODUCTS**

Technical requirements and detail regarding different types of ventilated conventional shipments are discussed in Chapter 5 par 5. Products and conditions for ventilated container shipments are discussed in Chapter 7 par 1.2. Specific requirements for ventilated conventional shipments are discussed in the following paragraphs.

### **4.1 Risks involved in ventilated shipments**

Ventilated shipments of perishable products are not recommended because of certain uncontrollable risks. Some of these risks are:

- Perishable products such as onions and potatoes cannot tolerate warm temperatures and high humidity. Fluctuations in temperature and humidity definitely result in physiological and microbiological quality losses. These conditions cannot be controlled during ventilated shipments.
- Preshipment, transshipment and post discharge conditions are very unpredictable and uncontrollable making it impossible to take informed decisions. The matter is further complicated by the absence of reliable detail information making it impossible to resolve any disputes afterwards.

### **4.2 Fresh air circulation**

The only fairly effective way to avoid condensation on the product and packaging material is to ensure continuous fresh air ventilation through the load. Air exchange rates of at least 90 up to 120 complete fresh air changes per hour based on the empty deck volume is required.

A complicating factor however is the very humid marine atmosphere along both the Atlantic and Indian Ocean coasts bordering South Africa. It is not impossible that the fresh air can be over saturated with moisture (fog) and that this moisture is deposited directly on to the product.

Care must also be taken not to introduce air at too low (colder than plus 5°C) or too warm (warmer than 25°C) temperatures. The objective must be to keep the product temperature in the range of plus 15°C to plus 20°C.

### **4.3 Cargo protection – food safety related aspects**

The cargo must at all times be maintained in a safe to eat condition. Some of the more important factors are:

- No chemical pollution of the product is allowed. This means that perishable cargo must be stowed in completely separate spaces. No contact with any chemical, including exhaust, bunker and diesel fumes shall be allowed.
- No physical contamination is permissible. This includes contamination by any metal objects, glass, wood splinters as well as sand and dust. Decks must be absolutely clean before loading and kept clean during loading and during the voyage.
- No microbiological contamination is allowed. This includes the absolute absence of any rodents, remains of previously carried cargo and intrusion of any water into the cargo holds.

### **4.4 Cargo protection – product quality aspects**

Correct stowage is also an important product quality-determining factor. The following aspects must be optimum:

- The cargo must never be stowed near heat sources such as heated bunker tanks and engine room bulkheads.
- There must always be adequate airflow through and around the load.
- The cargo must be well stabilised to prevent it from moving during the voyage.
- The cargo must never be handled directly on the quayside surface. The cargo must be protected against the elements after discharge.

## **5. SHIPPING INFORMATION**

All shipping information must be delivered to the PPECB in the format and times specified in the PPECB regulations. It is important to note that this is a statutory requirement and failure to comply will lead to legal actions against the shipping line that may include refusal to load the vessel again in a South African port. Information required by PPECB includes:

- Reefer lists for containerized shipments
- Stowage plans including the reefer code for all conventional shipments
- The bills of lading within 5 days from departure.