

# AMPC Snapshot Barcode as Shipping Marks

Use of Meat Messaging and Bar Codes as Shipping marks to US

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## **Project description**

The objective of this project was to find ways to remove the need to apply regulatory shipping marks at the time of staging or loadout for shipment to the U.S. market. This outcome is achieved by meeting Food Safety Inspection Service (FSIS) regulations and directives for lot identification linked to Health Certificates. A key method used for linking cartons to health certificates is through the use of barcodes.

The U.S. is Australia's largest export market for Beef (412 million kgs for 2024), 2nd largest for Sheepmeat and the largest for Goatmeat.

The U.S. has specific import requirements that must be satisfied to allow Australian red meat clearance into the U.S. commerce. Before changing any industry-wide current practices related to shipping marks, a detailed understanding of the usage of shipping marks through the whole supply chain was first conducted. The review found the following key requirements **MUST** be achieved with any changes to current practices:

- 1. Must be based on FSIS Directives and satisfy FSIS requirements,
- 2. Deliver commercial value to every segment of the entire meat supply chain (Exporters, Import Inspection Establishments, U.S. Buyer, and End Users),
- 3. Reduce the incidences of refused entry due to shipping mark failures,
- 4. Provide a clear visual identification system for managing commercial lots,
- 5. Reduce the time taken for export load and import clearance activities,
- 6. For certain supply chains and products, the existing shipping mark procedures **MUST** remain in place.

To determine the full scale of the problem to be solved, a detailed analysis of refused entry occurrence over the last 10 years was undertaken. The volume of refused entry occurrence has risen from 10 refused entries per 1,000 metric tonne in 2021 to 25 refused entries per 1,000 metric tonne in 2024.

During 2024, 30% of all consignments to the U.S. had a refused entry notice issued. This is a huge cost to industry with a total of 11,863 refused entry notices issues for a final total of 1.576 million kgs weight refused entry. This is 1.576 million kgs of Australian meat destroyed due to failing to meet import requirements.



When compared to other countries exporting to the U.S., Australia has been consistently one of the worse countries for refused entry occurrence to the U.S. for the last 3 years as is shown in the chart below:



The causes of refused entry occurrences fall into two (2) distinct categories:

- 1. Exporter preventable causes, and
- 2. Exporter non-preventable causes.

Exporter preventable causes include invalid shipping mark, invalid inspection certificate, failed type of inspection and other (typically miscellaneous labelling issue). These are refused entry causes where the export establishment should have had suitable systems and processes in place through their Approved Arrangements (AA) to prevent the occurrence.

Non-Preventable causes are typically related to shipping damage which is often outside of the control of the Export Establishment.

The preventable and non-preventable cause percentage breakdown for beef and lamb in 2024 are shown below:



The majority of the failure reasons related to manually applied shipping marks include:

- 1. The loss of the applied shipping mark label during transport. One of the reasons this may occur is that the label is applied to a frozen or chilled carton that may have ice or condensation on the surface, at time of application.
- 2. Incorrect label being applied. Often the label is manually applied, and human error can result in the wrong label being applied.
- 3. Incorrect stamp being applied. Often the stamp is manually applied, and human error can result in the wrong stamp being applied.
- 4. Incorrect, missing or eligible inkjet applied shipping mark. When an inkjet shipping mark is applied the process for application can result in incorrect, missing or illegible shipping marks due to technical issues or print head maintenance issues.
- 5. Certificate violations due to incorrect number of marks being applied.

Examples of preventable shipping mark failures are shown on the images below that were collected at U.S. import inspection establishments:





#### **Project content**

The project methodology employed the following steps:

- Industry engagement Meetings with DAFF, the Australian Embassy, MLA North America, Australian
  industry representatives to formalise a strategy and action plan that has industry and government
  agreement.
- Obtain industry and government endorsement for trial pilot protocols for Australian meat to use barcodes and Meat Messaging as replacements of traditional shipping marks with the barcodes as unique identifier marks.
- Working with DAFF and industry to define a proposal for the FSIS to conduct a demonstration pilot utilising Meat Messaging and carton barcodes as the method of shipping mark compliances for specification supply chain protocols.
- Obtain agreement from FSIS to participate in a demonstration pilot and determine the timeframe for the trial.
- Conduct the demonstration pilots with 10 export Establishments with supervision of Australian representatives and FSIS representatives.
- Document the demonstration pilot results in a manner suitable for use as a set of protocols for adoption by FSIS to use carton barcodes as shipping marks.
- Work with Australian exporters, US importers, Australian Embassy, MLA north America and industry representatives for adoption of the proposed alternative protocols for use of carton barcodes as shipping marks.

To successfully conduct the pilots, following the pilot protocols agreement, work activities were undertaken with the following organisations to ensure the supply chain participant acceptance:

- 1. Export Processing Establishments,
- 2. Non-Packer Exporters,
- 3. 3rd Party Cold Storage Export Establishments,
- 4. Freight Forwarders,
- 5. MLA North America,
- RMSCC Meat Messaging steering committee (representing DAFF, MLA, ISC, AMPC, MICA, GS1 and industry),
- 7. U.S. import Inspection Establishments,
- 8. U.S. Buyers/ Importer of Record,
- 9. U.S. End Users,
- 10. DAFF,
- 11. Australian Embassy (through DAFF), and
- 12. FSIS.

The process included initial communication with all the parties above through informal discussions with drafts of proposed pilots for comment and feedback. This feedback highlights operational and regulatory issues that need to be addressed in the protocol long before any pilot is proposed. If any of the parties above said "no" the cause of the no was reviewed to be understood the reason and a solution included to address the concerns.

The result of the project activities where the development of three protocols suitable for different product supply chain arrangement:

- 1. Airfreight consignments of less than 10,000lbs using the Placard protocol based on FSIS Directive 9910.1 BARCODES IN LIEU OF SHIPPING MARKS FOR FRESH MEAT PRODUCTS FROM AUSTRALIA.
- Whole container load consignments of a single product code to a single US further processing using the Placard protocol based on FSIS Directive 9910.1 BARCODES IN LIEU OF SHIPPING MARKS FOR FRESH MEAT PRODUCTS FROM AUSTRALIA.
- 3. Case/Carton Label Unique Batch Codes (Shipping Marks) applied at time of case/carton production.

Each of the proposed protocols ensures that a commercial visual lot mark is on each case/carton to manage commercial lotting along the meat supply chain. This commercial lot mark MUST NOT be used for regulatory purposes.

The details on the three proposed protocols can be found under the "Pilots/ Projects" section of the Meat Messaging website: https://meatmessaging.org/shipping\_marks

This includes a detailed video/PowerPoint of the Case/Carton Label Unique Batch Codes as Shipping Marks protocol as this protocol is permitted under current FSIS regulations: https://meatmessaging.org/docs/MM\_Carton\_label\_shipping\_mark\_20250212\_A.mp4

The protocol with the broadest application, easiest to apply and is compliant to the current FSIS directives is the Case/Carton Label Unique Batch Codes (Shipping Marks) applied at time of case/carton production.

## **Project outcomes**

The project outcomes included the need to engagement with export processing establishments to trial the 3 proposed protocols.

Six export processing establishment companies were engaged in the project that represented 10 export processing establishments.

The project was conducted through a subcommittee of the Red Meat Supply Chain Committee (RMSCC) to ensure suitable engagement with industry and government representation. The project participates where included in the RMSCC subcommittee.

The project did achieve the objective of:

"Investigate the possibility of conducting pilots utilising Meat Messaging for sending products to the US using the carton barcode as the regulatory shipping mark."

This is evidenced through the three proposed protocols for removing the application of shipping marks at the time of staging and loadout and using the carton label/barcode as the primary identifier in conjunction with Meat Messaging.

The project did not succeed in conducting sufficient trials and pilots to determine the readiness of export processing establishments to use this protocol. The third protocol requires no changes to FSIS directives as this protocol is compliant to the current directives.

The project participants, due to commercial and operational constraints caused by rapid U.S. growth, were unable to gather the necessary resources to conduct pilots by the time the project needed to be completed.

Of the three proposed protocols, the "Case/Carton Label Unique Batch Codes (Shipping Marks) applied at time of case/carton production" has the largest industry benefit.

Case/Carton Label Unique Batch Codes (Shipping Marks) applied at time of case/carton production" protocol is outlined as follows:

The case/carton label can easily have a human readable batch code included at the time of case/carton label creation. The image below shows an example case/carton label with a Batch Code, with the prefix 'BC' for batch code.



The globally unique GS1 meat industry barcode provides the carton/case verification to the Health Certificate and any certificate of analysis (COA). The label-based Batch Code (shown below) provides the human readable identification linkage to the Health Certificate therefore fulfilling the shipping mark requirement.

BONELESS BEEF PRODUCT OF AUSTRALIA TENDERLOIN SS/ON IW/VAC	REALLY GOOD MEAT	<sup>co.</sup> 99999
(01)99348731011235(3102)00	1460(13)230621(21)0530	36260020
PKD ON 21-JUN-23 17:26		June 1 Ming
14.60kg 31.18lb	( QQQQ Y	$\frac{1}{3}$ hala $\frac{1}{2}$
NET WEIGHT KEEP FROZEN	ASPECTER	9999
BC 1281102311		AUSTRALIA
00 4204 102044	S/N 053036260020	EST. NO.9999

The case/carton label shows the unique Batch Code, prefixed with BC as a ten (10) digit number. This number is assigned by the Export Establishment at time of carton/case production. The number is assigned to a specific product run of "Like" product as defined by the FSIS Product Categorisation under the nine (9) process categories identified in 9CFR 417.2(b).

At time of staging or loadout, the cases for the consignment are scanned to ensure the nominated product is the product to be shipped. The Request For Permit process uses the scan nominated Batch Codes and the scan count for submission for the generation of the Health Certificate. The Health Certificate once finalised would show each Batch Code and respective count within the shipment. As Batch Code and counts are scan driven and not applied post carton production, the error rate of shipping mark failures is greatly reduced.

For an export shipment to the U.S. the information would be uploaded to the Meat Messaging portal including the group level unique batch code (shipping mark) and each individual globally unique GS1 meat industry barcode.

At time of import inspection, the cases/cartons are grouped by the unique Batch Code (shipping mark) and the count recorded. This is checked against the shipping mark (batch code) details and count on the Health Certificate. Once requirements are met, the product is stamped "U.S. inspected" and released into U.S. commerce.

Should any discrepancies be identified by Meat Messaging, the all-carton barcode report for the shipment is used to resolve the discrepancies as per FSIS Directive 9900.5, Section VII, E. Procedures for Correcting Shipping Marks when Using Barcodes.

The case/carton batch code model meets all the U.S. buyer, import inspection establishment and end user requirements for the need of a visual commercial mark for product picking and inventory management.

However, the process for implementation of the case/carton unique Batch Code as a shipping mark requires the following steps:

- Changes to DAFF/ EXDOC (or NEXTDOC) operational restrictions for removing the need for the three (3) digit alpha exporter prefix and the requirement for uniqueness of the batch code between health certificates. There would be the need for only ensuring uniqueness of the batch code based on the establishment of production.
- Adding the unique Batch Code (Shipping Mark) meeting all with the necessary production run controls for "Like" product as defined by the FSIS Product Categorisation under the nine (9) process categories identified in 9CFR 417.2(b).
- 3. Ensuring the Export Establishment is listed to use Meat Messaging with FSIS and is using Meat Messaging for all US shipments.

If DAFF/ EXDOC (or NEXTDOC) can implement the required relaxation of the 3 alpha prefix and the uniqueness per health certificate the Australian industry could implement the case/carton batch code model very rapidly.

#### **Benefit for industry**

With an average of 30% of all shipments to the U.S. having a refused entry notice issued, moving away from the manual application of shipping marks at the time of staging or loadout would result in an annual saving, in excess, of \$262 million a year along the entire Australian red meat supply chain.

This sum is evident through the following:

- Australia exports approximately 2.5 million cartons to the U.S. each month, leading to the application of more than 33 million shipping marks annually across these consignments. Each shipping mark carries an estimated cost of AU\$7.50, which includes not only the physical label itself but also the associated Australian labour costs involved in printing, applying, inspecting, and managing the labels. When scaled across the entire export volume, the total annual cost to industry exceeds an estimation of AU\$225 million. This represents a substantial and recurring operational expense, highlighting a key area where process efficiencies or digital alternatives could deliver meaningful cost savings.
- 2. The administrative labour required to prepare shipping marks associated with Health Certificates for Australia's 38,000 consignments to the U.S. in 2024 represents a significant operational burden. With an estimated average cost of AU\$250 per consignment, covering time spent on documentation, compliance checks and coordination with export systems related to shipping marks, this process contributes to an annual estimation of more than AU\$9.5 million. These costs are absorbed by industry and represent an area where improved systems could deliver major efficiencies.
- 3. In 2024, there were more than 12,000 refused entries of Australian red meat in the U.S. When a refused entry occurs, product is held and significant costs are incurred. This involves higher U.S. labour rates and penalties for inspection, correction of any shipping marks, re-inspection, handling and administration. FSIS inspections are often scheduled on weekends when operational demands are lower, allowing FSIS inspectors to review refused entries without disrupting weekday import activities. At an estimated cost of up to AU\$1,000 per consignment in U.S. labour, this amounts to over AU\$12 million per year.

4. In 2024, a total of 1.59 million kilograms of Australian red meat exports were refused final entry into the U.S. market. These refusals often result in product being destroyed rather than salvaged, representing a significant loss to the industry. Had batch code shipping marks and Meat Messaging systems been implemented, these consignments may have been preventable, allowing the product to enter U.S. commerce as intended. With an estimated value of AU\$10 per kilogram, the estimated loss equates to nearly AU\$16 million per year in destroyed product alone. This figure underscores the critical need for more advanced, traceable systems to prevent unnecessary waste and safeguard export value.

The Australian red meat industry stands to gain an estimated AU\$262 million annually by adopting batch code shipping marks in conjunction with Meat Messaging. Beyond the significant financial savings, this shift would also enhance Australia's reputation as a reliable and efficient exporter to the U.S. market.