National Cargo Bureau

Who They Are & What They Do

Matthew Bullock
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National Cargo Bureau (NCB) was incorporated in 1952 as a non-profit organization, with a mission of promoting and enforcing “Safety of Life and Cargo at Sea” (SOLAS).

The Bureau was created to assist the United States Coast Guard (USCG) in their responsibilities under the 1948 International Convention SOLAS.

The U.S. Code of Federal Regulations (CFR) actually contains a number of references to NCB in Titles 7, 19, 46 and 49.

There is a memorandum of understanding and partnership agreement between NCB and the USCG regarding the safe carriage and stowage of hazardous materials.

USCG recognizes the NCB as the pertinent authority to audit Dangerous Cargo Manifest and Stowage and Segregation of Hazardous Materials on board commercial vessels.

NCB inspects approximately 60,000 Hazardous Containers a year. The results of these are included in USCG’s report to International Maritime Organization (IMO) and CINS.

NCB also inspects approximately 4,000 vessels loading grain in the United States each year.
NCB is also part of the United States delegation that attends IMO Committee meetings in London each year to provide technical support and act on behalf of USCG.

- The DSC contributes to Amendments to the IMDG (International Maritime Dangerous Goods) Code.
- The DSC developed the new Guidelines for Packing of Cargo Transport Units (CTU Code).
- NCB acts as the pertinent authority to enforce the CTU Code.
What is the Container Transport Unit Code (CTU)

- CTU is a joint publication by the International Maritime Organization (IMO), the International Labor Organization (ILO) and the United Nations Economic Commission for Europe (UNECE)
- It's essentially the ILG for the Ocean Mode
- CTU is a mandatory global code of practice for packing and securing cargo in shipping containers
- The CTU Code aimed to provide a single global guideline for safe packing and securing of cargo in ISO containers for ocean surveyors
Why the CTU CODE?

Slamming, Pounding, Inertial Sloshing
- Container Location
- High Stack
- Stern (aft most)
- Forecastle (Bow)
- Off Centerline
- DG must be stowed away from heat sources
- Carrier planning Department
These containers get a roughest ride
Why the CTU CODE?

Surge – Yaw – Heave – Pitch – Roll
According to the NCB Poor CTU packing and securing is responsible for an alarmingly high % of incidents along the transport chain, leading to cargo damage and loss, injuries and fatalities.

Victims may be the general public or transport and supply chain workers, who generally have no control over the packing of such units.
NCB Inspections, normally target only declared dangerous goods and especially flammables.

Surveys find that 30% of containers hold incorrectly packed, secured and stowed cargo (Capt. MacNama NCB).

According to data recorded by the Cargo Incident Notification System (CINS), 28% of cargo and container incidents are caused by incorrectly packed and secured cargo.
CTU Code Vs. ILG

- Mode Of Transportation Focus
- CTU / PHMSA / 49 CFR
- Performance Based Regulations
- AAR = Prescriptive Based Guideline
- Rail Mode G Force Discrepancy

CTU CODE  = 1 G
TTCI TEST  = >2.5 G’s
Force = Mass (of Cargo) x Acceleration

80 Drums / 40,000 lb. Load

3 G Impact = 120,000 lbs.
1G impact = 40,000 lbs.  

Longitudinal Force to be Absorbed by Cargo and Restraint system

- Packaging Deformation
- Coefficient Of Friction (CoE)
- Sidewall Deflection
1 CARGO SECURING METHODS

Goods should be prevented from sliding and tipping in forward, backward and sideways directions by blocking, bracing, lashing or a combination of these methods.

1.1 Blocking and Bracing

1.1.1 Blocking means that the cargo is allowed against fixed blocking structures and fixtures on the CTU Chaps, wedges, damage stoppers, inclined damage stops and other devices which are supported directly or indirectly by fixed blocking structures are also considered as blocking.

1.1.2 Blocking is primarily a method to prevent the cargo from sliding, but if the blocking reaches high enough, it also prevents tipping. Blocking is the primary method for cargo securing and should be used as far as possible.

1.1.3 The sum of void spaces in any horizontal direction should not exceed 15 cm. However, between dunnage cargo items, such as steel, concrete or stone, the void spaces should be further minimized, as far as possible.

1.2 Top-over lashing

When using the tables for top-over lashing, the angle between the lashing and the platform board is of great importance. The tables are valid for an angle between 75° to 90°. If the angle is between 60° to 75°, the number of lashings is needed (alternatively the table values are halved). If the angle is less than 75°, another cargo securing method should be used.

Top-over lashings preventing tipping forward and backward should be placed symmetrically on the cargo.

10. QUICK LASHING GUIDE A

Cargo securing on CTUs for transports on Road, Combined Rail and in Sea Area A

10.1 General Remarks

10.1.1 Accelerations to be expected expressed in parts of the gravity acceleration ($g = 9.81 m/s^2$)

<table>
<thead>
<tr>
<th>Transport mode/Sea area</th>
<th>Sideways</th>
<th>Forward ($F$)</th>
<th>Backward ($B$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road</td>
<td>0.5</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Combined Rail</td>
<td>0.5</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>Sea Area A</td>
<td>0.5</td>
<td>0.3</td>
<td>0.5</td>
</tr>
</tbody>
</table>

$V = \text{Vertical acceleration to be used in combination with horizontal accelerations, } 5 \text{ dwt cm, } F \text{ Forward and } B \text{ Backward}$
2.3.3 A bracing or closing arrangement should be designed and completed in such a way that it remains intact and in place, also if compression is temporarily lost. This requires suitable uprights or braces supporting the annual sheaves, a proper joining of the elements by nails or clamps and the calibration of the arrangement by diagonal braces as appropriate (see Figures 7.4 and 7.5).

2.3.4 Transverse battens in a CTU, intended to restrain a block of packages in front of the door or at intermediate positions within the CTU should be sufficiently dimensioned in their cross section, in order to withstand the expected longitudinal forces from the cargo (see Figure 7.6). The ends of such battens may be fixed to solid configurations of the side walls of the CTU. However, preference should be given to brace them against the frame structure, such as battens or top rails or corner posts. Such battens act as bracers, which are fixed at their ends and tied horizontally over the entire length of about 2.4 meters. Their bending strength is decisive for the forces that can be resisted. The required number of such battens for each cargo arrangement may be identified by calculating, which is shown in appendix 4 to this annex.

2.3.5 Blocking by nailed or nailing should be used for the securing demands only. Depending on size of the rack used, the shear strength of such a blocking arrangement may be estimated to face a blocking force between 1 and 4 kN per rail. Nailed or nailing may be executed by blocking round shapes into pipes. Care should be taken that wedges are cut in a way that the direction of grain supports the shear strength of the wedge. Any such blocking bars or wedges should only be tied to drainage or bottom boards placed under cargo. Wooden floors of closed CTUs are generally not suitable for nailing. Nailing to the soffit wood of decks or planks and wooden CTUs may be acceptable with the consent of the CTU operator (see Figure 7.7).

4.2.5 When the door end of a CTU is designed to provide a defined wall resistance (e.g. the doors of a general purpose design container; see chapter 6 of the Class), the loads may be considered as a strong transverse boundary, provided the cargo is stored to avoid impact loads to the door and to prevent the cargo from falling out when the doors are opened.

4.2.6 Where there is the need to stack packages in an impossible second layer at the centre of the CTU, additional longitudinal bracing can be adopted (see Figures 7.33 and 7.36).

Figure 7.6 Blocking in a strong boundary CTU.

Figure 7.7 Properly cut and nailed wedges.

Figure 7.8 General view of wooden battens for strong protection of a CTU.
USCG Container Inspection Program

National Container Inspection Program

• Survey SOP
• Container Transport Unit Code (CTU Code)
• Codifies NCB Role
• SOLAS Convention - CFR - PHMSA
• IMDG (International Maritime Dangerous Goods) Code.

COMDTINST M16616.11C
• NCB Trains USCG Surveyors
• Vessel Architecture
• Vessel Stability
• Vessel Draft
• Securing Non-Standardized CTU’s
• Grain Loading
• Securing Cargo

• **Bulk Cargo Vessel Surveys** - Coal & Bulk Cargo Certificates, Pile Surveys, Vessel Cleanliness Cert,

• **Container Vessel Surveys** - Dangerous Cargo Manifest Review, Loading Certificates, Hazardous Stowage and Segregation Review, Break Bulk/Heavy Lift Surveys, Cargo Gear Certifications, Bunker Surveys

• **Container / Cargo Inspections** – Hazardous Container / Tank Inspections, Container Structural Serviceability Inspections, Flat Rack Securing Inspections. Damaged Cargo Survey, Radioactive / Explosive Cargo Survey

• **Flat Rack Inspections**

• **Cargo Securement Inspections**
NCB Flat Rack Inspection Program

- Inspecting the Flat Rack for suitability to load on board a
- Evaluating the blocking, bracing, and bedding for cargo securing and weight distribution
Pre-emptive DP Approach

Not Looking for a GOTCHA!