Canadian Grain Commission | Commission canadienne des grains

Canada

Vessel Loading Standard for Official Weighing

CGC WS-STAN 4.1

en français :	Services de la pesée **Norme sur le chargement des navires pour la pesée officielle**

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Version 2

Version No.	Section	Description of change	Effective date
1		Initial release	June 1, 2014
2		Reformatting, modification/clarity of requirements	September 1, 2015
3			
4			

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1.0 Acronyms and Definitions

1.1 Acronyms

AWRAPS	Automated Weight Recording and Playback System
CAR	Corrective Action Request
CGC WS	Canadian Grain Commission Weighing Services

1.2 Definitions

Accuracy Test – The evaluation of a device's accuracy relative to known test standards or performance benchmarks.

Berthing –

Eastern Region – A berthing is a completed shipment at a single terminal elevator. If the vessel leaves the terminal elevator berth and returns to complete the same order, it is still considered to be a single berthing. If a vessel loads at two or more terminal elevators, each loading is considered to be a berthing.

Western Region – A berthing is a completed shipment at a single terminal elevator. If the vessel leaves the terminal elevator berth, the berthing is complete. If the vessel re-berths at the same or berths at a different terminal elevator, a new berthing is created.

Device – An object, machine, or piece of equipment that is used for the purpose of weighing grain.

Document – A written, printed, electronic file or otherwise that is subject to change (live paper), i.e., directions on conducting or how to carry out an activity.

Event Log – A file or document that captures or tracks events during the shipping process.

In-house Weigh Back – The recovery of officially weighed grain that has not been discharged to a vessel but retained within the terminal elevator. The weight of the recovered product is deducted from the appropriate vessel total.

Marine Weigh Back – The recovery of officially weighed grain from a vessel. The weight of the recovered product is deducted from the appropriate vessel total.

Lot – The designation by which cargo on a vessel is separated. A vessel may have one lot for a whole shipment or may have multiple lots in each hold.

Occurrence – An event that could affect or has affected the official weight of a vessel.

Record – A document that memorializes and provides objective evidence of activities performed, events occurred, results achieved, or statements made that <u>are not</u> subject to change (dead paper).

Route Checks – The verification of equipment through visual and electronic means to ensure that all officially weighed grain moves through the delivery system without diversion or loss.

Scale – An instrument or machine that is used for weighing.

Sensor – Any device designed to detect, measure, or record physical phenomena, as in heat, weight, or pressure, and to respond, as by transmitting information, initiating changes, or operating controls.

Set – The configuration of all diversion points of the delivery system that defines the route between the scale and vessel or vessel to scale (weighback), i.e., scale to shipping bin to belt/s to spout to hold.

Standard – Requirements that must be met by a terminal elevator in order to weigh grain which will then be certified by the CGC WS.

Vessel Package – The completed records (electronic and/or hard copy) required by CGC WS to certify an export vessel.

Weighing System – The assemblage of all components that weigh and deliver grain.

2.0 Introduction

The Canada Grain Act defines “Official Weighing” as the weighing of grain under the supervision of a person authorized by the Commission or in a manner authorized by the Commission. On August 1, 2013, the CGC moved from “weighing grain under the supervision of a person authorized by the Commission” (onsite CGC WS staff) to a “manner authorized by the Commission” (Weighing oversight model). This change shifted the role and responsibilities of terminal elevator management in the official weighing process.

This standard sets out the requirements and responsibilities of licensed terminal elevators to load direct export vessels to ensure accurate and verifiable weights. Once the records submitted by the terminal elevators to support the weight are verified by the CGC WS, the submitted weight becomes the official weight reported on the Certificate Final and associated official documents.

Terminal elevators must document the processes they follow to meet the requirements of this standard in a Vessel Loading Work Instruction for Official Weighing. This work instruction must be reviewed and approved by the CGC WS. It is the responsibility of the terminal elevator management to ensure that the work instruction is understood and implemented consistently by their staff and/or contracted service provider.

The accuracy of the weights generated by terminal elevators will be monitored through the ongoing review of records submitted by the elevators for each vessel loaded, the inspection of the weighing systems and process audits.

3.0 General Requirements

All licensed terminal elevators must:

- Establish, document and implement the processes required by this standard, and

- Install, obtain approval for, and maintain the weighing systems and electronic recording systems required by this standard.

The documented procedure, to be called a Vessel Loading Work Instruction for Official Weighing, must be submitted to the CGC WS for review and approval. Once approved, the work instruction must be implemented and maintained.

4.0 Elevator Management Responsibility

The terminal elevator management must demonstrate its commitment to meeting the requirements of this standard by:

- Communicating and explaining to all relevant elevator staff (or contracted service providers) the importance of following the Vessel Loading Work Instruction for Official Weighing,

- Providing resources to meet the internal monitoring procedures established in the work instruction,

- Cooperating with CGC WS staff in the scheduling of external monitoring requirements, and

- Assigning to a management representative the responsibility and authority to develop, implement and monitor the Vessel Loading Work Instruction for Official Weighing.

5.0 Technical Requirements for Weighing Devices and Systems

5.1 Weighing systems for official weighing must be approved for use and inspected for performance by CGC WS and Measurement Canada. All devices must have current Measurement Canada certification to be used for official weighing purposes.

5.2 Test weights must meet Measurement Canada specifications, including the required periodic re-certifications.

5.3 If weighing devices are not working within the in-service limit of error of 0.1% and/or if components of the weighing system require repair, the system must be removed from service and the situation must be reported immediately to the CGC WS. The CGC WS will determine the corrective measures required to return the device and/or weighing system to service.

5.4 Any sensors used within the weighing system must be tested for accuracy at regular intervals as defined by the terminal elevator management and indicated in their work instruction.

6.0 Automated Weight Recording and Playback System (AWRAPS)

6.1 All terminal elevators with electronic weighing systems must install and maintain an AWRAPS. There must be a method to verify that AWRAPS is on and recording throughout the shipping process.

6.2 AWRAPS must record and allow playback of weighing systems activities (loading/unloading) during a berthing. See Annex 1 for more detailed specifications.

6.3 Recorded data must be retained for a minimum of 6 months post-loading.

6.4 AWRAPS data must be provided immediately and in the format required when requested by CGC WS for review.

7.0 Documentation

7.1 Terminal elevator management must develop, maintain and control a Vessel Loading Work Instruction and the associated forms for Official Weighing for their elevators as required by this standard.

7.2 A copy of the terminal elevator Vessel Loading Work Instruction for Official Weighing and the associated forms for record keeping must be provided to the CGC WS for approval prior to implementation.

7.3 Each Vessel Loading Work Instruction and the associated forms must contain the document name, revision number and the revision date.

7.4 Any revisions to the Vessel Loading Work Instruction and the associated forms must be re-submitted to CGC WS for approval, containing the revision number, revision date and changes highlighted.

8.0 Record Keeping

8.1 The terminal elevator must maintain records as objective evidence that the processes detailed in their Vessel Loading Work Instruction for Official Weighing are being followed.

8.2 Records must be stored in a manner that provides for their safekeeping, be readily available, and be retained for a minimum of two (2) years post-loading.

8.3 All records, including scale tapes, must contain the vessel name and must be signed. Electronic signatures are acceptable for electronic records. Electronic records and emails must be in a readable format.

8.4 After each vessel berthing is complete, a Vessel Package must be submitted to the CGC WS. The Vessel Package must include the following records:

- vessel orders (including layout)
- final stowage plan
- documentation of vessel loading routes (sets)
- signed shipping scale tapes
- shipping scale tape summary sheet(s) such as the scale ledger or a vessel loading report, based on product and lot number
- records of the route checks
- Port Warden Readiness to Load Report (Transport Canada) and Ship Inspection Approval for Loading (CFIA)
- And, if applicable:
  - occurrence report(s)
  - weigh back report
  - marine weigh back report
  - accuracy test results
  - event logs

8.5 In addition, if requested by the CGC WS, the following records must be provided:

- AWRAPS segments
- transfer scale tapes

9.0 Vessel Loading Procedures

9.1 Start of the day

9.1.1 AWRAPS must be checked to ensure the system is recording.

9.1.2 If automatic test weights are available:

9.1.2.1 An accuracy check to ensure that the device is operating within the acceptable limit of error of +/- 0.1% must be performed and results recorded. This must be done both prior to loading and at the beginning of each day.

9.1.2.2 If the scale is not performing within acceptable limit of error, a recheck of physical scale components must be done to determine if the problem can be corrected. If the problem cannot be corrected, the scale must be removed from service and reported to the CGC WS. A device inspection and recertification must be scheduled with CGC WS. The device must not be returned to service until recertified.

9.1.3 Verify the integrity of the grain left in the system from the previous day.

9.1.4 The delivery system readiness must be checked by ensuring that any equipment that has a time stamp is synchronized within five minutes of the actual time.

9.1.5 Record any discrepancies as an occurrence.

9.2 Prior to loading a new lot

9.2.1 Each weighing device must be checked to ensure it is ready to accurately receive and record weighing data and the weighing system is set to shipping mode. This includes ensuring:

- Scales are empty.
- Scales are set to zero.
- Printers, where used, operates properly, print quality is good, and there is enough paper.
- Electronic scale tape systems, where used, are activated.

9.2.2 The delivery system readiness must be checked, and the results of this verification must be recorded by:

- Visual check that the delivery system from the scale to the destination is empty.
- Visually check that the delivery system is set to the appropriate route and if applicable, secured.

9.2.3 Garner and scale valves must be free of leaks. The results of this verification must be recorded.

9.3 During loading

9.3.1 Scale tapes must be checked at regular and defined intervals as defined by the terminal elevator management and indicated in their work instruction. This check is done, and the results of this verification must be recorded, by:

- Comparing the weights recorded on each scale tape to the readout on the indicator or weighing console and verifying that the weights are the same. The results of this verification must be recorded.
- The operator must ensure that the console readings are not erratic, inconsistent or show irregularities.

9.3.2 The transaction memory must be checked to ensure that the total has not carried forward from the previous scale tape. The results of this verification must be recorded.

9.3.3 All scale alarms must be investigated, resolved and reported as an occurrence. Additionally for the potential weight affecting situations listed below, inform CGC WS as soon as possible. In the event you are unsure how to resolve an alarm or event, call CGC WS for technical support.

- Scale under zero
- Scale over capacity or scale overweight
- Scale overweight – grain released to the vessel
- Interlock error
- Weighing hopper full
- Scale unbalanced
- Communication / data error (indicator, PC, PLC, Network)
- System failure

In the event of a system failure where records are not captured (ie: missing drafts on the scale tapes) collect evidence to support the weight going aboard, this may include one or more records of AWRAPS segments, pictures or video recordings and CGC WS must be informed as soon as possible of such occurrences.

In the event of a system failure where records are not captured (ie; missing drafts on the scale tapes) and there is no evidence to support these records, call CGC WS immediately to collaboratively investigate if there is a method to substantiate the missing weighment.

See Annex 2 for instruction on how to respond to scale alarms.

9.3.4 A running total of weights per lot of grain must be maintained. Scale tapes must be recorded sequentially on a scale ledger or equivalent record.

9.3.5 The delivery system sets at all diversion points must be verified and recorded to ensure grain is delivered to the intended destination. The date and time of all changes to sets must be recorded.

9.3.6 The date, time and reason for any delay in loading operations greater than 15 minutes must be recorded.

9.3.7 All weighing and delivery systems must be physically checked at a minimum of every 4 hours during vessel loading. The results of this verification must be recorded with the date and time.

9.3.8 Any irregularities and malfunctions in the delivery system must be investigated and reported to CGC WS as an occurrence.

9.3.9 Any spill of weighed grain that is recoverable must be reclaimed and transferred to the vessel or weighed back to the house and reported to the CGC WS as an occurrence.

9.3.10 Any spill of weighed grain that is unrecoverable (visible or unmeasurable) must be reported immediately to the CGC WS. A process to estimate the spilled weighed grain must be agreed upon between the terminal elevator manager and CGC WS. Records supporting the estimate must be provided to the CGC WS and should include:

- A photograph of the spill, if possible,
- The measurements of the spill, the method and the rationale of estimating its weight, and,
- The scale tape indicating the grain replacement.

Refer to “guidance document” for further information.

9.4 **Weigh back procedures**

9.4.1 Weighed grain in the delivery system that is not going to the vessel must be returned to the house. This grain must be weighed and deducted from the total weight of the applicable lot. The weight must be recorded and noted as negative on a scale ledger or equivalent record. The scale tapes for the weigh back must be identified as such and recorded sequentially as part of the running total.

9.4.2 In the event of a marine weigh back or a potential marine weigh back, the following steps must be followed:

a) Immediately upon discovery of a potential marine weigh back, the elevator management must contact the CGC WS with the intended process to be used to discharge and weigh the grain from the vessel. The weigh back cannot proceed until the CGC WS has approved the process.

b) The grain removed from the vessel must be weighed using a CGC-approved weighing system.

c) Grain discharged from the vessel must be removed in a manner that prevents any unrecoverable and unmeasurable loss and recorded in a manner that it is traceable back to the house.

d) At completion of the marine weigh back, the CGC WS must be notified of the quantity of grain removed from the vessel and provided with revised vessel loading reports. The weight must be recorded and noted as negative on a scale ledger or equivalent record. The scale tapes for the marine weigh back must be identified as such and recorded sequentially as part of the running total.

9.5 End of day

9.5.1 At the end of each day or shift, a statement attesting to the daily interim weight of grain delivered to the vessel must be provided to CGC WS. This could be sent by email, fax or posted on the CGC WS FTP site.

9.5.2 If the vessel loading takes place over more than one day:

- All weighing and delivery systems must be visually checked after loading is discontinued for the day to ensure all weighed grain has been delivered to the intended destination and shipping, surge and/or weigh-back bins are empty. The result of this verification must be recorded.
- If weighed grain is to be held within the set during a specified period, i.e., overnight it must be secured. The result of this verification must be recorded.

9.6 End of lot

9.6.1 The delivery route must be physically checked to verify that all weighed grain has reached the vessel. The result of this verification must be recorded.

9.7 On conclusion of loading (berthing)

9.7.1 In order to meet commercial commitments, the final weight per lot may be adjusted as indicated in Annex 3.

9.7.2 A statement attesting to the final weight delivered to the vessel must be provided to CGC WS. This could be sent by email, fax or posted on the CGC WS FTP site.

9.7.3 The terminal elevator management must provide the Vessel Package in either hard copy or electronically to the CGC WS for validation of the weight.

9.7.4 In the event that the CGC WS finds an error in the weight during vessel validation, the terminal elevator management will be advised and be required to provide corrected records in a timely manner.

10.0 Audits and Monitoring

10.1 The terminal elevator must participate in the audit program as specified by the CGC WS, which will include both scheduled complete and announced or unannounced adhoc audits.

10.2 The terminal elevator management must ensure the cooperation of terminal elevator staff and/or contracted service providers when CGC WS on-site audits occur, including arranging a workplace and/or meeting place and ensuring the availability of any records or documents required by this standard.

10.3 The CGC WS may identify non-conformances by issuing a Corrective Action Request (CAR) at any point, as they relate to this standard.

10.4 In the event of a cargo complaint, terminal elevator management must cooperate by providing any additional information that the CGC WS requests in regard to the vessel in question.

10.5 The terminal elevator management will comply with Corrective Action Request/s by addressing non-conformances immediately or by developing a plan acceptable to the CGC WS to address non-conformances in the prescribed timeline.

Annex 1 – AWRAPS Detailed specifications

Items to be captured (but not limited to):

1. Grain flow visual display - mandatory
2. Scale VDT's/indicators - mandatory
3. Surveillance camera/s (berth/es) feed - mandatory
4. Virtual Scale Tape systems
5. Event logs
6. Inspection specific visual display and / or data, i.e., sampler controls

Grain flow visual display (if capable)

1. Legs – on/off, amperage, connection to upper garner (if selectable)
2. Upper garner – empty, full and high level sensor indication
3. Upper garner gate slide – open/close indication, percentage open
4. Weigh scale hopper – empty, full and high level sensor indication/warnings, scale over capacity, scale out of balance, scale weight indicator, running total, CCN number
5. Scale functions (displayed within or immediately around the scale) – scale mode, current action and status, destination bin, draft information (CCN, gross, tare, net), terminal elevator transaction number, discharge permissive, grain type, automatic or manual mode, conveyance identification, running total for transaction, running total for lot
6. Weigh scale hopper gate slide – open/close indication, percentage open
7. Lower garner – empty, full and high level sensor indication
8. Distributor – position (spouting to destination – name, bin or belt/bin), locked on/off
9. Shipping bin – empty, current level, full and high level sensor indication
10. Shipping bin gate slide – open/close indication, percentage open
11. Shipping bin distributor – position (spouting to destination name – leg [w/b] or belt/s / spout/s), locked on/off
12. Conveyor belt/s – amperage per section, load indicator, direction indicator (if reversible)
13. Trip/Tripper – position/selection
14. Cross belt – amperage
15. Spout – position/selection, plug indicator
16. Other items (as noted below)

Other items

1. Interlock error – activation or repeated attempts to activate interlocks
2. Data error
3. Communication error
4. Printer error
5. Equipment names
6. Scale mode of operation – Shipping, Receiving, Transferring, Calibration

Annex 2 – Instructions on how to respond to scale alarms

1.0 Cease operations by discontinuing the elevation and/or discharge of grain.

- remove mayo spout from shipping delivery route
- obtain visual readouts and record
- discontinue grain flow to and from scale
- go to manual mode

2.0 Check and confirm weighing system by inspecting the scale and related equipment and report status.

- inspect all pertinent scale equipment
- check scale and garner valves position
- determine the grain levels in the scale (where possible)
- communicate results of investigation
- discuss the re-weighing of affected parcels of grain

3.0 Consult regarding possible causes and corrective action.

- review the events leading up to the occurrence
- review scale tapes and documentation
- identify the cause(s) of alarm
- determine the best course of action

4.0 Identify and resolve - Confirm the causes and effect of the alarm or occurrence and then analyze and implement corrective action.

- review all information gathered
- discuss possible solutions or acceptable alternatives
- ensure repairs are carried out where applicable
- if possible, re-weighing effected parcels of grain
- run system tests to house when possible

5.0 Resume and monitor the operation once repairs or adjustments are completed and operations returned to normal. Continue assessing the situation for further alarms, malfunctions or occurrences.

- ensure system integrity by closely monitoring operation
- inspect the scale and related equipment while in operation
- consult with operator on results and/or further action to be taken

6.0 Document and report the entire event and corrective action. Collect all pertinent data from available sources and compile appropriate documents to accurately report each occurrence.

- gather all information
- ensure all information is accurate
- assemble in chronological order
- prepare an accurate and legible report
- forward to CGC WS

Annex 3 – Final Weight Adjustment

In order to meet commercial commitments, the final weight per lot may be adjusted (last scale tape of final berthing) on a lot.

Some reasons include: over or under “shooting” the target weight due to human error, mechanical error, scale graduations, slide jogging capabilities, or weighing system limitations.

Parameters for elevator scale tape adjustments are:

- any adjustment to scale tape and reason for adjustment is clearly noted:
  - below the original final weight showing the + or – amount then a line below it and finally the new final adjusted overall weight;
  - on an adjustment/scale ledger;
  - or via an occurrence.
- maximum allowable adjustment:
  - Deducting the weight is 0.200t for the overall lot loading
  - Adding weight is 0.100t for the overall lot loading.
  - Anything else would be subject to the regional Manager of Weighing Services’ or designates’ verbal or written approval.

Example: Loading order states MIN/MAX Total - 50,000.000t

Examples of Deducting Weight

ACCEPTABLE

Total on board	50,000.200t
Deduct	- 0.200t
Weight adjusted	50,000.000t

Total on board	50,000.099t
Deduct	- 0.099t
Weight adjusted	50,000.000t

NOT ACCEPTABLE

Total on board	50,000.251t
Deduct	- 0.251t
Weight adjusted	50,000.000t

Examples of Adding Weight

ACCEPTABLE

Total on board	49,999.900t
Add	+ 0.100t
Weight adjusted	50,000.000t

Total on board	49,999.973t
Add	+ 0.027t
Weight adjusted	50,000.000t

NOT ACCEPTABLE

Total on board	49,999.899t
Add	+ 0.101t
Weight adjusted	50,000.000t