United States Department of Agriculture
Agricultural Marketing Service
Federal Grain Inspection Service

Program Notice

FGIS-PN-10-03 **October 19, 2009**

ADDITIONAL PARAMETERS FOR AUTOMATED MONITORING AND SUPERVISION OF OFFICIAL WEIGHING

Contents

1. PURPOSE

This notice announces that the Agricultural Marketing Service (AMS), Federal Grain Inspection Service (FGIS) specifies requirements for automated official weight monitoring systems in addition to the requirements noted in FGIS Directive 9160.3, Parameters for Automated Monitoring and Supervision of Official Weighing, dated September 4, 2006.

2. BACKGROUND

FGIS Directive 9160.3 establishes a list of parameters for developing an automated official grain weighing and handling system, also called an Automated Weighing System (AWS), which will produce the necessary documentation and incorporate the necessary safeguards such that it can be operated without 100 percent official physical supervision. Features which make these systems more effective, more reliable, or easier to operate are added to the list of requirements as advances in technology make them practical. It is the policy of the Agricultural Marketing Service (AMS), Federal Grain Inspection Service (FGIS) to encourage the grain industry to automate weighing, sampling, and material handling systems to assist in improving the efficiency and effectiveness of official service.

In 2009 FGIS implemented the Inspection Data Warehouse (IDW), which stores and distributes grade and weight certificates in electronic form, plus Certificate and Distributed Certificate software (CRT and DCRT), and Inspection, Testing, and Weighing software (ITW) to generate the certificates. Since inbound barge and rail weight certificates carry no inspection data, an AWS can generate these certificates automatically. The previous way of doing this has been to print the certificates on pre-printed forms using impact printers. This method will no longer be allowed because the paper certificates generated must be entered into IDW manually. They cannot simply be scanned. Instead, an AWS will be required to transmit the data directly to an FGIS computer running DCRT.

3. POLICY

The features specified in this program notice are required in any AWS before it is given initial approval for official use, or before it is re-approved for official use following major modifications, major upgrades, or repairs which involve extensive reprogramming or incorporation of new data processing equipment.

Existing approved AWSs will be required to have these features by certain dates which are specific to each feature. Failure to provide a required feature by the specified date will result in suspension of the system’s approval to provide official weights without a weigher being present.

4. ALARM AND EVENT REQUIREMENTS

a. Silencing Audible Alarms.

Official personnel must be able to silence an audible alarm without clearing the visual alarm indication. Silencing an alarm that requires investigation before the error condition is cleared avoids errors due to personnel hastily clearing the alarm to stop the noise, or continuing to work while subjected to constant noise.

The ability to silence audible alarms will be required by August 30, 2010.

b. Descriptive Voice Announcements for Alarms and Permissive Requests.

Alarms and permissive requests must incorporate a voice announcement that gives general information about the kind of alarm or request. The accompanying visual indication can fill in the specifics that the voice leaves out. For example, a voice alarm could say, “Gate opened without permission,” and the visual indication could show the specific gate and the scale affected. Another example is a permissive request in which the voice says, “OK to Weigh request,” and the visual indication identifies the scale and shipping bin. Voice alarms and requests improve the accuracy and efficiency of the system by letting official personnel know the action required even before reading the visual indication. In contrast, generic beeps can allow personnel to confuse an alarm that needs immediate attention with a “nuisance” alarm that has been occurring frequently and has low importance.

As voice alarms are expected to involve more extensive changes to automated weighing software, and possibly changes to the hardware as well, more time is being allowed for their implementation. Voice alarms will be required by September 3, 2012.

c. Replacement of Event Log Printers.

In order to reduce the amount of equipment and paper and reduce the noise level in inspection labs, printers which print out event logs continuously will no longer be allowed. In place of the printer, an AWS must make an Alarm and Events screen available which can display at least the most recent 24 hours of alarms and events. There must also be a simple way to print a hard copy of the data in this screen or to copy it to a removable electronic storage device. Event logs will continue to be monitored continuously by an FGIS computer, and copied to a server on the AMS network every night.

This feature will be required in all AWSs by September 3, 2012.

5. INBOUND WEIGHT CERTIFICATES

a. Port.

Weight certificate data must be transmitted to the FGIS computer over an RS-232 serial port. Computer security regulations would interfere with the use of any other type of hardware port. Default port settings are 38400 baud, 8 data bits, 1 start bit, 1 stop bit, and no parity, but these can be changed if necessary. Either software (XON) or hardware (DTR) flow control can be used.

b. Basic Flow Control.

If hardware flow control is enabled, the FGIS computer (the receiver) asserts the “Data Terminal Ready” (DTR) control line (+5V) when it is ready to receive data, and drops the DTR line (0V) when it is not ready. If software flow control is enabled, the FGIS computer sends one XON character (ctrl-Q or ASCII 17) every 100 milliseconds as long as it can receive data.

The AWS may respond to either hardware flow control, i.e., transmitting data only while DTR is asserted, or software flow control, i.e., transmitting only when an XON has been received within 100 milliseconds, or both. If possible, the AWS should use software flow control, as is may not be possible for the FGIS computer to lower the DTR line if the receiver program is blocked. If the AWS cannot receive characters from the FGIS computer over its serial port, it must use hardware flow control.

If DTR is low continuously for more than 10 seconds, or no XON is sent for more than 10 seconds, either an error condition exists or the receiver program is not running.

c. Data Transfer Initiation and Completion.

The AWS must hold its certificate data until the FGIS computer signals that it is ready to receive data by asserting the DTR control line (hardware flow control) or transmitting an XON (software flow control). Normally it will have to wait no longer than 10 seconds. When certificate data are available, the AWS must transmit the entire certificate without interruptions, because the FGIS computer will time out and assume an error condition exists if it does not receive any characters for 5 seconds.

The AWS must indicate the end of a certificate by sending either a Form Feed (FF, ASCII 12) or an End of Transmission (EOT, ASCII 4) character. The receiver will reply with an Acknowledge (ACK, ASCII 6) character to indicate the file was received successfully, and if hardware flow control is enabled, it will drop DTR. The AWS must then remove the certificate data from its transmit queue and prepare to transmit the next certificate, if any.

d. Error Handling.

An error condition is indicated if either computer transmits a Negative Acknowledge character (NACK, ASCII 21), or if the AWS stops transmitting data for 5 seconds, or if the FGIS computer holds DTR low and does not send an XON character for 10 seconds.

If the FGIS computer detects an error condition, it will stop receiving data, close its certificate file, and, if hardware flow control is enabled, will drop DTR. If software flow control is enabled, it will transmit a NACK character to notify the AWS of the error, unless the AWS had indicated the error itself by transmitting a NACK.

If the AWS detects an error, it must stop transmitting data and prepare to re-transmit the certificate from the beginning. The AWS may optionally transmit a NACK to notify the FGIS computer of an error condition, but it should not transmit a NACK in response to receiving a NACK.

e. Comma-Separated Variable (CSV) Data Format.

NOTE: FGIS has a programming project to parse data formatted for a preprinted weight certificate form in an impact printer and reformat it for the DCRT program. If this project is successful, existing AWSs which currently print weight certificates on preprinted forms will not have to reformat their data for DCRT. In addition, the hardware flow control option of the FGIS data receiving program is similar to the flow control used by a serial printer. However, this does not guarantee that it will be possible to simply move the printer cable to a serial port on the FGIS computer.

FGIS computers can currently accept data as ASCII text in Comma-Separated Variable (CSV) format. In this format, data fields are separated by commas, and the meaning of a field is determined by its position in the data file. The first field is always the record type (all weight certificates are type “S”), the second field is the service point code of the location where the certificate is generated, and so on.

Attachment 1 of this program notice lists the fields of an inbound weight certificate, their permissible contents, and their meanings. A field may contain alphabetic or numeric characters, spaces, and any punctuation characters except commas, double quotes, or single quotes. A field may optionally be enclosed in double quotes, in which case it may also contain commas and single quotes. A field may never contain a carriage return (ASCII 13) or line feed (ASCII 10), because DCRT interprets these characters as record separators to allow multiple records to be imported as a single file.

Attachment 2 of this program notice shows the correspondence between the fields of a preprinted official weight certificate and the fields of a CSV file.

FGIS Directive 9290.16, Inspection Data Warehouse (IDW) for Grain Program Services, Attachment 1, also lists the fields of a CSV file, their permissible contents, and their meanings. However, a weight certificate is much simpler than the general certificate specified in FGIS Directive 9290.16. Many fields are left blank in a weight certificate, and the fields beyond “Inspection Weighing Service” are not needed and should be omitted.

f. Deadlines.

AWSs will be required to send inbound weight certificates to a FGIS computer running DCRT by August 30, 2010, regardless of whether the software to parse data formatted for a preprinted certificate is available.

The requirement for the AWS to re-send a certificate from the beginning if it detects an error condition is expected to involve more extensive programming modifications, and such error conditions are expected to be uncommon, so weighing systems will not be required to implement this until September 3, 2012.

6. FILING INSTRUCTIONS

Retain a copy of this program notice with FGIS Directive 9160.3 until this information is incorporated into the directive.

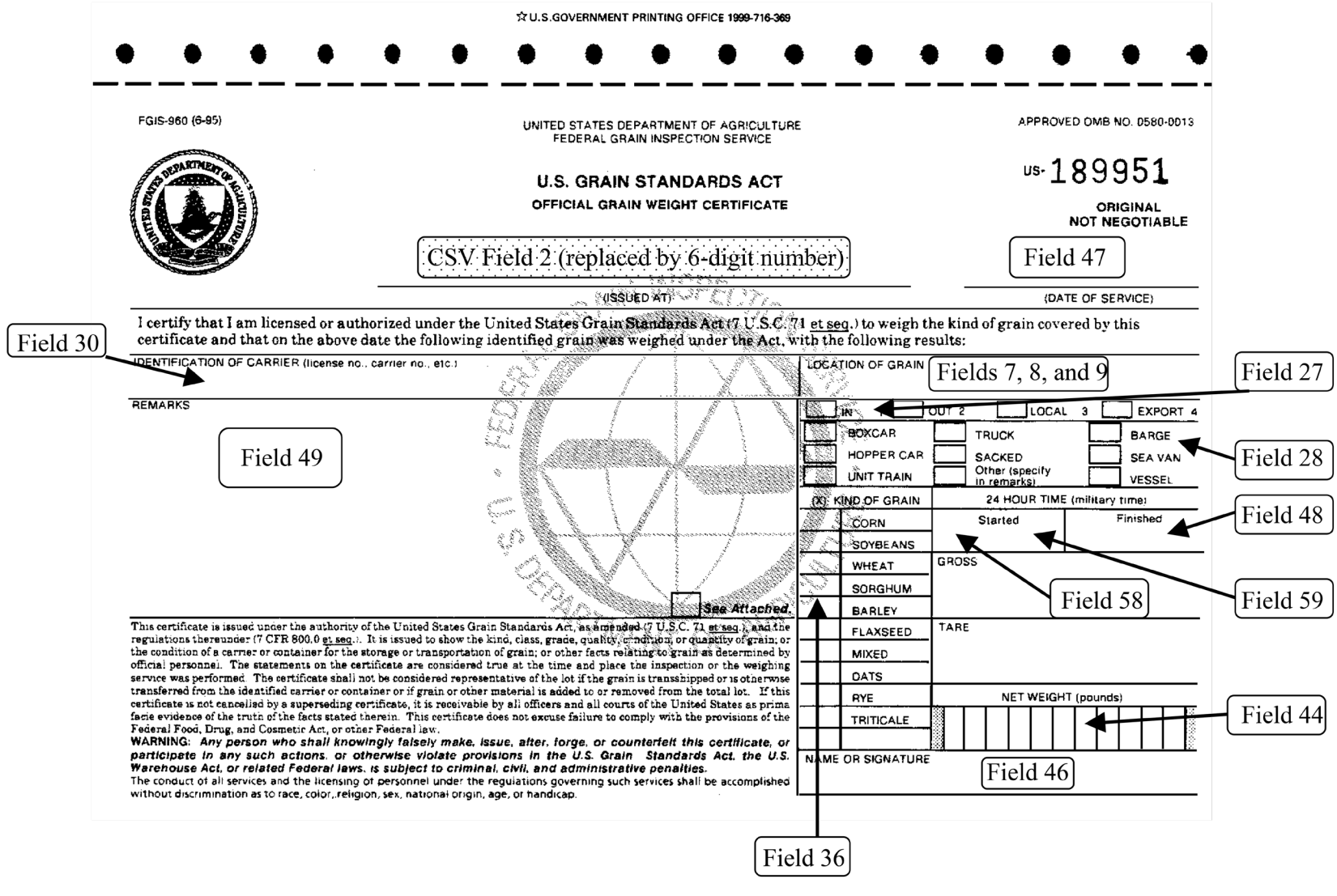
7. QUESTIONS

Direct any questions regarding this notice to AMS - FGIS Policies Procedures and Market Analysis Branch.

Attachments

Field Number	Field Name	Length	Permissible Value(s)	Definitions	Key
1	Record Type	1	S	Code that identifies a Summary Weighing Certificate	S = Summary Inspection and/ or Weighing
2	Certification Location	7	6-digit service point number	FGIS-assigned number for the location where the certificate is issued	
3	Analysis Weighing Location	7	6-digit service point number	FGIS-assigned number for the location where the weighing service is performed	
4,5	Lot Number, File Sample ID	Empty			
6	Inspection Type	4	O, S, N	Level of Inspection	O=Original S=Supervision (Class Y) N=New Original
7	Commodity / Carrier Location	50		Name of facility where the commodity is located at the time of service	
8	City	30		City where the commodity is located at the time of service	
9	State	4	Standard 2-character abbreviation	State where the commodity is located at the time of service	
10	Ordered By	50		Name of the customer requesting service	
11	Certificate Number	Empty		Assigned by CRT software	
12	Certificate Date	Empty		Assigned by CRT software	
13	Service Type	4	X,Y	Class X or Class Y Weighing	
14-22	Repeats of Service Type	Empty			
23	Purpose Code	4	O	Purpose of record (Original, Void, Duplicate, Corrected)	O=Original
24-26		Empty	I		
27	Movement	4	B, R	In, Out, Local, Export	I=Inbound
28	Carrier Type	4		Type of carrier used to transport the commodity	B=Barge R=Rail
29	Number of Carriers	4		Number of carriers comprising the lot	
30	Identification	100		Identification of the carrier	
31-35		Empty			

Field Number	Field Name	Length	Permissible Value(s)	Definitions	Key
36	Commodity Class	10		Lowest level of agricultural commodity class or subclass as defined in the Agricultural Product Standards	
37-43		Empty			
44	Official Weight	9		Weight of the lot weighed	
45	Unit of Measure	4	LB or MT		LB=Pounds MT=Metric Tons
46	Certificate Signature Inspector Number	5		FGIS-assigned number for the individual whose name appears on the certificate	
47	Date of Service	8	YYYYMMDD	Date inspection or weighing is completed	
48	Time of Service	4	HHMM	Time inspection or weighing is completed	
49	Remarks	8000		Information from the remarks section of the certificate that is not reported in another field	
50	Agency Field Office Code	10	Standard 2-4 character abbreviation	Official agency or field office that performs the inspection or weighing service	
51-55		Empty			
56	Customer Number	18		FGIS-assigned number for the customer. Required to let a customer access data from IDW	
57	FGIS Fee	1	Y,N	Field to indicate if record is to be used for computing supervision or administrative tonnage fees	Y=Yes N=No
58	Date Started	8	YYYYMMDD	Date weighing begins	
59	Time Started	4	HHMM	Time weighing begins	
60	Type Shipment	4	BU, SA	Bulk or Sack	BU=Bulk, SA=Sack
61	Inspection Weighing Service	4	W	Classification of service as inspection only, weighing only, or inspection & weighing	W=Weighing only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FGIS-960 (6-95)
UNITED STATES DEPARTMENT OF AGRICULTURE
FEDERAL GRAIN INSPECTION SERVICE
APPROVED OMB NO. 0580-0013
U.S. GRAIN STANDARDS ACT
OFFICIAL GRAIN WEIGHT CERTIFICATE
US-189951
ORIGINAL
NOT NEGOTIABLE
CSV Field 2 (replaced by 6-digit number)
Field 47
(ISSUED AT)
(DATE OF SERVICE)
I certify that I am licensed or authorized under the United States Grain Standards Act (7 U.S.C. 71 et seq.) to weigh the kind of grain covered by this certificate and that on the above date the following identified grain was weighed under the Act, with the following results:
Field 30
IDENTIFICATION OF CARRIER (license no., carrier no., etc.)
LOCATION OF GRAIN
Fields 7, 8, and 9
Field 27
REMARKS
Field 49
IN
OUT 2
LOCAL 3
EXPORT 4
BOXCAR
TRUCK
BARGE
Field 28
HOPPER CAR
SACKED
SEA VAN
UNIT TRAIN
Other (specify in remarks)
VESSEL
(X) KIND OF GRAIN
24 HOUR TIME (military time)
Field 48
CORN
Started
Finished
SOYBEANS
GROSS
WHEAT
SORGHUM
Field 58
Field 59
BARLEY
See Attached.
FLAXSEED
TARE
MIXED
OATS
RYE
NET WEIGHT (pounds)
Field 44
TRITICALE
This certificate is issued under the authority of the United States Grain Standards Act, as amended (7 U.S.C. 71 et seq.), and the regulations thereunder (7 CFR 800.0 et seq.). It is issued to show the kind, class, grade, quality, condition, or quantity of grain; or the condition of a carrier or container for the storage or transportation of grain; or other facts relating to grain as determined by official personnel. The statements on the certificate are considered true at the time and place the inspection or the weighing service was performed. The certificate shall not be considered representative of the lot if the grain is transshipped or is otherwise transferred from the identified carrier or container or if grain or other material is added to or removed from the total lot. If this certificate is not cancelled by a superseding certificate, it is receivable by all officers and all courts of the United States as prima facie evidence of the truth of the facts stated therein. This certificate does not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act, or other Federal law.
WARNING: Any person who shall knowingly falsely make, issue, alter, forge, or counterfeit this certificate, or participate in any such actions, or otherwise violate provisions in the U.S. Grain Standards Act, the U.S. Warehouse Act, or related Federal laws, is subject to criminal, civil, and administrative penalties.
The conduct of all services and the licensing of personnel under the regulations governing such services shall be accomplished without discrimination as to race, color, religion, sex, national origin, age, or handicap.
NAME OR SIGNATURE
Field 46
Field 36