Overview of

U.S. WHEAT INSPECTION

This booklet was printed by U.S. Wheat Associates in cooperation with the United States Department of Agriculture, Agricultural Marketing Service, Federal Grain Inspection Service, to provide information on the national, official grain inspection and weighing system used in the United States of America. Revised 2021.

Table of CONTENTS

Introduction

The Overview of U.S. Wheat Inspection is a compilation of USDA, Federal Grain Inspection Service (FGIS) sampling, weighing and inspection handbooks describing the official sampling, weighing, inspection, and certification procedures employed by FGIS for export shipments of U.S. wheat. This publication is a convenient, concise reference for importers and end users of U.S. wheat so they may gain a better understanding of U.S. wheat standards and inspection methods and procedures and aid them in contracting for the quality of U.S. wheat they desire.

CHAPTER I

U.S. WHEAT ASSOCIATES

Purpose

U.S. Wheat Associates (USW) is the export market development organization for the U.S. wheat industry. USW proudly represents the hard-working farm families that produce enough wheat every year to fill tables at home, while still supplying a substantial share of world wheat trade.

USW promotes the reliability, quality and value of all six U.S. wheat classes to wheat buyers, millers, bakers, food processors and government officials in more than 100 countries around the world.

Its mission is to "Develop, maintain, and expand international markets to enhance wheat's profitability for U.S. wheat producers and its value for their customers."

Funding is made possible through checkoff dollars, goods and services from 17 state wheat commissions and cost-share grants from the USDA's Foreign Agricultural Service.

USW does not buy, sell nor process wheat; we do help make it easier for everyone else who does.

Market Development Activities

U.S. Wheat Associates (USW) works on behalf of U.S. wheat producers to help wheat buyers, millers, bakers, wheat food processors and government officials understand the quality, value and reliability of all six classes of U.S. wheat.

The U.S. grain marketing system is reliable and transparent but can be complicated. So, USW keeps buyers and wheat food processors informed about crop quality and prices — an effort that also includes risk management and technical education, market analysis and in-country demand creation. Buyers and users can specify the qualities necessary for almost every end-use product by choosing from among the six classes grown across the country. This combination of reliability and quality provides excellent value to U.S. wheat customers.

All activities may be classed as one of four approaches to market development: trade servicing, technical assistance, market information and analysis, and consumer promotion.

Trade Servicing

USW works directly with overseas buyers to answer questions and resolve issues in purchasing, shipping or using U.S. wheat through regional and country offices, trade delegations to the United States, regular crop and market condition updates, quality surveys and other activities.

Technical Assistance

USW sponsors participation in technical courses, workshops and seminars to help strengthen milling, storage, handling and end-product industries. Other activities include personalized consulting in milling, baking, snack food and pasta production, and grain storage and handling.

Market Information and Analysis

USW regularly gathers and analyzes relevant market data. USW shares information with buyers on trade policy, standards or specifications that may affect imports and projections for future wheat production and consumption. USW publishes several regular reports covering wheat export prices, commercial export sales, world and U.S. wheat supply and demand, crop quality and harvest progress.

Consumer Promotion

USW conducts a few activities directed at consumers. USW works with customers and other U.S. grain industry partners to expand consumer awareness and appreciation for wheat foods, including nutritional information through seminars, consumer demonstrations, trade shows and promotional campaign support.

Market Development Offices

USW maintains its headquarters office in Arlington, Virginia, an office for West Coast trade in Portland, Oregon, and 13 overseas offices to implement market development programs throughout the world.

Each USW overseas office is staffed with highly qualified U.S. and local employees, fluent in the languages of the area and experienced in the field of international grain marketing. USW cooperates on a regular basis with the state wheat commissions in its member states, USDA's Foreign Agricultural Service, agricultural attachés, universities, Office of the U.S. Trade Representative, various commodity organizations and other government agencies.

For further information contact:

Headquarters
Arlington, Virginia
Telephone: (202) 463-0999
E-mail: info@uswheat.org

West Coast Office
Portland, Oregon
Telephone: (503) 223-8123
E-mail: InfoPortland@uswheat.org

Mexican-Central American-Caribbean Region
Mexico City, Mexico
Telephone: 5255 5-202-2075 or 5125
InfoMEX@uswheat.org

South American Region
Santiago, Chile
Telephone: (56 2) 2231-1636
InfoSCL@uswheat.org

South Asian Region
Singapore
Telephone: (65) 6737-4311
InfoSIN@uswheat.org

Manila, Philippines
Telephone: (63 2) 818-4610
InfoMNL@uswheat.org

North Asian Region
Tokyo, Japan
Telephone: (813) 5614-0798
InfoTYO@uswheat.org

Seoul, Korea
Telephone: (822) 720-7926
InfoSEL@uswheat.org

North Asian Region *Continued*
Taipei, Taiwan
Telephone: (886 2) 2521-1444
InfoTPE@uswheat.org

European Region
Rotterdam, The Netherlands
Telephone: (31 10) 413-9155
InfoRTM@uswheat.org

Middle Eastern - North African Region
Casablanca, Morocco
Telephone: (212) 522-787-712
InfoCSA@uswheat.org

People's Republic of China - Hong Kong Region
Hong Kong
Telephone: (852) 2890-2815
InfoHKG@uswheat.org

Beijing, Peoples Republic of China
Telephone: (86 10) 6505-3866
InfoBJG@uswheat.org

Sub-Sahara African Region
Cape Town, Republic of South Africa
Telephone: (27 21) 418-3710
InfoCPT@uswheat.org

Lagos, Nigeria
InfoLGO@uswheat.org

CHAPTER II

WHEAT CLASSING

There are eight classes of U.S. wheat: Durum wheat, Hard Red Spring wheat, Hard Red Winter wheat, Soft Red Winter wheat, Hard White wheat, Soft White wheat, Unclassed wheat, and Mixed wheat.

"Mixed wheat" is the class designation for shipments that contain less than 90 percent of one wheat class and more than ten percent of one or more other classes. "Unclassed wheat" is the class designation for any variety which cannot be classed under criteria of the official U.S. wheat standards.

CLASS	*SUBCLASS*	*VITREOUS CONTENT*
Hard Red Spring (HRS)	DNS – Dark Northern Spring NS – Northern Spring RS – Red Spring	≥ 75% DHV * 25-74% DHV < 25% DHV * Dark Hard and Vitreous
Hard Red Winter (HRW)	No Subclasses	None
Hard White (HW)	No Subclasses	None
Soft White (SW)	SW H– Soft White WH CB– White Club WWH – Western White	None None None
Soft Red Winter (SRW)	No Subclasses	None
Durum	HAD - Hard Amber Durum AD - Amber Durum Durum	≥ 75% HVAC * 60 – 74% HVAC < 60% HVAC * Hard and Vitreous of Amber Color

U.S. Wheat Quality

One of the major strengths of the U.S. grain production and marketing system is the variety of grades, classes, and prices that it can offer customers around the world. Dramatic differences in topography, soils, and climate from one region to another make this variety possible. By building on these natural advantages, seed breeders, researchers, farmers, grain handlers and merchandisers are continually seeking to expand both the type and quality of wheat the United States can make available to its customers.

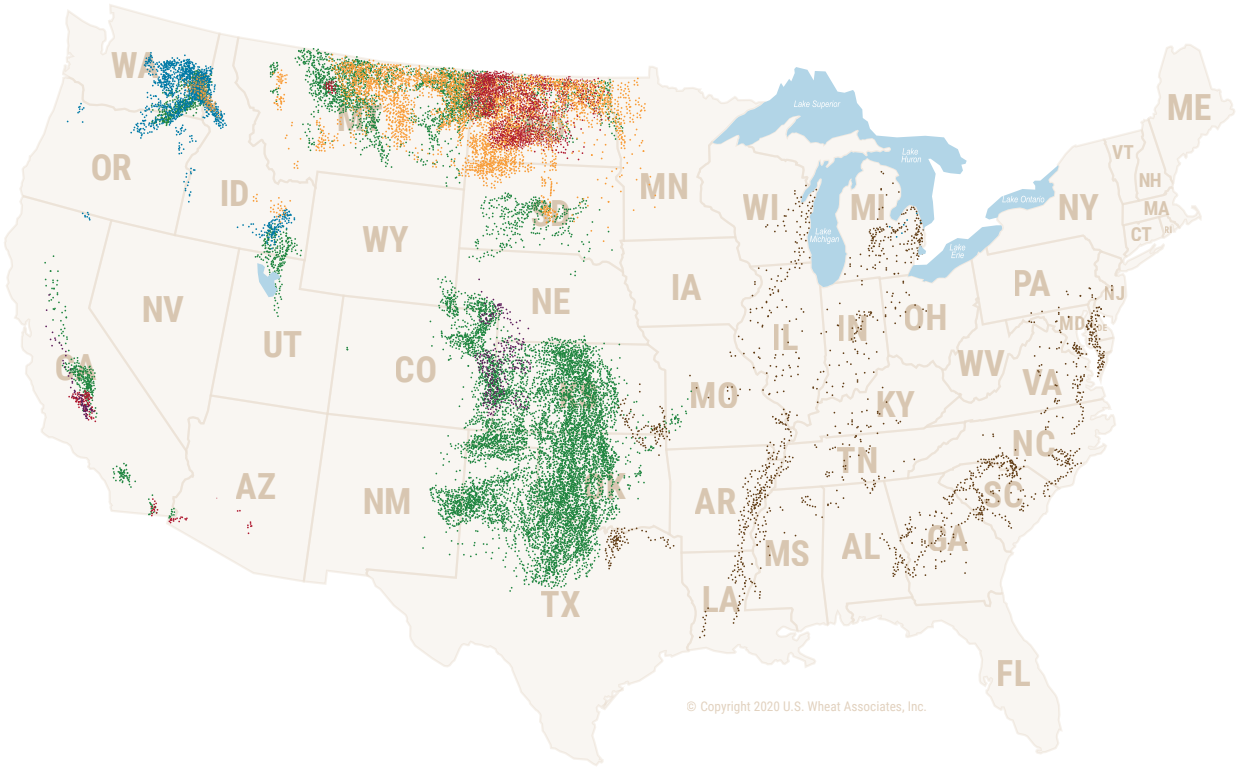
CHAPTER III

WHEAT PRODUCTION, DISTRIBUTION AND EXPORTS

Geographic Production Areas

Wheat is grown in 42 states of the United States. The class and quantity of wheat grown varies widely from one region to another.

U.S. Wheat Production – By Class



- Hard Red Winter (HRW)
- Soft Red Winter (SRW)
- Hard White (HW)
- Hard Red Spring (HRS)
- Soft White (SW)
- Durum

- ***Hard Red Spring*** – Grown primarily in the North Central region and shipped via the Pacific, Gulf, and Great Lakes ports. Hard red spring (HRS) wheat is an important bread wheat with excellent milling and baking characteristics. It has high protein of 12.0% to 15.0% (12% moisture basis), hard endosperm, red bran, strong gluten and high water absorption. It is used in pan breads, hearth breads, rolls, croissants, bagels, hamburger buns, pizza crust and for blending.

- ***Hard Red Winter*** – Grown in the Great Plains and Pacific Northwest (PNW) region and California, and shipped via the Gulf and Pacific ports. Hard red winter (HRW) wheat is an important, versatile bread wheat with excellent milling and baking characteristics. It has medium to high protein of 10.0% to 13.0% (12% mb), medium hard endosperm, red bran, medium gluten content and mellow gluten. It is used in pan breads, Asian noodles, hard rolls, flat breads and general purpose flour.

- ***Hard White*** – Grown in the Central Plains, Montana, Idaho and California, and, when available for export, shipped via Pacific and Gulf ports. Hard White (HW) wheat has a hard endosperm, white bran and a medium to high protein content of 10.0% to 14.0% (12% mb). It is used in Asian noodles, whole wheat or high extraction flour applications, pan breads, and flat breads.

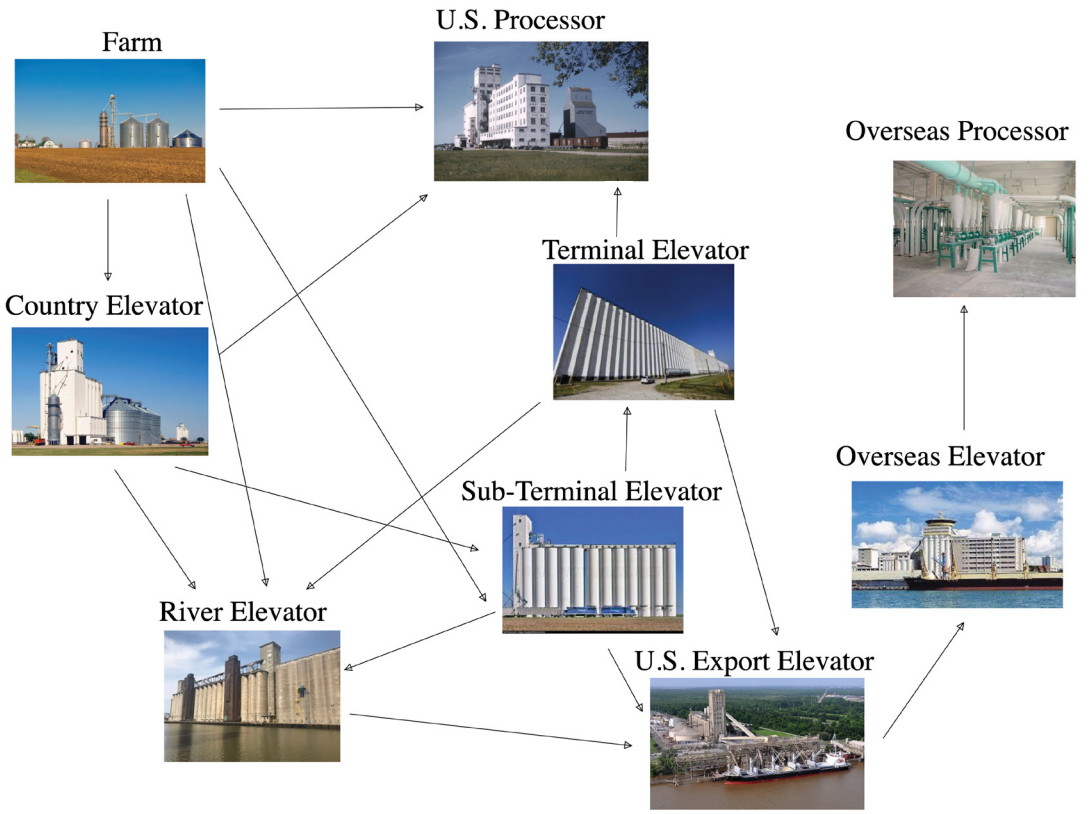
- ***Soft White*** – Grown primarily in the Pacific Northwest and shipped via Pacific ports. Soft White wheat has low protein of 8.5% to 10.5% (12% mb), low moisture and provides excellent milling results. It is used in flat breads, cakes, biscuits (cookies), pastries, crackers, Asian-style noodles and snack foods.

- ***Soft Red Winter*** – Grown in the eastern third of the United States and shipped via Gulf, Atlantic, and Great Lakes ports. Soft Red Winter (SRW) wheat is a high-yielding wheat with low protein of 8.5% to 10.5% (12% mb), soft endosperm, red bran, and weak gluten. It is used in pastries, cakes, cookies, crackers, pretzels, flat breads and for blending flours.

- ***Durum*** – Northern durum is grown primarily in the North Central region and Desert Durum® is grown in the desert Southwest and shipped via Gulf, Great Lakes and Pacific ports. Durum wheat is the hardest of all wheat with a high protein content of 12.0% to 15.0% (12% mb), yellow endosperm and white bran. It is used in pasta, couscous, and some Mediterranean breads.

The general flow of grain from the farm through the distribution system to the domestic and overseas processors.

GRAIN FLOW MOVEMENT



AVERAGE ANNUAL U.S. WHEAT EXPORTS BY CLASS AND PORT 2015/16-2020/21

(Thousands of Metric Tons)

PORT	*HRW*	*HRS*	*SRW*	*SW*	*HW*	*Durum*	*TOTAL*	*PERCENT*
Atlantic	2	8	71	0	<1	0	81	>1%
Gulf	5,300	823	2,100	2	134	29	8,388	33%
Interior	1,400	210	157	63	13	0.3	1,843	7%
Lakes/SSW	1	545	107	0	0	352	1,005	4%
Pacific	3,000	5,600	0	5,100	3	250	13,953	55%
Total	9,703	7,186	2,435	5,165	150	631	25,270	100%
Percent	38%	28%	10%	20%	>1%	3%	100%	

Source: USDA/Federal Grain Inspection Service

CHAPTER IV

FEDERAL GRAIN INSPECTION SERVICE

The Federal Grain Inspection Service, commonly referred to as FGIS, became an Agency of the U.S. Department of Agriculture in 1976 under the United States Grain Standards Act. In October 1994, FGIS merged with the Packers and Stockyards Administration to form a new agency, Grain Inspection, Packers and Stockyards Administration (GIPSA). Then in 2016, FGIS became a program under the Agricultural Marketing Service (AMS).

FGIS oversees 43 State and private agencies that provide official services under the USGSA. Of these: 33 are private agencies; six are state agencies designated to provide official inspection and/or weighing services in domestic markets; three are state agencies delegated to provide mandatory official export inspection and weighing services, as well as designated to provide official domestic inspection and weighing services within the State; and one is a state agency delegated to provide mandatory official export inspection and weighing services within the State.

The U.S. Grain Standards Act, with few exceptions, requires official inspection and weighing of export grain sold by grade. Official services are provided upon request for grain in domestic commerce. The Agricultural Marketing Act (AMA) of 1946 authorizes similar inspection and weighing services for rice, pulses, and many processed grain products.

National Inspection System

The structure and composition of the national inspection system is unique, comprised of Federal, State, and private laboratories all under the direct oversight of FGIS. State and private laboratories provide impartial service to the domestic market. Federal and state export laboratories, provide mandatory weighing (See Chapter V, Page 14) and inspection services (See Chapter VI, Page 19) at all export grain facilities. There are five basic operations performed at export when officially going aboard a ship: stowage examination; weighing; sampling; inspection; and certification.

At both export and domestic inspection sites, there is a cadre of supervisors that monitor official personnel performance to ensure accuracy and impartiality.

The success of the national inspection system is due, in part, to the precise testing procedures, equipment criteria, and employee conduct standards established and enforced by FGIS. The official system delivers impartial, accurate and consistent results, and protects against waste, fraud and abuse.

Ensuring Quality

Quality Assurance / Quality Control

Equipment Testing

Board of Appeals and Review

Every FGIS field office has a Quality Assurance Specialist who is trained to ensure that all inspectors in the area are performing accurately and according to instructions.

The FGIS Board of Appeals and Review is comprised of the Agency's most senior inspectors who make final determinations on grain quality assessments. They monitor and ensure the accuracy of all inspectors, including the Quality Assurance Specialists.

FGIS re-engineered its Quality Assurance and Control (QAC) program to capitalize on today's technology, using computers and automated systems to provide frontline inspectors with the information needed to get the job done right the first time and preclude quality analysis problems. The quality control system ensures that all inspectors align with the Board of Appeals and Review and that all equipment operates properly and is calibrated to the national reference methods located at the FGIS National Grain Center in Kansas City, Missouri.

U.S. Grain Standards and Commodities Inspection

Official U.S. grain standards are used to describe the physical and biological properties of grain at the time of inspection. Grades, class, and condition reported on official certificates are determined based on factors defined in these standards. Factors vary by grain and may include test weight per bushel, and percent, by weight, of damaged kernels, foreign materials, broken kernels, and other factors. Grades issued under U.S. standards represent a sum of these factors. The certificate also notes certain conditions of the grain such as moisture content, and infestation. Regardless of average new crop quality, no seasonal adjustments are made to the U.S. standards.

Standards exist for 12 grains (listed from largest to smallest volume inspected): corn, wheat, soybeans, sorghum, barley, oats, rye, flaxseed, sunflower seed, triticale, mixed grain, and canola.

Commodities such as rice, pulses, and hops have similar standards for grade and factors. Other commodities and a wide range of processed products, including flour, food mixes, edible oils, and other cereal food products, have no official USDA standards for these products. FGIS, can however, perform the physical, chemical and microbiological tests — using official laboratory methods of AOAC International — requested in contract specifications.

Official inspection of export grain is mandatory. Official personnel employed or licensed by FGIS obtain representative samples using approved equipment. The grain is weighed and inspected. The grade is reported on an Official Export Grain Inspection Certificate, which represents the entire lot inspected.

Standards used to inspect grain and commodities are updated regularly through public rulemaking procedures and represent currently accepted market practice.

FGIS Rulemaking Procedures

Official U.S. Standards for Grain are based on public comment; they are not unilaterally prescribed by the U.S. Government. Before FGIS can establish or revise any of its standards or regulations, the agency must publish a proposal in the Federal Register — the U.S. Government's legal newspaper.

Most Federal Register proposals have a 60-day comment period during which FGIS solicits the views of all sectors of the grain industry — breeders, producers, handlers, exporters, and importers. FGIS transmits the proposals to the agricultural offices of U.S. embassies worldwide and issues a press release.

Current press releases may be found on FGIS' web site, at: https://www.ams.usda.gov/news. FGIS also mails specific proposals to any person upon request.

Each proposal contains instructions for submitting comments including a mailing address, fax number and e-mail address.

After the comment period closes, FGIS decides on the appropriate action based on the views expressed. FGIS publishes its decision as a "final rule" in the Federal Register. Changes to the standards generally take effect one year after the final rule is published and at the beginning of the marketing year (June 1 for wheat).

FGIS does not change the standards each year to reflect the fair average quality of the crop; rather, the standards remain fixed until specifically revised. FGIS is required to review each of the grain standards at least once every five years to verify they still meet the needs of the industry.

Research Projects

FGIS is committed to developing new technology or expanding the use of current technology to measure relevant wheat quality attributes. Official analysis must be timely, reliable, and cost-effective; and the results must be understandable throughout the market. Relevant, reliable, and market accessible end-use quality data is essential to meet the future challenges of the international wheat market.

Computer imaging is one of the most promising technologies to contribute to the accuracy, consistency, and objectivity of grain inspection. FGIS will continue to explore opportunities for applying remote digital imaging to enhance visual grading services. Remote digital imaging will provide faster turnaround of results on difficult and unusual characteristics encountered in grain and graded commodities.

Today's technology offers many possibilities for improving the system and providing more meaningful information to the customer. FGIS recognizes and accepts the challenge of harnessing technology to improve the national inspection system.

International and Domestic Program Development

The FGIS International Affairs Division (IAD) is FGIS' liaison to importers and other governments and international traders. IAD: explains the national inspection system, U.S. grain standards and commodity inspection programs; conducts briefings and educational visits; assesses foreign inspection and weighing techniques; and responds to inquiries about quality and weight of U.S. grain

shipments. FGIS also coordinates cooperative studies to monitor the quality and weight of grain shipments between U.S. and destination ports.

For further information, contact:

USDA, AMS, Federal Grain Inspection Service
International Affairs Division
14th and Independence Ave., S.W.
Washington, D.C. 20250-3620
Telephone: (202) 690-3368

Or visit the AMS/FGIS web site at: **www.FGIS.AMS.USDA.GOV/Service/FGIS/International**

FGIS agent José Robinson was in Lima, Peru, in 2019, to conduct half-day seminars in the five largest wheat importing companies in the country in cooperation with U.S. Wheat Associates (USW). Robinson educated 53 quality control managers on the FGIS wheat inspection process as part of USW's trade and technical service activities.

CHAPTER V

OFFICIAL WEIGHING SERVICES

Official weighing is mandatory for all grain exported from the United States by sea. The weight may be certified separately or included on the official inspection certificate. Official supervision of 100 percent of the weighing process is required on export grain.

During weighing operations, trained technicians employed or licensed by FGIS observe and verify weighing and loading of grain and monitor scales and grain flow security. Official personnel must know a variety of weighing systems, their proper use, and signs of system breakdowns. This knowledge is essential to the certification of weights.

Scales used for official weighing of grain and commodities must be installed and operated under FGIS guidelines. Scales at export elevators are tested every six months and must remain accurate to 0.01 percent. Accuracy of standard weights used to calibrate scales is verified every three years or as needed.

In addition to scale testing, FGIS owns five railcars to test over 40 railroad track scales and calibrates seven master track scales. These master scales are used to calibrate track scales across the United States.

Official Weighing Procedures

Electronic Weighing Systems

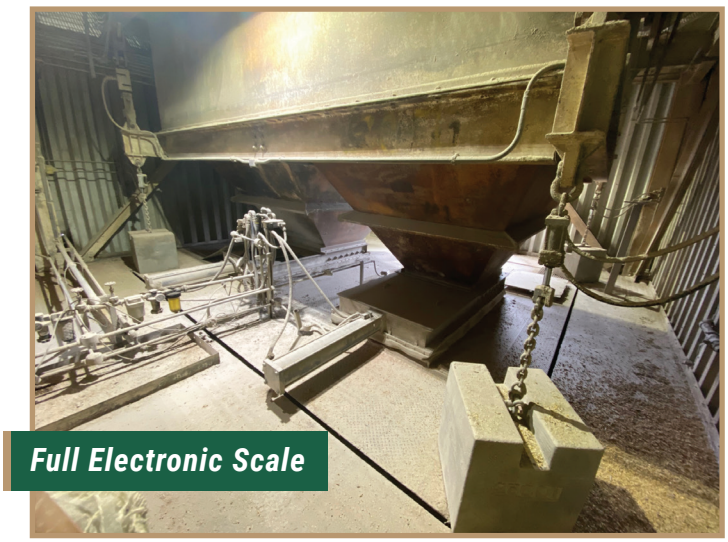
Electronic weighing systems consist of a load receiving element (e.g., a weigh hopper or platform, with load cells), an indicating element (e.g., digital instrument), a printer, and the associated material handling equipment. The load cell senses the amount of applied load — the weight — in the load receiving element and produces an output voltage that is sent to the digital instrument that converts the output voltage into a digital display — a readout of the weight. The tape printer records the weight displayed onto a tape or ticket for a permanent record. There are two types of electronic scales: levertronic and full electronic.

Levertronic Scales

Levertronic scales are mechanical scales that have been converted to electronic scales by inserting a load cell in the lever system. The weighbeam or dial used to obtain and print a weight is replaced with a digital instrument and printer.

Full Electronic Scales

In full electronic scales, the load-receiving element is either supported by or rests on the load cells.



Full Electronic Scale

Load Cell

The control room in an export elevator is the weighing operations control center. It may be in the elevator or a separate building. Digital instruments, printers, and control boards are located in the control room. A digital instrument may have some form of process control that allows the operator to manually or automatically operate the gates of the garners and scale.

In the manual mode, the operator controls the operation of each scale cycle; in the automatic mode, the scale cycle repeats in succession. Control boards are scaled-down diagrams of the elevator's grain handling systems. Elevator personnel can control bin selection, tripper movement, diversion points, legs, conveyor belts, and slides and gates from this board. Official weighing personnel monitor export grain flow after weighing and sampling to assure all the grain weighed and sampled is, in fact, delivered to the vessel.

Printers

Scale Tapes

During the operation of an electronic weighing system, the official weigher constantly verifies that the weight value displayed on the digital instrument is the same as the printed value on the scale tape or ticket to assure proper system operation and to detect any printer malfunction.

The weight of each draft is added to determine the sublot total. The official weigher records the number of the sublot on the tape and initials the total weight. When the tape is removed from the printer, the weigher initials it, records the time, carrier identification, kind of grain, tape number and scale numbers. If this information is printed on the tape automatically, the weigher verifies the accuracy of the information and initials it.

Certified Capacity

The certified capacity of a scale is the maximum weight limit that has been approved by FGIS for a specific scale. The certified capacity and the minimum division size are prominently displayed on the front of the digital instrument. If the weight of a draft of grain is over the certified capacity of the scale (overdraft), the weight in excess of the certified weight capacity is not certified.

Grain Flow Security

When grain is shipped out of an elevator, the responsibilities of official personnel do not end with the weighing of the grain but extend to the carrier that is to be loaded. An official weight certificate certifies that there is an exact weight of grain in an identifiable carrier, and it must be accurate. Every weighing position in the elevator, and every seal and lock, ensures the accuracy of the certificate.

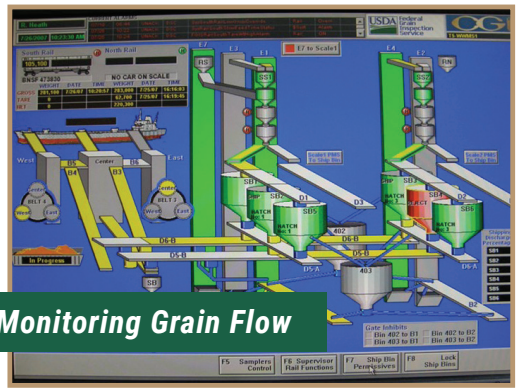
Automated Scale Systems

Grain elevators own and operate the scales, but at least one FGIS employee must be present during official weighing to physically supervise the operation of scales and grain flow throughout the elevator.

Export grain elevators continually strive to reduce costs by operating their facilities more efficiently. To achieve this, they use computerized material handling, weighing and inventory control systems. To keep pace with this progress, FGIS has developed an automated system to monitor and supervise the weighing process officially.

Using the automated method, a computer compares the displayed weight against the printed weight data using parity checking. Parity checking is an electronic method that compares the weight data transmitted from the bulk weigher to the weight data received by the printer before printing. Any discrepancies generate an alarm signal.

The computerized control system also can be programmed to set up automatically certain grain routing paths appropriate for any particular application. It also can be programmed to print a record of all grain routing paths, scale and bin selection, system component identification, date, time, etc. The system is under FGIS control and is not accessible to elevator personnel.



Monitoring Grain Flow

The Official Weight Certificate

Weighing documentation provides a backup for official weight certificates. The logs, tapes and tickets are admissible as prima facie court evidence and can be used as proof that certificates are correct. Therefore, the weigher must enter clear, concise, and accurate information. Unusual events that might relate to

the weight (e.g., light loads, open hatch covers, and appearance of pilferage) are documented on the appropriate scale tape or ticket. FGIS shift supervisors review this information to assure that the official weight certificate represents the true weight of the cargo.

The weight is recorded in pounds on the Official Grain Weight Certificate. Metric weight conversion is available upon request in the sales contract. An example of the Official Grain Weight Certificate certifying the total weight of the lot is shown as Appendix III on page 54.

CHAPTER VI

OFFICIAL INSPECTION SERVICES

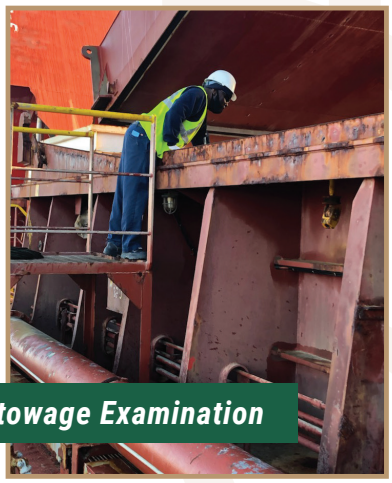
To be officially graded, grain must be inspected according to provisions of the United States Grain Standards Act. This means the equipment and procedures used are approved and checked regularly for accuracy, and inspectors tested for proficiency in carrying out their inspection duties. The U.S. Congress gave FGIS the responsibility for administering and supervising a uniform, nationwide system of official inspection. Voluntary inspections not performed by FGIS or official agencies delegated by FGIS are not controlled or supervised by the U.S. Government.

There are five basic operations performed when officially inspecting and weighing grain going aboard a ship: stowage examination; weighing; sampling; inspection; and certification.

Stowage Examination

When the vessel arrives in port, the inspection process usually begins with a stowage examination while the ship is still at anchor in the harbor. To perform the stowage examination, official inspection personnel go aboard the ship and enter the shipholds.

Stowage Examination



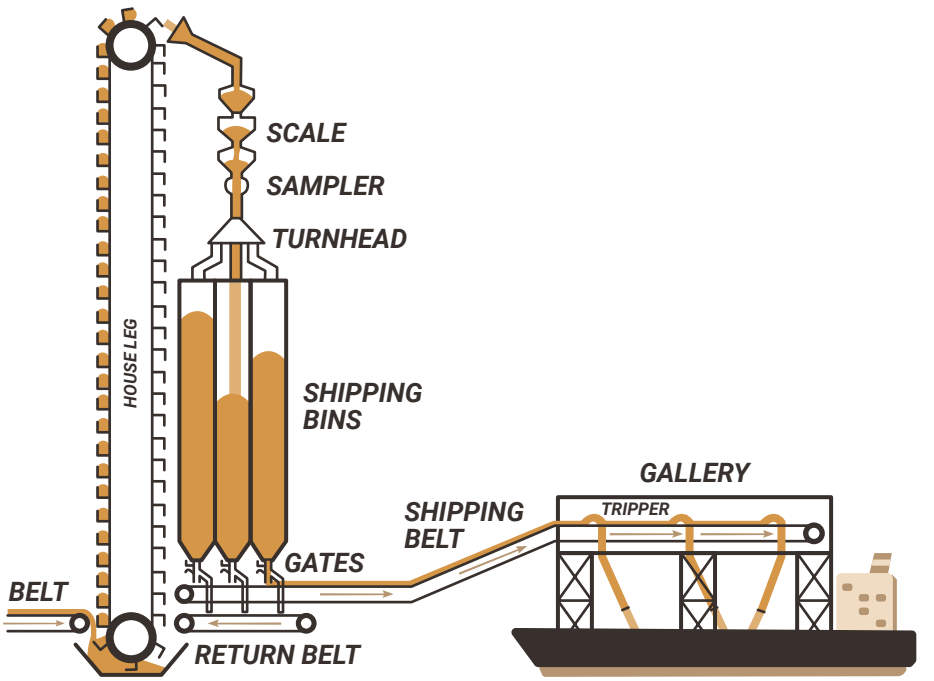
Stowage Examination

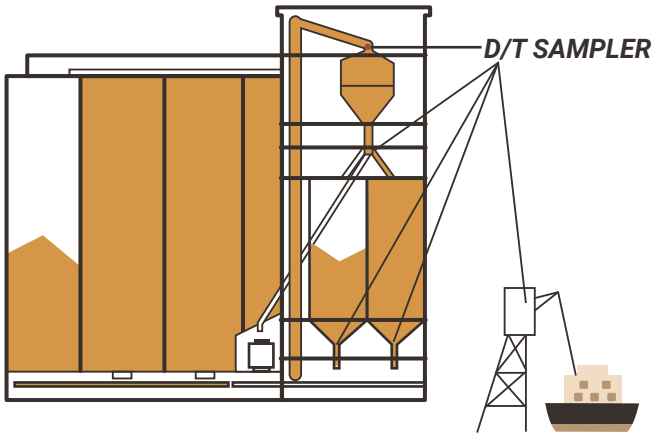
Shipholds are examined for potential defects such as rust scale, insect infestation, oil sludge, and water. Before loading can begin, the vessel must be substantially clean, dry and ready to receive grain. The results of the stowage examination are reported on the Official Stowage Examination Certificate. An example of this certificate is shown in Appendix III on page 55.

Sampling

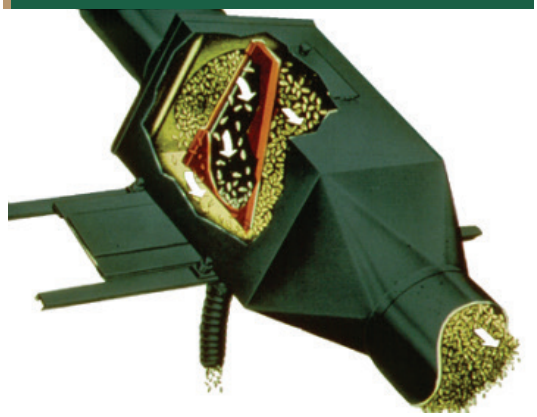
During grain handling, there is a continual segregation of particles based on particle size, density, and texture differences. During loading, the larger-sized materials tend to migrate away from the spout line flow and form strata or layers. The inner core under the loading spout is composed primarily of the smaller-sized material. When the grain is unloaded, a reverse segregation occurs; the inner core leaves the silo or shiphold first.

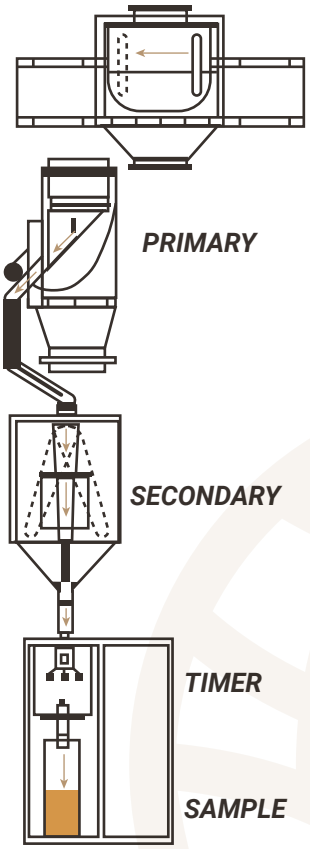
The diverter-type (D/T) mechanical sampler draws the most representative sample of any grain lot. Although D/T samplers vary in design, all operate on the same principle. Installed at the end of a conveyor belt or in a spout, they draw the sample by periodically moving a pelican-like device through the entire grain stream. The frequency of these "cuts" is regulated by timer controls. After the grain enters the primary sampler, it flows through a tube into a secondary sampler (SM) to reduce the size of the sample. From the secondary sampler the sample flows to a collection box or sample bucket located inside the FGIS onsite laboratory, under the control of official personnel.





Cut Away Diagram of a D/T Sampler





Diverter-Type Sampler

Inspection Procedures

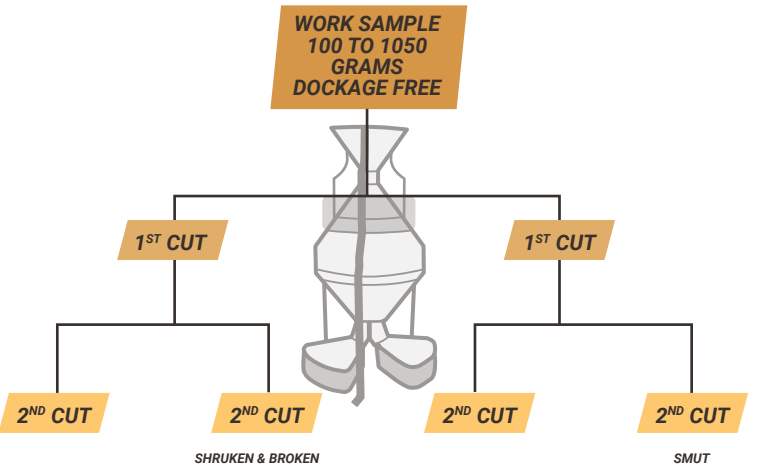
During sampling, the inspector periodically examines the samples collected in the laboratory collection boxes for objectionable odors. The inspector draws off a portion of the wheat from the collection box into a sieve pan and places his nose into the wheat and smells the grain for unusual or unnatural odors. Then, the inspector examines the sample to see if any insects are present. The inspector sieves the entire sample and performs a visual examination for live insects that falls through the sieve and into the bottom pan. For more information on infested lots, see page 33.

Inspector checks for unusual odors

Inspector looks for live infestation

After passing the preliminary tests, the sample is divided into two portions of approximately 1,500 grams each: the work sample and the file sample. The work sample is used to determine the moisture and all grading factors. The file sample is maintained in a moisture-proof container at the laboratory and is stored in a locked compartment for 90 days after the inspection is completed. In the event there is any question regarding the quality of the grain, the file sample is available for review.

Boerner Divider



A Boerner Divider is used in the inspection laboratory to break down the representative sample into smaller sized portions for factor determinations. Each time grain passes through the divider, it divides the sample into two approximately equal portions. A pictorial flow chart of sample break-down procedures is shown above.

CHAPTER VII

DETERMINING WHEAT QUALITY

FGIS determines the quality of wheat through standardized testing methods in accordance with the Official U.S. Standards for Wheat (Appendix I on page 38) and FGIS Inspection Handbook II, which can be found on the AMS web site at: https://www.ams.usda.gov/sites/default/files/media/Book2.pdf, Chapter 13 Wheat Inspection.

A number of wheat quality factors affect the numerical grades U.S. No. 1 through U.S. No. 5 and U.S. Sample Grade. Test weight, heat damage, total damaged kernels, foreign material, shrunken and broken kernels, total defects, wheat of other classes, contrasting classes, and sample grade criteria are known as grade-determining factors because they affect the numerical grade assigned. FGIS is required to test for the above factors in order to assign a numerical grade in addition to other factors such as wheat class, dockage, and moisture known as non-grade-determining factors because they do not affect the numerical grades and are usually specified in the sales contract. Official testing service is offered for other "optional" tests such as protein, Falling Number, mycotoxin, and pesticide residue analysis. FGIS provides these testing services upon request in the sales contract. Such optional tests are also available from private unofficial inspection companies.

Grade-Determining Factors

Test Weight per Bushel

Test weight per bushel is the weight of the grain required to fill a level Winchester bushel measure 2,150.42 cubic-inch (35.24-liter) capacity. The factor "test weight per bushel" is determined using an approved apparatus which has a kettle capacity of one dry quart (1.101 liter). This determination is made on the basis of 1,350 grams of wheat cut from the representative sample using a Boerner Divider.

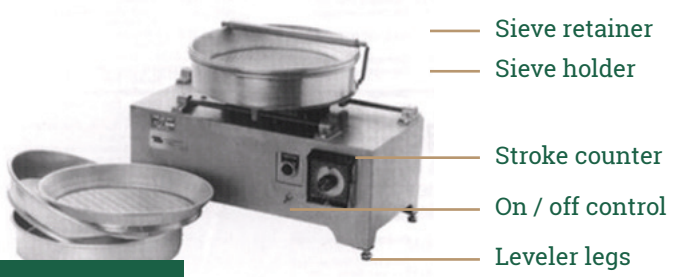
To determine test weight, the work sample is poured into the closed hopper centered over the kettle. The valve is quickly opened to allow the grain to fill the kettle. A standard stroker held in both hands with the flat sides in a vertical position is used to remove the excess grain from the top of the kettle with three full-length, zigzag motions. The kettle is carefully placed on the scale platform. The weight is read by an electronic scale that converts the gram weight to either pounds per bushel or kilograms per hectoliter.

Test weight per bushel is a grading factor. Generally, it is expressed in pounds per Winchester bushel, but upon request it will be converted and reported in kilograms per hectoliter (see Appendix V, page 60).

Procedures for determining test weight

Shrunken and Broken Kernels

Shrunken and broken kernels is a grading factor for wheat. To determine shrunken and broken kernels in wheat, the inspector places 250 grams on a 0.064 inch x 3/8 inch (1.626 mm x 9.545 mm) oblong-hole sieve and mechanically shakes the sieve 30 times from side to side. The machine used to sieve the sample, a Strand Sizer, has a stroke counter and always starts and stops in the same position. One complete stroke takes approximately 1 second.



Strand Sizer

Shrunken and broken kernels

Foreign Material

Foreign material is a grade-determining factor. It is determined on a 50-gram portion after the removal of dockage and shrunken and broken kernels. The inspector manually removes all material other than wheat.

Damaged Kernels

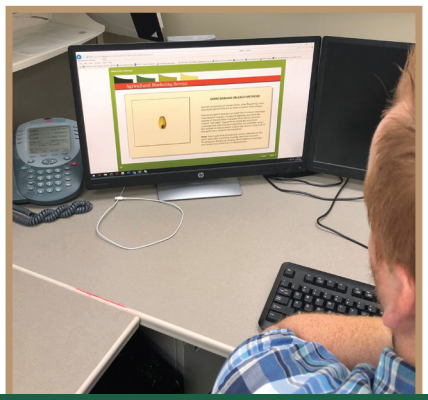
Damaged kernels is a grade-determining factor and is composed of two categories: heat damage and total damage. Heat-damaged kernels are reported separately from all other types of kernel damage but are included in the total damage. The inspector visually examines a portion of the wheat sample — 50 grams for heat damage and 15 grams for other damage types — to determine whether any kernels have been materially discolored or damaged by physical or biological factors.

The inspector must be well-trained and capable of distinguishing different types of damage. Those conditions that may be mistaken for damage (such as dirt stains which appear to be mold) must be recognized also.

Visual Grading Aids

FGIS maintains a visual grading aids system to help inspectors make subjective grading decisions. This system consists of Visual Reference Images, which can be found on the AMS, FGIS web site at: https://www.ams.usda.gov/book/visual-reference-images.

The Visual Reference Images program was developed to provide all inspectors throughout the United States with a standard reference for the different types of damage. Inspectors can view these images on their computers at their workstations.



Visual Reference Images program

Interpretive line samples are actual samples enclosed in clear plastic containers. Overexposure to direct sunlight can cause bleaching. Therefore, interpretive line samples are stored in a cool, dark place.

The following is a list of the visual reference images on the AMS, FGIS web site for wheat damage:

- Black tip (fungus)
- Blight (scab)
- DHV
- Frost (blistered)
- Frost (candied)
- Frost (discolored)
- Frost (flaked)
- Germ damage (sick-scraped)
- Germ damage (sick-bleached)
- Green damage
- Heat damage
- HDWH (color line)
- HVAC
- Other damages
- Sprout damage
- Insect chewed
- Insect bored
- Mold damage
- Pink damage
- Jagged ends (red)
- Jagged ends (white)
- Threshed kernels

Total Defects

Total defects, a grade-determining factor that is determined as a further measure of quality, is the sum of shrunken and broken kernels, foreign material, and damaged kernels.

Wheat of Other Classes

Wheat of other classes is a grade-determining factor that is assessed on a 15-gram portion after the removal of dockage and shrunken and broken kernels. The inspector picks out classes of wheat that are not the predominating class.

Contrasting Classes

Contrasting classes is a grade-determining factor that is assessed on a 15-gram portion after the removal of dockage and shrunken and broken kernels.

Contrasting classes are:

1 - durum wheat, soft white wheat, and unclassed wheat in classes of hard red spring wheat, and hard red winter wheat.

2 - hard red spring wheat, hard red winter wheat, hard white wheat, soft white wheat, soft red winter wheat, and unclassed wheat in the class durum wheat.

3 - durum wheat and unclassed wheat in the class soft red winter wheat.

4 - durum wheat, soft red winter wheat, and unclassed wheat in the classe hard white wheat.

5 - durum wheat, hard red winter wheat, hard red spring wheat, soft red winter wheat, and unclassed wheat in the class soft white wheat.

Mandatory Non-Grade-Determining Factors

Moisture and dockage are two quality factors that must be determined, but do not affect the numerical grade.

Moisture

DICKEY John GAC 2500 UGMA

Pertin AM5200-A

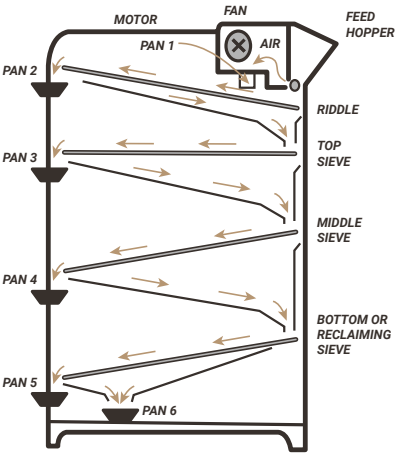
The DICKEY John GAC 2500 UGMA is one of two official moisture meters approved for use in the national inspection and weighing system. The second moisture meter approved for use in the official inspection system is the Pertin AM5200-A moisture meter. Both moisture meters are calibrated to the USDA air-oven method (1 hour at 130°C).

Dockage

Dockage is determined with a special machine called the Carter Dockage Tester. Dockage, like moisture, does not influence the numerical grade. It is an additional test made by the inspector and reported separately on the certificate.

The Carter Dockage Tester, using aspiration (air) and a combination of riddles and sieves, prepares a sample for grading by removing the readily separable material. Generally, this material consists of all matter that is lighter than, larger than, and smaller than wheat.

The material removed by a dockage tester is readily separated and does not require the additional sophisticated equipment found in the cleaning houses of mills.



CARTER DOCKAGE TESTER

Optional Non-Grade-Determining Tests

Customers may require additional quality tests. These optional tests can be performed by private, unofficial inspection laboratories or officially by FGIS. Check with the supplier, FGIS, or U.S. Wheat Associates on the availability of any of these optional testing services. FGIS can officially test for protein, Falling Number, aflatoxin, vomitoxin, fumonisin, and certain pesticide residues. Unofficial laboratories can perform additional optional tests, such as wet gluten, sedimentation, alveograph, farinograph, extensigraph, mixograph, and 1,000-kernel weight. Any optional testing must be requested in the sales contract.

Protein

FGIS uses near-infrared transmittance (NIRT) spectroscopy to determine protein for official inspections.

FGIS adopted the Combustion Nitrogen Analyzer in 1994 as the standard reference method for determining wheat protein because it provides accurate and consistent results with less chemical exposure to the inspectors and uses no hazardous chemicals, and the analysis time for the Combustion Nitrogen Analyzer is shorter.

All field NIRTs are calibrated to the standard protein reference method, the Combustion Nitrogen Analyzer, to ensure the accuracy of the results. Each NIRT instrument is checked for accuracy daily using a set of five standard reference samples for each class of wheat. If the daily average of the results on the standard reference samples differs by more +/- 0.10 percent, the instrument is adjusted and rechecked before use. The goal is to have a daily tolerance within +/- 0.05 percent difference. The same set of standard reference samples is used throughout the FGIS national system for checking official NIRT instruments.

Near-Infared Transmittance Field Instruments

Combustion Nitrogen Analyzer

The Combustion Nitrogen Analyzer consists of a computer-controlled, closed-system combustion process, and a thermal conductivity detector.

Protein is usually reported on the 12.0 percent moisture basis. Upon request in the sales contract, FGIS will report protein on an alternate moisture basis, in addition to the 12.0 percent moisture basis.

Protein can be specified by the buyer in the following ways:

1 - Ordinary protein - any protein level can be loaded;

2 - Average protein - a weighted or mathematical average of the sublots with no limit on sublot variability;

3 - Minimum or maximum protein - a weighted or math average of sublots where Cu-Sum (see Chapter IX, Page 34) applies with limits on sublot variability; or

4 - Modified minimum or maximum protein - sublots are weighted or mathematically averaged with a reduced Cu-Sum breakpoint. For example, a request for Northern Spring wheat, minimum 14.0 percent protein, with no sublot below 13.8 percent; or Soft White wheat, maximum 9.0 percent protein, with no sublot above 9.2 percent.

The grade and protein are issued on the same certificate, shown in Appendix III, page 54. If a maximum 10.0 percent protein is specified, the lot average cannot exceed 10.0 percent, no sublot can be higher than 10.5 percent, and all sublots must be within 1.0 percent of each other.

Falling Number (Hagberg)

Falling Number (FN) analysis is an indicator of kernel germination (sprouting) and the resulting increases in alpha amylase activity. FN results of 300 seconds or higher usually indicate that no sprout damage is present. FGIS performs FN as an optional service under the AMA and reports results on the Commodity Inspection Certificate, (Appendix III, page 56). Upon request, FGIS determines the FN in wheat meal at the FGIS Technical Services Division Laboratory in Kansas City, Missouri, and certain FGIS field offices and State agencies.

Falling Number Instrument

Perten Shakematic

On May 1, 2019, FGIS implemented a new barometric pressure correction and requires the use of the Perten Shakematic for the determination of falling number (FN) for wheat grain to reduce overall variation of test results within the official inspection system.

FN is reported on a 14 percent moisture basis unless the buyer specifies another moisture basis. Cu-Sum averaging is not available for FN because FNs are not additive. Buyers can specify FN in the following ways:

1 - **Cargo lot analysis** where a single analysis is performed for the entire cargo,

2 - **"Liquefaction average"** of sublots, or

3 - **Sublot minimum analysis** where a limit is placed on each sublot.

CHAPTER VIII

GRADE DESIGNATIONS

The end product of all the analyzing, grading, and monitoring is the Official Export Grain Inspection Certificate. There are two options under which shiplot grain can be loaded and certified — "**Option 1**" and "**Option 2**."

Under **Option 1**, the exact grade must be loaded.

Example: U.S. No. 1 (only No. 1 grade shipped)

Example: U.S. No. 2 (only No. 2 grade shipped)

Under **Option 2**, the exact grade specified or a better grade can be loaded. Option 2 gives the shipper more flexibility and gives the buyer a potentially better quality of grain.

Example: U.S. No. 2 or better (No. 1 and/or No. 2 shipped)

Example: U.S. No. 3 or better (No. 1, No. 2, and/or No. 3 shipped)

The buyer has the option to contract for quality superior or inferior to the U.S. grade. For example, the buyer may desire a test weight that is higher than the contract U.S. No. 2 minimum of 58 lbs/bu (76.4 kg/hl). Then the buyer would specify: U.S. No. 2 or better, except that minimum test weight is 60 lbs/bu (78.9 kg/hl). Test weight conversion charts are shown in Appendix V, page 60.

Special Grades

Special grades draw attention to unusual conditions in wheat and are made part of the grade designation. Definitions and examples of the designations for special grades in wheat are:

1 - Ergoty Wheat. Wheat that contains more than 0.05 percent of ergot.

Example: U.S. No. 2 or better Northern Spring wheat, Ergoty, Dockage 0.5%

2 - Garlicky Wheat. Wheat in a 1,000-gram portion that contains more than two green garlic bulblets or an equivalent quantity of dry or partly dry bulblets.

Example: U.S. No. 2 or better Soft Red Winter wheat, Garlicky, Dockage 0.6%

3 - Infested Wheat. FGIS examines wheat for the presence of live weevils or other live insects injurious to stored wheat. The presence of eggs or larvae not visible to the naked eye cannot be detected and reported.

See Appendix IV, page 59, for more information on fumigation and grain protectants.

The presence of live insects does not affect the numerical grade of wheat; the special grade "infested" is added to the grade on the official certificate. The determination for the special grade "infested" is based on the lot as a whole or the official sample before removing dockage.

A sample is considered "infested" if it contains:

1 - 2 or more live weevils, or

2 - 1 live weevil and 1 other live insect injurious to stored grain, or

3 - 2 or more live insects injurious to stored grain other than live weevils.

Example: U.S. No. 2 or better Hard Red Winter wheat, Infested, Dockage 0.3%.

4 - Light Smutty Wheat. Wheat in a 250-gram portion that has an unmistakable odor of smut or which contains smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 5 smut balls, but not in excess of a quantity equal to 30 smut balls of average size.

Example: U.S. No. 3 or better Hard Red Winter wheat, Light Smutty, Dockage 0.5%

5 - Smutty Wheat. Wheat in a 250-gram portion that contains smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 30 smut balls of average size.

Example: U.S. No 2 or better Northern Spring wheat, Smutty, Dockage 0.4%

6 - Treated Wheat. Wheat that has been scoured, limed, washed, sulfured, or treated in such a manner that the true quality is not reflected by either the numerical grades or the U.S. Sample grade designation alone.

Example: U.S. No. 1 Amber Durum wheat, Treated (limed), Dockage 0.2%

CHAPTER IX

UNIFORM INSPECTION PLAN (Cu-Sum) AND OPTIONAL FACTORS

During loading of an export grain vessel, FGIS follows a uniform loading plan for sampling and inspection. A shipment or "lot" of grain is divided into "sublots" to assess uniformity of quality. Sublot size is based on the hourly loading rate of the elevator and the capacity of the vessel being loaded. A sublot may represent from 250 to 1,600 metric tons. The grade and factors determined on each sublot must meet, within specified tolerances, the official grade and factors requested in the contract. The loading elevator supplies FGIS with a load order which describes the quality requirements of the purchase contract. Sublots that do not meet tolerances are removed from the shipment or certified separately. Otherwise, FGIS certificates represent the entire lot of grain based on the average of sublot results at the time of loading.

The uniform inspection plan for shiplots is called the Cu-Sum Plan. It establishes statistically based tolerances, known as breakpoints, for accepting those occasional portions of a lot that, because of known sampling and grading variations, grade below the desired lot quality. The Cu-Sum Plan was adopted to ensure that the entire lot is within uniform quality tolerances.

The inspector uses an inspection log to record his findings for each sublot. Each log contains all the factor results for each sublot, plus any other observations made by the sampler and inspector. It is a complete record of all inspection information concerning the lot. FGIS has developed an automated Cu-Sum Plan which prints out a computer-generated inspection log.

For minimum and maximum protein, there are three criteria under Cu-Sum:

1 - The average of all sublots must be no lower than the minimum percentage (or no greater than the maximum percentage) specified;

2 - No sublot can be more than 0.5 percent lower than the minimum percentage (or more than 0.5 percent higher than the maximum percentage) specified; and

3 - A statement indicating the actual protein range of the lot is shown on the certificate if the difference between the lowest and the highest protein determinations exceeds 1.0 percent and the contract does not specify a specific range limit.

For example, if a minimum 14.0 percent protein is specified, the lot must average at least 14.0 percent, no sublot result can be lower than 13.5 percent, and all sublots must be within 1.0 percent of each other.

The certified grade of the lot is based on a mathematical or weighted average of the sublot results. The results are reported on the official grain inspection certificate is shown in Appendix III, page 56.

The inspection log is retained by FGIS, and a buyer can obtain a copy by requesting it in the contract. An example of the computer-generated inspection log is shown in Appendix III, pages 51-53.

CHAPTER X

DISCREPANCY REPORT PROCESS

The United States Department of Agriculture has established a formal quality discrepancy process administered by the Foreign Agricultural Service (FAS) and investigated by FGIS. When an importer notes a discrepancy in quality or quantity compared to the original certificate, they can report the discrepancy to the FGIS International Affairs Division (IAD) through the agricultural representative in the local American Embassy.

The complainant should provide the U.S. representative with as much detailed information about the discrepancy as possible, such as the name of the vessel, the quantity of wheat involved in the discrepancy, where and when the vessel loaded in the United States, the quality factors involved, destination results, and how the samples were taken and testing methods used at destination.

FGIS will reanalyze the file samples (if the complaint is received within the 90 day file sample retention period for bulk shipments or within 60 days for containerized shipments). In cases where file samples are not available, all available documentation is reviewed for mistakes or errors made during the original inspection.

If the buyer chooses to submit a destination sample(s), FGIS analyzes it and compares the results to the original and review results. All loading documentation including the inspection log, certificates, and weighing records are reviewed. All information is evaluated, and an impartial report of findings is prepared within 90 days of receipt of the discrepancy and sent to all interested parties through the agricultural counselor. FGIS does not issue new certificates nor do they act as arbitrators. They merely report the facts and suggest means of minimizing such differences in the future.

Reasons for Quality Discrepancies

Most quality discrepancies reported by importers can be attributed to one or more of these factors.

1 - Differences in factor results between FGIS and destination are often due to differences in samples tested. Destination testing performed on a non-representative sample will often yield factor results significantly different from those reported by FGIS (see page 20) for description of diverter-type samplers.

2 - Differences in testing methods and procedures are contributing factors to differences in factor results.

Example: Differences in dockage results are often due to a difference between samples due to obtaining non-representative samples, and to using a method other than a Cater-Day Dockage Tester as FGIS.

Example: Differences in SHBN can often be attributed to the use of a sieve size other than the 0.064-inch x 3/8-inch oblong sieve (1.626-mm x 9.545-mm) used by FGIS. Some importers handpick the shrunken and broken kernels and not use a sieve. This can contribute to significant differences in SHBN results between FGIS and destination.

Example: Differences in subjective factors such as damaged kernels may be due to differences in inspectors' interpretations. That is why FGIS uses visual reference images (VRI) as a guide for inspectors' determinations of damaged kernels (see page 25 for information on VRI examples in wheat).

IAD works with USDA cooperators like USW to show inspectors our testing and grading procedures. A decline in the number of complaints over the past several years can be partly attributed to FGIS' wheat grading seminars and in-country training of local inspectors.

APPENDIX I

OFFICIAL U.S. STANDARDS FOR WHEAT

General Provisions

NOTE — Compliance with the provisions of these standards does not excuse failure to comply with the provisions of the Federal Food, Drug, and Cosmetic Act, or other Federal laws.

General Terms Defined

Grains for which standards are established

Grain refers to barley, canola, corn, flaxseed, mixed grain, oats, rye, sorghum, soybeans, sunflower seed, triticale, and wheat. Standards for these food grains, feed grains and oilseeds are established under the United States Grain Standards Act.

Definition of other terms

Unless otherwise stated, the definitions in this section apply to all grains. All other definitions unique to a particular grain are contained in the appropriate subpart for that grain.

a) Distinctly low quality. Grain that is obviously of inferior quality because it is in an unusual state or condition and that cannot be graded properly by use of other grading factors provided in the standards. Distinctly low quality includes the presence of any objects too large to enter the sampling device; i.e., large stones, wreckage, or similar objects.

b) Moisture. Water content in grain as determined by an approved device according to procedures prescribed in FGIS instructions.

c) Stones. Concreted earthy or mineral matter and other substances of similar hardness that do not disintegrate in water.

d) Test weight per bushel. The weight per Winchester bushel (2,150.42 cubic inches) as determined using an approved device according to procedures prescribed in FGIS instructions. Test weight per bushel in the standards for wheat is determined after mechanically cleaning the original sample and is recorded in whole and tenth pounds to the nearest tenth pound.

e) Whole kernels. Grain with 1/4 or less of the kernel removed.

Principles Governing the Application of Standards

Basis of determination

a) Distinctly low quality. The determination of distinctly low quality is made on the basis of the lot as a whole at the time of sampling when a condition exists that may or may not appear in the representative sample and/or the sample as a whole.

b) Certain quality determinations. Each determination of rodent pellets, bird droppings, other animal filth, broken glass, castor beans, cockleburs, crotalaria seeds, dockage, garlic, live insect infestation, large stones, moisture, temperature, an unknown foreign substance(s), and a commonly recognized harmful or toxic substance(s) is made on the basis of the sample as a whole. When a condition exists that may not appear in the representative sample, the determination may be made on the basis of the lot as a whole at the time of sampling according to procedures prescribed in FGIS instructions.

c) All other determinations. The basis of determination for all other factors is contained in the standards for wheat.

Percentages

a) Rounding. Percentages are determined on the basis of weight and are rounded as follows:

1 - When the figure to be rounded is followed by a figure greater than or equal to 5, round to the next higher figure; e.g., report 6.36 as 6.4, 0.35 as 0.4, and 2.45 as 2.5.

2 - When the figure to be rounded is followed by a figure less than 5, retain the figure; e.g., report 8.34 as 8.3 and 1.22 as 1.2.

b) Recording. The percentage of dockage in wheat is reported in whole and tenth percent to the nearest tenth percent. The percentage of ergot is reported to the nearest hundredth percent. The percentage when determining the identity of wheat is reported to the nearest whole percent. Also reported to the nearest whole percent are the classes and subclasses. All other percentages are reported in tenths percent.

Grades, Grade Requirements, and Grade Designations

Grades and Grade Requirements

The grades and grade requirements are shown in the grade table on page 45.

Grade Designations

a) Grade designations for grain. The grade designations include, in the following order (1) the letters "U.S."; (2) the abbreviation "No." and the number of the grade or the words "Sample grade"; (3) when applicable, the subclass; (4) the class or kind of grain; (5) when applicable, the special grade(s); and (6) when applicable, the word "dockage" together with the percentage thereof. When applicable, the remarks section of the certificate will include in the order of predominance; in the case of a mixed class, the name and approximate percentage of the classes; and if requested, the percentage of protein content.

b) Optional grade designations. In addition to paragraph (a) of this Section, grain may be certified under certain conditions as described in FGIS instructions when supported by official analysis as "U.S. No. 2 or better (type of wheat)," "U.S. No. 3 or better (type of wheat)," and the like.

Special Grades, Special Grade Requirements and Special Grade Designations

Special Grades and Special Grade Requirements

A special grade serves to draw attention to a special factor or condition present in the grain and, when applicable, is supplemental to the grade assigned in subparagraphs a) and b) above. Except for the special grade "infested," the special grades are identified and requirements are established in the standards for wheat.

a) Infested wheat. Tolerances for live insects responsible for infested wheat are defined according to sampling designations as follows:

1 - Representative sample. The representative sample consists of the work portion, and the file sample if needed and when available. These grains will be considered infested if the representative sample (other than shiplots) contains two or more live insects injurious to stored grain.

2 - Lot as a whole (stationary). The lot as a whole is considered infested when two or more live insects injurious to stored grain, or two or more other live insects injurious to stored grain, are found in, on, or about the lot (excluding submitted samples and shiplots).

3 - Sample as a whole (continuous loading/unloading of shiplots and bargelots). The minimum sample size for bargelots and shiplots is 500 grams per each 2,000 bushels of grain. The sample as a whole is considered infested when a component (as defined in FGIS instructions) contains two or more live insects injurious to stored grain, or two or more other live insects injurious to stored grain.

Special Grade Designations

Special grade designations are shown as prescribed in the section on grade designations. Multiple special grade designations will be listed in alphabetical order. In the case of treated wheat, the official certificate shall show whether the wheat has been scoured, limed, washed, sulfured, or otherwise treated.

Wheat Terms Defined

Definition of wheat

Grain that, before the removal of dockage, consists of 50 percent or more common wheat *(Triticum aestivum L.)*, club wheat *(T. compactum Host.)*, and durum wheat *(T. durum Desf.)* and not more than 10 percent of other grains for which standards have been established under the United States Grain Standards Act and that, after the removal of the dockage, contains 50 percent or more of whole kernels of one or more of these wheats.

Definition of Other Terms

a) Classes. There are eight classes for wheat: Durum wheat, Hard Red Spring wheat, Hard Red Winter wheat, Soft Red Winter wheat, Hard White wheat, Soft White wheat, Unclassed wheat, and Mixed wheat.

1 - Durum wheat. All varieties of White (Amber) Durum wheat. This class is divided into the following three subclasses:

a) Hard Amber Durum wheat. Durum wheat with 75 percent or more of hard and vitreous kernels of amber color.

b) Amber Durum wheat. Durum wheat with 60 percent or more but less than 75 percent of hard and vitreous kernels of amber color.

c) Durum wheat. Durum wheat with less than 60 percent of hard and vitreous kernels of amber color.

2 - Hard Red Spring wheat. All varieties of Hard Red Spring wheat. This class shall be divided into the following three subclasses:

a) Dark Northern Spring wheat. Hard Red Spring wheat with 75 percent or more of dark, hard and vitreous kernels.

b) Northern Spring wheat. Hard Red Spring wheat with 25 percent or more but less than 75 percent of dark, hard, and vitreous kernels.

c) Red Spring wheat. Hard Red Spring wheat with less than 25 percent of dark, hard, and vitreous kernels.

3 - Hard Red Winter wheat. All varieties of Hard Red Winter wheat. There are no subclasses in this class.

4 - Soft Red Winter wheat. All varieties of Soft Red Winter wheat. There are no subclasses in this class.

5 - Hard White wheat. All hard endosperm White wheat varieties. There are no subclasses in this class.

6 - Soft White wheat. All soft endosperm White wheat varieties. This class is divided into the following three subclasses:

a) Soft White wheat. Soft endosperm White wheat varieties which contain not more than 10 percent of White Club wheat.

b) White Club wheat. Soft endosperm White Club wheat containing not more than 10 percent of other Soft White wheats.

c) Western White wheat. Soft White wheat containing more than 10 percent of White Club wheat and more than 10 percent of other Soft White wheats.

7 - Unclassed wheat. Any variety of wheat that is not classifiable under other criteria provided in the wheat standards. There are no subclasses in this class. This class includes any wheat which is other than red or white in color.

8 - Mixed wheat. Any mixture of wheat that consists of less than 90 percent ofone class and more than 10 percent of one other class or a combination of classes that meet the definition of wheat.

b) Contrasting classes. Contrasting classes are:

1 - Durum wheat, Hard White wheat, Soft White wheat, and Unclassed wheat in the classes Hard Red Spring wheat and Hard Red Winter wheat.

2 - Hard Red Spring wheat, Hard Red Winter wheat, Hard White wheat, Soft Red Winter wheat, Soft White wheat, and Unclassed wheat in the class Durum wheat.

3 - Durum wheat and Unclassed wheat in the class Soft Red Winter wheat.

4 - Durum wheat, Hard Red Spring wheat, Hard Red Winter wheat, Soft Red Winter wheat, and Unclassed wheat in the classes Hard White wheat and Soft White wheat.

c) Damaged kernels. Kernels, pieces of wheat kernels, and other grains that are badly ground-damaged, diseased, frost-damaged, germ-damaged, heat-damaged, insect-bored, mold-damaged, sprout-damaged, or otherwise materially damaged.

d) Defects. Damaged kernels, foreign materials, and shrunken and broken kernels. The sum of these three factors may not exceed the limit for the factor defects for each numerical grade.

e) Dockage. All matter other than wheat that can be removed from the original sample by use of an approved device according to procedures prescribed in FGIS instructions. Also, underdeveloped, shriveled, and small pieces of wheat kernels removed in properly separating the material other than wheat and that cannot be recovered by properly rescreening or recleaning.

f) Foreign material. All matter other than wheat that remains in the sample after the removal of dockage and shrunken and broken kernels.

g) Heat-damaged kernels. Kernels, pieces of wheat kernels, and other grains that are materially discolored and damaged by heat which remain in the sample after the removal of dockage and shrunken and broken kernels.

h) Other grains. Barley, canola, corn, cultivated buckwheat, einkorn, emmer, flaxseed, guar, hull-less barley, nongrain sorghum, oats, Polish wheat, popcorn, poulard wheat, rice, rye, safflower, sorghum, soybeans, spelt, sunflower seed, sweet corn, triticale, and wild oats.

i) Shrunken and broken kernels. All matter that passes through a 0.064 x 3/8-inch oblong-hole sieve after sieving according to procedures prescribed in the FGIS instructions.

j) Sieve-0.064 x 3/8 inch (1.626 mm x 9.545 mm), oblong-hole sieve. A metal sieve 0.032 inch thick with oblong perforations 0.064 inch by 0.375 (3/8) inch.

Principles Governing the Application of Standards

Basis of determination

Each determination of heat-damaged kernels, damaged kernels, foreign material, wheat of other classes, contrasting classes, and subclasses is made on the basis of the grain when free from dockage and shrunken and broken kernels. Other determinations not specifically provided for under the general provisions are made on the basis of the grain when free from dockage, except the determination of odor is made on either the basis of the grain as a whole or the grain when free from dockage.

Grades and Grade Requirements

GRADES U.S. NO.:	1	2	3	4	5
MINIMUM LIMITS:					
Test Weight (lb/bu)					
HRS or White Club	58.0	57.0	55.0	53.0	50.0
All other classes and subclasses	60.0	58.0	56.0	54.0	51.0
Test Weight (kg/hl)					
HRS or White Club	76.4	75.1	72.5	69.9	66.0
Durum	78.2	75.6	73.0	70.4	66.5
All other classes and subclasses	78.9	76.4	73.8	71.2	67.3
MAXIMUM PERCENT LIMITS:					
Defects					
Damaged kernels:					
- Heat (part of total)	0.2	0.2	0.5	1.0	3.0
- Total	2.0	4.0	7.0	10.0	15.0
Foreign material	0.4	0.7	1.3	3.0	5.0
Shrunken and broken kernels	3.0	5.0	8.0	12.0	20.0
Total[1]	3.0	5.0	8.0	12.0	20.0
Wheat of Other Classes[2]					
Contrasting classes	1.0	2.0	3.0	10.0	10.0
Total[3]	3.0	5.0	10.0	10.0	10.0
Stones	0.1	0.1	0.1	0.1	0.1
MAXIMUM COUNT LIMITS (ALL GRADES):					
Other material (1000 g sample)					
Animal filth			1		
Castor beans			1		
Crotalaria seeds			2		
Glass			0		
Stones			3		
Unknown foreign substance			3		
Total[4]			4		
Insect-damaged kernels in 100 g			31		

U.S. Sample Grade is wheat that:

(a) does not meet the requirements for U.S. Nos. 1, 2, 3, 4, 5; or

(b) has a musty, sour or commercially objectionable foreign odor (except smut or garlic odor); or

(c) is heating or of distintively low quality.

Notes:

[1] Includes damaged kernels (total), foreign material, and shrunken and broken kernels.

[2] Unclassed wheat of any grade may contain not more than 10.0% of wheat of other classes.

[3] Includes contrasting classes.

[4] Includes any combination of animal filth, caster beans, crotalaria seeds, glass, stones, or unknown foreign substance.

Grades and Grade Requirements for Mixed Wheat

Mixed wheat is graded according to the U.S. Numerical and U.S. Sample grade requirements of the class of wheat that predominates in the mixture, except that the factor wheat of other classes is disregarded.

Special Grades and Special Grade Requirements

1 - Ergoty wheat. Wheat that contains more than 0.05 percent of ergot.

Example: U.S. No. 2 Hard Red Winter wheat, Ergoty, Dockage 0.3%

2 - Garlicky wheat. Wheat that contains in a 1,000-gram portion more than two green garlic bulblets or an equivalent quantity of dry or partly dry bulblets.

Example: U.S. No. 2 Soft Red Winter wheat, Garlicky, Dockage 0.6%

3 - Light smutty wheat. Wheat that has an unmistakable odor of smut, or which contains in a 250-gram portion, smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 5 smut balls, but not in excess of a quantity equal to 30 smut balls of average size.

Example: U.S. No. 3 Hard Red Winter wheat, Light Smutty, Dockage 0.5%

4 - Smutty wheat. Wheat that contains, in a 250-gram portion, smut balls, portions of smut balls, or spores of smut in excess of a quantity equal to 30 smut balls of average size.

Example: U.S. No. 2 Northern Spring wheat, Smutty, Dockage 0.5%

5 - Treated wheat. Wheat that has been scoured, limed, washed, sulfured, or treated in such a manner that the true quality is not reflected by either the numerical grades or the U.S. sample grade designation alone.

Example: U.S. No. 1 Amber Durum wheat, Treated (limed), Dockage 0.2%

APPENDIX II

WHEAT SAMPLE BREAKDOWN CHART

3000-GRAM SAMPLE

1050-GRAM WORK PORTION

1050-GRAM FILE SAMPLE

STORE FOR 90 DAYS

1050-GRAM WORK PORTION

650-GRAM MOISTURE

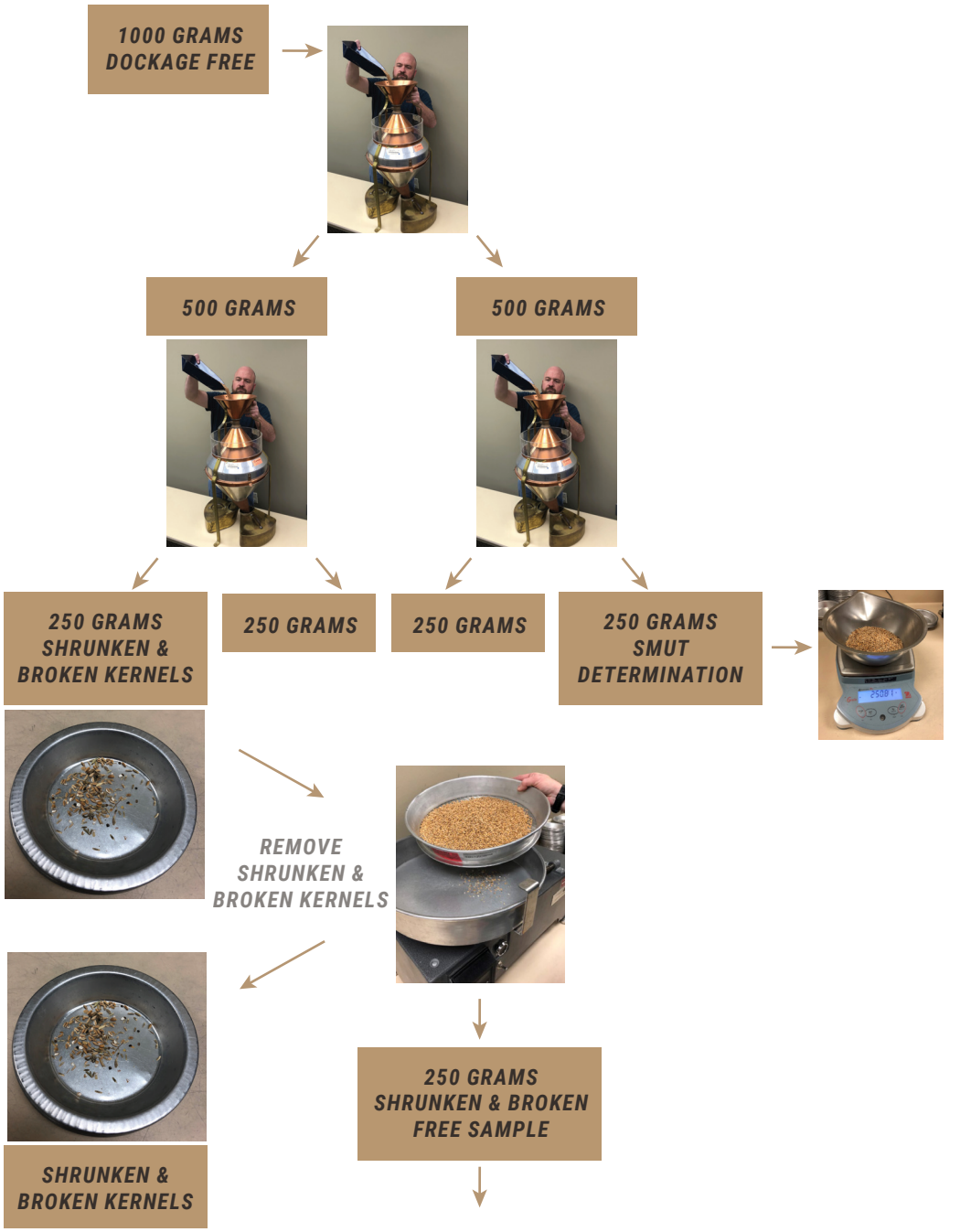
REMOVE DOCKAGE

1000 GRAMS DOCKAGE FREE

TEST WEIGHT

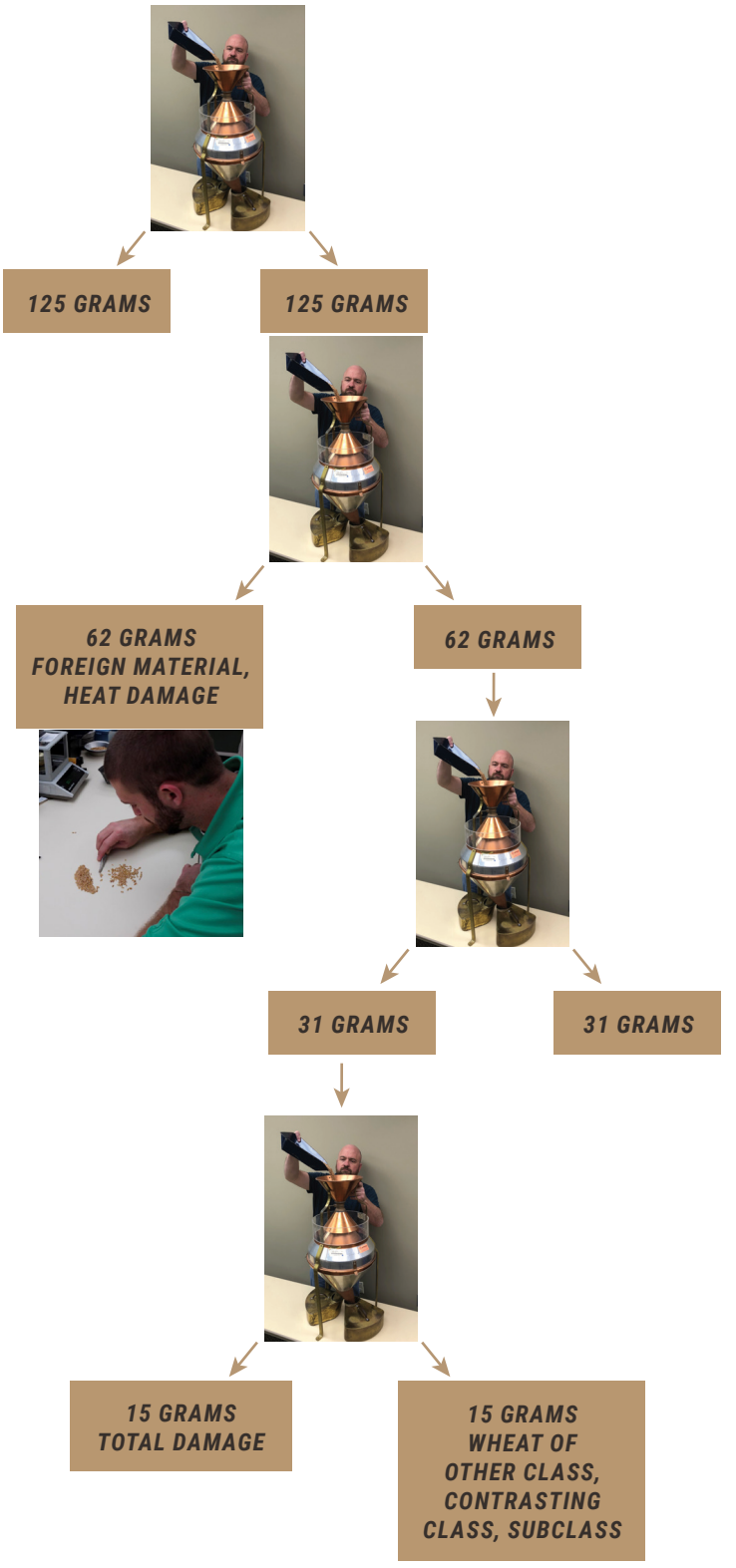
CONTINUED ON NEXT PAGE

Wheat Sample Breakdown Chart Continued



CONTINUED ON NEXT PAGE

Wheat Sample Breakdown Chart Continued



BASIS OF DETERMINATION CHART

LOT AS A WHOLE	FACTORS DETERMINED BEFORE THE REMOVAL OF DOCKAGE	FACTORS DETERMINED AFTER THE REMOVAL OF DOCKAGE	FACTORS DETERMINED AFTER THE REMOVAL OF DOCKAGE AND SHRUNKEN AND BROKEN KERNELS
Distinctly Low Quality	Distinctly Low Quality	Ergot	Class
Heating	Garlicky	Kind of grain	Subclass
Infested	Heating	Odor	Wheat of Other Classes
Odor	Infested	Smut	Contrasting Classes
	Kind of grain	Stones	Heat-damaged kernels
	Odor	Treated	Damaged kernels (total)
	Odor (smut)	Shrunken and Broken Kernels	Foreign material
	Moisture	Test Weight	
	Other unusual conditions	Protein	
	U.S. Sample Grade Factors	Single Kernel Hardness Test	

APPENDIX III

DOCUMENTATION

Export Inspection Log

U.S. DEPARTMENT OF AGRICULTURE
FEDERAL GRAIN INSPECTION SERVICE
INSPECTION LOG

OMB APPROVED NO.0580-0013
Form FGIS-921

Service Request #:
Level - Status: Original - Submitted
Name of Vessel: M/V OCEAN SHIP
Load Order Number: 01
Location: ABC Grain Elevator
Destination(s): CANADA (original)
Sampling Method: Mechanical Diverter

Grade To Be Loaded: U.S. No. 2 or better Soft Red Winter Wheat
Certification Option: Option 2
Quantity: 41513340.00 LB
Loading Started: 10/25/2019 1115
Loading Ended: 10/25/2019 2145
Inspector: John Doe
Final Grade: U.S. No. 2 or better Soft Red Winter Wheat

Hold	Date/Time
1	10/25/2019 11:06:00
2	10/25/20191011:06:00
3	10/25/2019 11:06:00
4	10/25/2019 11:06:00

Print	S/L	Start	End	Bin	Quantity	ODOR	TW 58.00	AVG QUAL	M	AVG QUAL	DKG	AVG QUAL	HT 0.20	AVG QUAL	DKT 4.00	AVG QUAL	FM 0.70	AVG QUAL	SHBN 5.00	AVG QUAL	DEF 5.00	AVG QUAL
☐	1	10/23/2019 0804	10/23/2019 0835	604	1121920	OK	59.7	59.70	12.6	12.60	0.8	0.80	0.0	0.00	1.5	1.50	0.1	0.10	0.7	0.70	2.3	2.30
☐	2	10/23/2019 0835	10/23/2019 0905	605	1121880	OK	59.7	59.70	12.6	12.60	0.9	0.84	0.0	0.00	2.2	1.84	0.1	0.10	0.6	0.65	2.9	2.59
☐	3	10/23/2019 0905	10/23/2019 0928	608	1121980	OK	59.8	59.73	12.5	12.56	0.6	0.76	0.0	0.00	3.9	2.53	0.2	0.13	0.7	0.66	4.8	3.33
☐	4	10/23/2019 0928	10/23/2019 0953	613	1121820	OK	60.0	59.79	12.6	12.57	0.8	0.77	0.0	0.00	2.1	2.42	0.0	0.10	0.8	0.69	2.9	3.22
☐	5	10/23/2019 0953	10/23/2019 1017	614	1121700	OK	59.9	59.81	12.6	12.57	1.1	0.83	0.0	0.00	2.4	2.42	0.2	0.12	0.7	0.69	3.3	3.24
☐	6	10/23/2019 1017	10/23/2019 1041	609	1121640	OK	59.9	59.83	12.5	12.56	1.2	0.89	0.0	0.00	2.0	2.35	0.0	0.10	0.7	0.69	2.7	3.15
☐	7	10/25/2019 1139	10/25/2019 1154	613	1122060	OK	60.2	59.88	12.4	12.54	1.0	0.91	0.1	0.01	1.3	2.19	0.1	0.10	0.7	0.69	2.1	3.00
☐	8	10/25/2019 1154	10/25/2019 1212	604	1122480	OK	60.4	59.95	12.5	12.53	0.5	0.86	0.0	0.01	2.1	2.18	0.0	0.08	0.6	0.68	2.7	2.96
☐	9	10/25/2019 1212	10/25/2019 1229	605	1200680	OK	60.1	59.96	12.5	12.53	0.7	0.84	0.0	0.01	3.7	2.36	0.0	0.07	0.7	0.68	4.4	3.13
☐	10	10/25/2019 1230	10/25/2019 1246	608	1200800	OK	60.0	59.97	12.5	12.52	0.6	0.81	0.0	0.00	5.4	2.68	0.0	0.06	0.7	0.69	6.1	3.44
☐	11	10/25/2019 1247	10/25/2019 1302	609	1201260	OK	60.1	59.98	12.6	12.53	0.4	0.77	0.0	0.00	5.4	2.94	0.0	0.06	0.7	0.69	6.1	3.69
☐	12	10/25/2019 1303	10/25/2019 1319	614	1201100	OK	59.6	59.95	12.7	12.55	0.6	0.76	0.0	0.00	6.1	3.22	0.0	0.05	0.4	0.66	6.5	3.94
☐	13	10/25/2019 1320	10/25/2019 1336	604	1200340	OK	59.7	59.92	12.8	12.57	0.8	0.76	0.0	0.00	6.0	3.44	0.0	0.05	0.8	0.67	6.8	4.17
☐	14	10/25/2019 1337	10/25/2019 1353	608	1200120	OK	60.0	59.93	12.8	12.58	0.8	0.76	0.0	0.00	4.5	3.52	0.0	0.04	0.8	0.68	5.3	4.25
☐	Local-1	10/25/2019 1354	10/25/2019 1454	609	893860																	
☐	15	10/25/2019 1455	10/25/2019 1510	613	1200460	OK	60.1	59.94	12.7	12.59	0.8	0.77	0.1	0.01	5.2	3.63	0.0	0.04	0.8	0.69	6.0	4.37
☐	16	10/25/2019 1510	10/25/2019 1527	608	1199540	OK	59.6	59.92	12.7	12.60	0.9	0.77	0.1	0.01	5.1	3.73	0.0	0.04	0.9	0.70	6.0	4.48
☐	17	10/25/2019 1528	10/25/2019 1542	605	1200420	OK	59.8	59.91	12.7	12.60	1.0	0.79	0.0	0.01	8.1	3.99	0.0	0.03	1.0	0.72	9.1	4.76
☐	18	10/25/2019 1543	10/25/2019 1559	604	1200780	OK	60.4	59.94	12.7	12.61	0.8	0.79	0.1	0.02	7.2	4.18	0.0	0.03	1.0	0.74	8.2	4.95
☐	19	10/25/2019 1600	10/25/2019 1617	613	1200440	OK	59.9	59.94	12.6	12.61	0.8	0.79	0.0	0.02	6.9	4.32	0.0	0.03	0.8	0.74	7.7	5.10
☐	20	10/25/2019 1618	10/25/2019 1633	609	1200800	OK	60.6	59.97	12.7	12.61	0.9	0.79	0.0	0.02	4.3	4.32	0.0	0.03	0.7	0.74	5.0	5.10
☐	21	10/25/2019 1634	10/25/2019 1650	608	1200080	OK	60.4	59.99	12.7	12.62	0.6	0.78	0.0	0.01	4.5	4.33	0.0	0.03	0.7	0.73	5.2	5.10
☐	22	10/25/2019 1651	10/25/2019 1706	614	1200020	OK	60.0	59.99	12.7	12.62	0.6	0.77	0.0	0.01	2.5	4.24	0.0	0.03	0.6	0.73	3.1	5.01
☐	23	10/25/2019 1707	10/25/2019 1722	605	1201040	OK	60.5	60.01	12.8	12.63	1.0	0.78	0.0	0.01	2.3	4.16	0.0	0.02	0.6	0.72	2.9	4.91
☐	24	10/25/2019 1723	10/25/2019 1737	609	1200040	OK	60.9	60.05	12.8	12.63	0.9	0.79	0.0	0.01	3.1	4.11	0.0	0.02	0.5	0.71	3.6	4.86
☐	25	10/25/2019 1737	10/25/2019 1753	604	1199900	OK	60.7	60.08	12.7	12.64	0.9	0.79	0.1	0.02	3.5	4.09	0.1	0.03	0.8	0.72	4.4	4.84
☐	26	10/25/2019 1753	10/25/2019 1811	613	1200200	OK	60.6	60.10	12.6	12.64	1.2	0.81	0.1	0.02	2.3	4.02	0.0	0.02	0.8	0.72	3.1	4.77
☐	27	10/25/2019 1811	10/25/2019 1831	605	1201240	OK	60.0	60.09	12.5	12.63	0.8	0.81	0.0	0.02	3.0	3.98	0.0	0.02	0.8	0.72	3.8	4.73
☐	28	10/25/2019 1831	10/25/2019 1847	608	1200780	OK	59.9	60.09	12.4	12.62	0.7	0.80	0.2	0.02	6.1	4.06	0.0	0.02	0.7	0.72	6.8	4.81
☐	29	10/25/2019 1847	10/25/2019 1903	609	1200380	OK	60.2	60.09	12.4	12.61	0.8	0.80	0.0	0.02	3.7	4.04	0.0	0.02	0.7	0.72	4.4	4.79
☐	30	10/25/2019 1903	10/25/2019 1918	604	1200500	OK	60.1	60.09	12.5	12.61	1.4	0.82	0.0	0.02	3.1	4.01	0.0	0.02	0.8	0.72	3.9	4.76
☐	31	10/25/2019 1918	10/25/2019 1936	605	1201040	OK	60.4	60.10	12.5	12.61	0.8	0.82	0.0	0.02	3.6	4.00	0.0	0.02	0.8	0.72	4.4	4.75
☐	32	10/25/2019 1936	10/25/2019 1953	614	1201080	OK	60.5	60.11	12.5	12.60	0.8	0.82	0.0	0.02	3.6	3.98	0.0	0.02	0.8	0.73	4.4	4.74
☐	33	10/25/2019 1953	10/25/2019 2011	608	1200880	OK	60.2	60.12	12.7	12.61	1.2	0.83	0.0	0.02	2.7	3.94	0.0	0.02	0.8	0.73	3.5	4.70
☐	34	10/25/2019 2011	10/25/2019 2035	609	1200820	OK	59.8	60.11	12.6	12.60	0.8	0.83	0.0	0.02	6.2	4.01	0.0	0.02	0.8	0.73	7.0	4.77
☐	35	10/25/2019 2035	10/25/2019 2059	613/604	1323120	OK	59.7	60.09	12.6	12.60	0.8	0.83	0.0	0.02	2.5	3.96	0.0	0.02	0.8	0.73	3.3	4.72
					Weighted Average:		60.09		12.60		0.83		0.02		3.96		0.02		0.73		4.71	
					(* indicates adjusted average) **Rounded Average:**	OK	60.1		12.6		0.8		0.0		4.0		0.0		0.7		4.7	

OMB No. 0580-0013: According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB
0013. The time required to complete this information collection is estimated to average 6.66 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and co

Export Inspection Log

U.S. DEPARTMENT OF AGRICULTURE
FEDERAL GRAIN INSPECTION SERVICE
INSPECTION LOG

OMB APPROVED NO.0580-0013
Form FGIS-921

Service Request #:
Level - Status: Original - Submitted
Name of Vessel: M/V OCEAN SHIP
Load Order Number: 01
Location: ABC Grain Elevator
Destination(s): CANADA (original)
Sampling Method: Mechanical Diverter

Grade To Be Loaded: U.S. No. 2 or better Soft Red Winter Wheat
Certification Option: Option 2
Quantity: 41513340.00 LB **Loading**
Started: 10/25/2019 1115
Loading Ended: 10/25/2019 2145
Inspector: Fox , Sheena E - 46278
Final Grade: U.S. No. 2 or better Soft Red Winter Wheat

Hold	Date/Time
1	10/25/2019 11:06:00
2	10/25/2019 11:06:00
3	10/25/2019 11:06:00
4	10/25/2019 11:06:00

Print	S/L	Start	End	Bin	Quantity	IDK 3 TOT	IN	CTSD	AVG QUAL	DON	AVG QUAL
☐	1	10/23/2019 0804	10/23/2019 0835	604	1121920	11	1-0	0	0.00	0.9	0.90
☐	2	10/23/2019 0835	10/23/2019 0905	605	1121880	16	1-0	0	0.00	1.0	0.94
☐	3	10/23/2019 0905	10/23/2019 0928	608	1121980	6	1-0	0	0.00	1.0	0.96
☐	4	10/23/2019 0928	10/23/2019 0953	613	1121820		1-0	0	0.00	1.0	0.97
☐	5	10/23/2019 0953	10/23/2019 1017	614	1121700		1-0	0	0.00	1.0	0.97
☐	6	10/23/2019 1017	10/23/2019 1041	609	1121640		1-0	0	0.00	0.7	0.93
☐	7	10/25/2019 1139	10/25/2019 1154	613	1122060		1-0	0	0.00	0.7	0.89
☐	8	10/25/2019 1154	10/25/2019 1212	604	1122480		1-0	0	0.00	0.9	0.89
☐	9	10/25/2019 1212	10/25/2019 1229	605	1200680		1-0	0	0.00	1.0	0.91
☐	10	10/25/2019 1230	10/25/2019 1246	608	1200800		1-0	0	0.00	0.9	0.91
☐	11	10/25/2019 1247	10/25/2019 1302	609	1201260		1-0	0	0.00	0.8	0.89
☐	12	10/25/2019 1303	10/25/2019 1319	614	1201100		1-0	0	0.00	1.0	0.90
☐	13	10/25/2019 1320	10/25/2019 1336	604	1200340		1-0	0	0.00	1.0	0.91
☐	14	10/25/2019 1337	10/25/2019 1353	608	1200120		1-0	0	0.00	1.1	0.92
☐	Local-1	10/25/2019 1354	10/25/2019 1454	609	893860						
☐	15	10/25/2019 1455	10/25/2019 1510	613	1200460		1-0	0	0.00	1.0	0.93
☐	16	10/25/2019 1510	10/25/2019 1527	608	1199540		1-0	0	0.00	1.2	0.95
☐	17	10/25/2019 1528	10/25/2019 1542	605	1200420		1-0	0	0.00	1.2	0.96
☐	18	10/25/2019 1543	10/25/2019 1559	604	1200780		1-0	0	0.00	1.4	0.99
☐	19	10/25/2019 1600	10/25/2019 1617	613	1200440		1-0	0	0.00	1.0	0.99
☐	20	10/25/2019 1618	10/25/2019 1633	609	1200800		1-0	0	0.00	1.1	0.99
☐	21	10/25/2019 1634	10/25/2019 1650	608	1200080		1-0	0	0.00	1.0	0.99
☐	22	10/25/2019 1651	10/25/2019 1706	614	1200020		1-0	0	0.00	0.9	0.99
☐	23	10/25/2019 1707	10/25/2019 1722	605	1201040		1-0	0	0.00	0.7	0.98
☐	24	10/25/2019 1723	10/25/2019 1737	609	1200040		1-0	0	0.00	0.7	0.96
☐	25	10/25/2019 1737	10/25/2019 1753	604	1199900		1-0	0	0.00	0.5	0.94
☐	26	10/25/2019 1753	10/25/2019 1811	613	1200200		1-0	0	0.00	0.8	0.94
☐	27	10/25/2019 1811	10/25/2019 1831	605	1201240		1-0	0	0.00	0.7	0.93
☐	28	10/25/2019 1831	10/25/2019 1847	608	1200780		1-0	0	0.00	0.8	0.92
☐	29	10/25/2019 1847	10/25/2019 1903	609	1200380		1-0	0	0.00	0.5	0.91
☐	30	10/25/2019 1903	10/25/2019 1918	604	1200500		1-0	0	0.00	0.3	0.89
☐	31	10/25/2019 1918	10/25/2019 1936	605	1201040		1-0	0	0.00	0.6	0.88
☐	32	10/25/2019 1936	10/25/2019 1953	614	1201080		1-0	0	0.00	0.4	0.86
☐	33	5/25/201910 1953	10/25/2019 2011	608	1200880		1-0	0	0.00	0.7	0.86
☐	34	10/25/2019 2011	10/25/2019 2035	609	1200820		1-0	0	0.00	0.6	0.85
☐	35	10/25/2019 2035	10/25/2019 2059	613/604	1323120		1-0	0	0.00	0.7	0.85
					Weighted Average:		0	0.0		0.85	
					(* indicates adjusted average) **Rounded Average:**	N/A	0	0		0.9	

OMB No. 0580-0013: According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB 0013. The time required to complete this information collection is estimated to average 6.66 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and co

Export Inspection Log

Final Stowage: Stowage: Hold Nos. 1, 2, 3, and 4.

General Remarks: Loading approx. 728,000 bus U. S. No 2 or better SRW, 1.0 % Dockage 20,000 bu sublots 14.0% moisture ave. 5 - 5 pound composite samples, seal nos. 1 - 3 pound sample per Sublot, seal nos. ----------5/23/19---------- 0730 DT checked by SF 0758 Lifted TW checked ok 0804 Started filling bins 1045 Figures checked with elevator thru S/L 6 ---------- 05/25/19---------- 1004 Lifted TW 1115 Grain on board 1415 GQIA, DT check by MM 1529 Gate leak, scale balance check 1600 Down for rain 1635 Resumed loading 1925 Gate leak check 2015 D/T check 2030 GQIA done by PS 2130 No spills on dock, deck or in elevator. 2142 Final figures check with elevator 2145 Ship complete 5- 5lb composites sealed with seal number 008251-8255

U.S. DEPARTMENT OF AGRICULTURE
FEDERAL GRAIN INSPECTION SERVICE
INSPECTION LOG

OMB APPROVED NO.0580-0013
Form FGIS-921

Service Request #:
Level - Status: Original - Submitted
Name of Vessel: M/V OCEAN SHIP
Load Order Number: 01
Location: ABC Grain Elevator
Destination(s): CANADA (original)
Sampling Method: Mechanical Diverter

Grade To Be Loaded: U.S. No. 2 or better Soft Red Winter Wheat
Certification Option: Option 2
Quantity: 41513340.00 LB **Loading**
Started: 10/25/2019 1115
Loading Ended: 10/25/2019 2145
Inspector: Fox , Sheena E - 46278
Final Grade: U.S. No. 2 or better Soft Red Winter Wheat

Hold	Date/Time
1	10/25/2019 11:06:00
2	10/25/2019 11:06:00
3	10/25/2019 11:06:00
4	10/25/2019 11:06:00

Print	S/L	Disposition	Person Notified	Time Notified	Inspector	Sampler	Remarl
☐	1	2	Jason	0906	Doe, Jane E	Voisar , Handy	
☐	2	2, On Board - Transferred	Jason	0934	Doe, Jane E	Voisar , Handy	
☐	3	3	Jason	0947	Doe, Jane E	Voisar , Handy	
☐	4	4	Jason	1015	Black, Ronald J.		
☐	5	4	Jason	1035	Black , Ronald J.		
☐	6	3	Jason	1100	Black , Ronald J.		
☐	7	4	Craig	1215	Banks , Brandy	Bosil , James B	
☐	8	2	Craig	1224	Banks , Brandy	Bosil , James B	
☐	9	2	Craig	1241	Banks , Brandy	Bosil , James B	
☐	10	3	Craig	1300	Banks , Brandy	Bosil , James B	
☐	11	3	Craig	1317	Banks , Brandy	Bosil , James B	
☐	12	4	Craig	1334	Banks , Brandy	Bosil , James B	
☐	13	2	Craig	1349	Banks , Brandy	Bosil , Jaames B	
☐	14	2	Craig	1406	Banks , Brandy	Bosil , James B	
☐	Local-1	Local - Sampler Malfunction	Craig	1454	Banks , Brandy	Bosil , James B	
☐	15	4	Craig	1527	Banks , Brandy	Koonz , Ken J	
☐	16	2	Craig	1540	Banks , Brandy	Koonz , Ken J	
☐	17	1	Craig	1557	Banks , Brandy	Koonz , Ken J	
☐	18	1	Craig	1617	Banks , Brandy	Koonz , Ken J	
☐	19	4	Craig	1631	Banks , Brandy	Koonz , Ken J	
☐	20	2	Craig	1648	Banks , Brandy	Koonz , Ken J	
☐	21	2, 3	Craig	1702	Banks , Brandy	Koonz , Ken J	
☐	22	4	Craig	1718	Banks , Brandy	Koonz , Ken J	
☐	23	1	Craig	1733	Banks , Brandy	Koonz , Ken J	
☐	24	3	Craig	1750	Banks , Brandy	Koonz , Ken J	
☐	25	1	Craig	1816	Doe, Jane E		
☐	26	4	Craig	1832	Doe, Jane E		
☐	27	1	Craig	1848	Doe, Jane E		
☐	28	3	Craig	1910	Doe, Jane E		
☐	29	2, 3	Craig	1921	Doe, Jane E		
☐	30	1	Craig	1935	Doe, Jane E		
☐	31	1, 2	Craig	1950	Doe, Jane E		
☐	32	4	Craig	2008	Doe, Jane E		
☐	33	2	Craig	2029	Doe, Jane E		
☐	34	3	Craig	2049	Doe, Jane E		
☐	35	2, 4	Craig	2106	Doe, Jane E		

Official Weight Certificate

FORM FGIS-909
JAN 07

UNITED STATES DEPARTMENT OF AGRICULTURE
FEDERAL GRAIN INSPECTION SERVICE
U.S. GRAIN STANDARDS ACT

Approved OMB No. 0580-0013

OFFICIAL EXPORT INSPECTION CERTIFICATE

ORIGINAL

US-TOFO-1-240XXX
NOT NEGOTIABLE

LEVEL OF INSPECTION:
Original

ISSUED AT:
Maumee, OH

DATE OF SERVICE:
October 25, 2019

IDENTIFICATION:
M/V OCEAN SHIP

LOCATION:
ABC Grain Elevator

QUANTITY: (this is NOT a weight certificate)
41,513,340 Pounds

GRADE AND KIND: U.S. No. 2 or better Soft Red Winter Wheat, Dockage 0.8%

RESULTS:

Test Weight Per Bushel 60.1 lb/bu	Moisture 12.6 %
Heat-Damaged Kernels 0.0 %	Damaged Kernels Total 4.0 %
Foreign Material 0.0 %	Shrunken And Broken Kernels 0.7 %
Defects 4.7 %	Contrasting Classes 0.0 %
Wheat Of Other Classes 0.0 %	DON 0.9 ppm.

REMARKS:
Stowage: Hold Nos. 1, 2, 3, 4.

No water applied to grain during the loading of this shipment.

I CERTIFY THAT THE SERVICES SPECIFIED ABOVE WERE PERFORMED WITH THE RESULTS STATED.

APPLICANT NAME: ABC Export Elevator

NAME OR SIGNATURE: **Jane E. Doe**

ISSUING OFFICE: FGIS - Toledo Field Office

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 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 canceled 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.
According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information is 0580-0013. The time required to disclose this recordkeeping requirement is to average 39.097 hours per recordkeeper annually, including the time to retain such records, and to notify, disclose, and report to third parties such recordkeeping requirements.

Stowage Exam Certificate

FORM FGIS-915
JAN 07

UNITED STATES DEPARTMENT OF AGRICULTURE
FEDERAL GRAIN INSPECTION SERVICE

Approved OMB No. 0580-0013

OFFICIAL STOWAGE EXAMINATION CERTIFICATE

ORIGINAL

LEVEL OF INSPECTION:
Original

Maumee, OH

May 25, 2019

IDENTIFICATION:
M/V OCEAN SHIP

LOCATION:
ABC Grain Elevator
Toledo, OH

FINISH TIME:
11:06

REMARKS:
STOWAGE AREA EXAMINED: Hold Nos. 1, 2, 3, 4.

RESULTS: Stowage area examined on the above date and found to be substantially clean, dry, free of insect infestation, and suitable to store or carry grain or commodity.

EXAMPLE ONLY – NOT LEGAL FOR TRADE

I CERTIFY THAT THE SERVICES SPECIFIED ABOVE WERE PERFORMED WITH THE RESULTS STATED

APPLICANT NAME: ABC Grain Elevator

NAME OR SIGNATURE: Jane E. Doe

ISSUING OFFICE: FGIS - Toledo Field Office

Official Commodity Inspection Certificate

FORM FGIS-993
JAN 07

UNITED STATES DEPARTMENT OF AGRICULTURE
FEDERAL GRAIN INSPECTION SERVICE
AGRICULTURAL MARKETING ACT OF 1946

Approved OMB No. 0580-0013

DIVIDED-LOT

ORIGINAL

COMMODITY INSPECTION CERTIFICATE

OFFICIAL WHITE CERTIFICATE

US-TOFO-1-21
NOT NEGOTIABLE

LEVEL OF INSPECTION:
Original

ISSUED AT:
Maumee, OH

DATE OF SERVICE:
August 17, 20

IDENTIFICATION:
M/V INA

LOCATION:
Chicago, IL

QUANTITY: (this is NOT a weight certificate)
3,306,900 Pounds

TYPE OF MOVEMENT:
Export

DATE SAMPLED:
July 31, 20

METHOD OF SAMPLING:
Mechanical Diverter

COMMODITY: Wheat

RESULTS:
Falling Number 349, 14.0% Moisture Basis.

REMARKS:
This commodity was officially inspected and/or weighed as an undivided lot of 30,449,440 Pounds.

Stowage: Hold Nos. 1, 2, 3, 5.

This grain was fumigated according to official procedures.

No water was applied to grain during the loading of this shipment.

END OF REMARKS

APPLICANT NAME: LLC,

ISSUING OFFICE: FGIS - Toledo Field Office

I CERTIFY THAT THE SERVICES SPECIFIED ABOVE WERE PERFORMED WITH THE RESULTS STATED.

NAME OR SIGNATURE:

Example of Statement of Fumigation Application Compliance

TO: Captain or Officer in charge of (vessel name).

I hereby certify that aluminum phosphide fumigant formulation was applied to the grain on the above referenced vessel on (date). I further certify that the fumigant formulation application was made in accordance with U.S. Environmental Protection Agency, U.S. Coast Guard, and Federal Grain Inspection Service regulations and instructions and applicable State and local laws and regulations. The grain in the following holds or tanks was treated:

Hold/Tank Number	Hold/Tank Depth	Type and Quantity of Fumigant Formulation Used	Cubic Capacity of Hold	Method of Fumigant Application

It is my understanding that the above named vessel is destined for (country) with an estimated voyage time of (days).

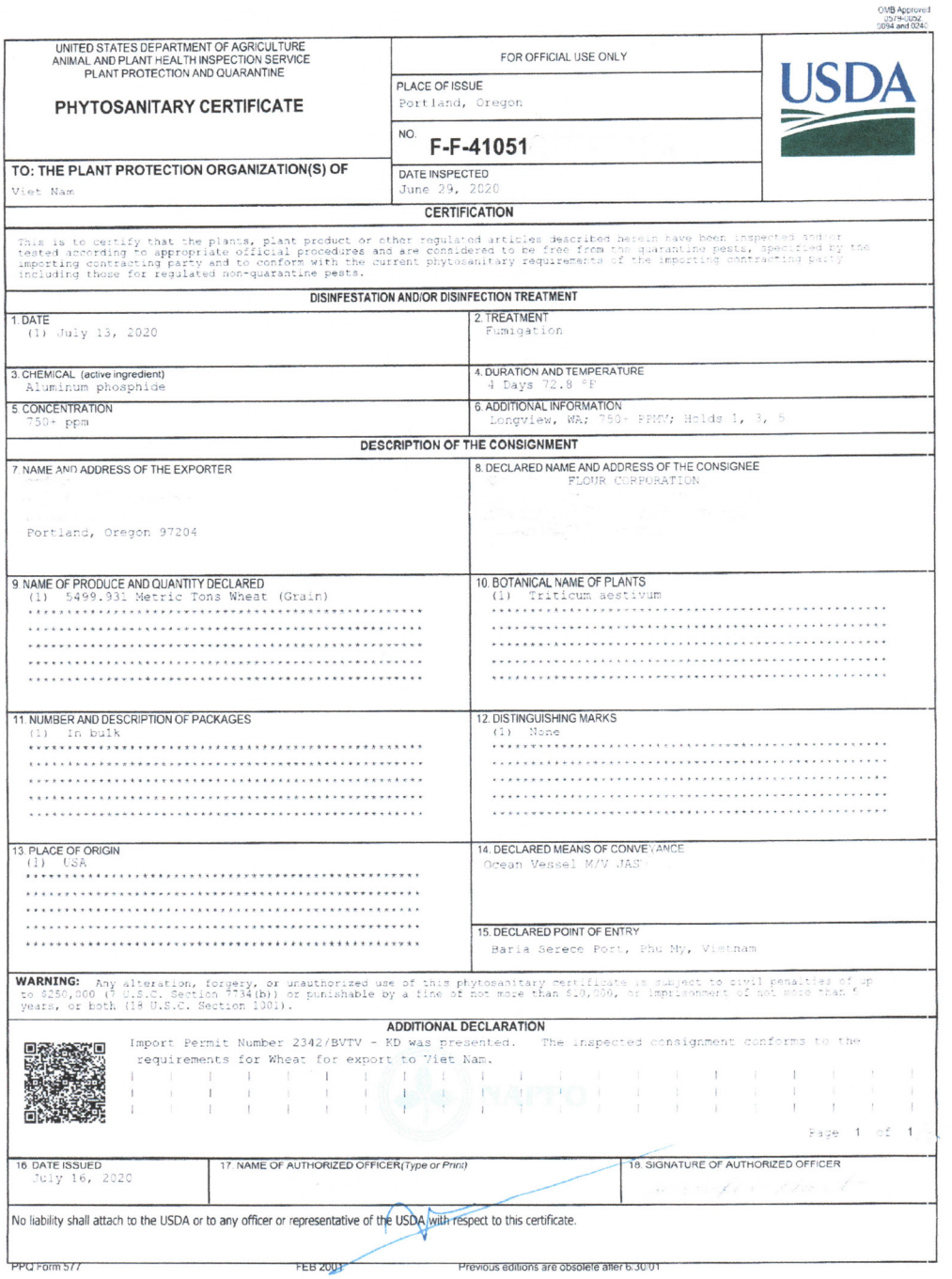
I certify that immediately following application of the fumigant formulation all openings to the fumigated space were closed and placarded with appropriate warning signs. I further certify that all openings to the fumigated space have been checked and no fumigant gas was leaking at the time of the vessel's departure.

Signed: _____
(Certified Applicator)

Acknowledged: _____
(Officer in Charge of the Vessel)

Phytosanitary Certificate

When an importing country has phytosanitary regulations prohibiting the entry of certain pests such as insects, the U.S. Government will examine the cargo for the presence of the prohibited pest and issue a Phytosanitary Certificate (shown below). This certificate is issued by the U.S. Department of Agriculture, Animal and Plant Health Inspection Service (APHIS), not by FGIS.



OMB Approved
0579-0200
0094 and 0245

UNITED STATES DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE

PHYTOSANITARY CERTIFICATE

FOR OFFICIAL USE ONLY

PLACE OF ISSUE: Portland, Oregon

NO. **F-F-41051**

DATE INSPECTED: June 29, 2020

USDA

TO: THE PLANT PROTECTION ORGANIZATION(S) OF
Viet Nam

CERTIFICATION

This is to certify that the plants, plant product or other regulated articles described herein have been inspected and/or tested according to appropriate official procedures and are considered to be free from the quarantine pests, specified by the importing contracting party and to conform with the current phytosanitary requirements of the importing contracting party including those for regulated non-quarantine pests.

DISINFESTATION AND/OR DISINFECTION TREATMENT

1. DATE	2. TREATMENT
(1) July 13, 2020	Fumigation
3. CHEMICAL (active ingredient)	4. DURATION AND TEMPERATURE
Aluminum phosphide	4 Days 72.8 °F
5. CONCENTRATION	6. ADDITIONAL INFORMATION
750+ ppm	Longview, WA; 750+ PPMV; Holds 1, 3, 5

DESCRIPTION OF THE CONSIGNMENT

7. NAME AND ADDRESS OF THE EXPORTER	8. DECLARED NAME AND ADDRESS OF THE CONSIGNEE
Portland, Oregon 97204	FLOUR CORPORATION
9. NAME OF PRODUCE AND QUANTITY DECLARED	10. BOTANICAL NAME OF PLANTS
(1) 5499.932 Metric Tons Wheat (Grain)	(1) Triticum aestivum
11. NUMBER AND DESCRIPTION OF PACKAGES	12. DISTINGUISHING MARKS
(1) In bulk	(1) None
13. PLACE OF ORIGIN	14. DECLARED MEANS OF CONVEYANCE
(1) USA	Ocean Vessel M/V JAS
	15. DECLARED POINT OF ENTRY
	Baria Serece Port, Phu My, Vietnam

WARNING: Any alteration, forgery, or unauthorized use of this phytosanitary certificate is subject to civil penalties of up to $250,000 (7 U.S.C. Section 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (18 U.S.C. Section 1001).

ADDITIONAL DECLARATION

Import Permit Number 2342/BVTV - KD was presented. The inspected consignment conforms to the requirements for Wheat for export to Viet Nam.

Page 1 of 1

16. DATE ISSUED	17. NAME OF AUTHORIZED OFFICER (Type or Print)	18. SIGNATURE OF AUTHORIZED OFFICER
July 16, 2020		

No liability shall attach to the USDA or to any officer or representative of the USDA with respect to this certificate.

PPQ Form 577 FEB 2001 Previous editions are obsolete after 6/30/01

SHIPPER'S ORIGINAL

APPENDIX IV

FUMIGATION AND GRAIN PROTECTANTS

Chemical methods available to control insects include fumigants and protectants. A fumigant, such as phosphine, is a gas, which penetrates the kernels and kills all life stages of insects: eggs, larvae and adults. After the grain is aerated, phosphine leaves no residue. On the other hand, grain protectants are applied to the surface of grain and kill adult insects on contact. Grain protectants do not kill insect eggs.

When a portion of cargo is graded "infested" the exporter has the option of

1 - accepting the official certificate with the "infested" designation,

2 - returning the infested cargo to the elevator, or

3 - continuing to load the vessel then fumigate it in transit following procedures specified by FGIS.

If the exporter selects option 3, the "infested" designation is not reported on the certificate.

A cargo can be fumigated or treated with a grain protectant (contact insecticide), if the buyer chooses, regardless of whether FGIS grades the cargo "infested." A grain protectant cannot be used to remove the "infested" designation. FGIS does not observe this procedure unless specifically requested.

FGIS has conducted research in cooperation with other government agencies and registered fumigators to develop safe and effective procedures for fumigating vessels in transit with aluminum phosphide fumigant formulations. The fumigation is done by a licensed applicator. FGIS personnel observe the procedure to assure it is performed according to correct procedures. FGIS requires the applicator to sign a statement on his company's letterhead stating the fumigant was applied according to U.S. Government regulations and the manufacturer's instructions. An example of a "Statement of Fumigation Application Compliance" form is shown in Appendix III, page 57.

In-transit fumigation with aluminum phosphide has been shown to be extremely effective in controlling all life stages of infestation which might otherwise develop in transit.

APPENDIX V

TEST WEIGHT CONVERSION CHARTS

Prediction For Durum Wheat

Metric Bulk Density = [1.292 x (TW)] + 0.630

(Prediction based on use of a 1-liter chondrometer apparatus)

Conversion Table

lb/bu	kg/hl	lb/bu	kg/hl	lb/bu	kg/hl	lb/bu	kg/hl
54.0	70.4	56.0	73.0	58.0	75.6	60.0	78.2
54.1	70.5	56.1	73.1	58.1	75.7	60.1	78.3
54.2	70.7	56.2	73.2	58.2	75.8	60.2	78.4
54.3	70.8	56.3	73.4	58.3	76.0	60.3	78.5
54.4	70.9	56.4	73.5	58.4	76.1	60.4	78.7
54.5	71.0	56.5	73.6	58.5	76.2	60.5	78.8
54.6	71.2	56.6	73.8	58.6	76.3	60.6	78.9
54.7	71.3	56.7	73.9	58.7	76.5	60.7	79.1
54.8	71.4	56.8	74.0	58.8	76.6	60.8	79.2
54.9	71.6	56.9	74.1	58.9	76.7	60.9	79.3
55.0	71.7	57.0	74.3	59.0	76.9	61.0	79.4
55.1	71.8	57.1	74.4	59.1	77.0	61.1	79.6
55.2	71.9	57.2	74.5	59.2	77.1	61.2	79.7
55.3	72.1	57.3	74.7	59.3	77.2	61.3	79.8
55.4	72.2	57.4	74.8	59.4	77.4	61.4	80.0
55.5	72.3	57.5	74.9	59.5	77.5	61.5	80.1
55.6	72.5	57.6	75.0	59.6	77.6	61.6	80.2
55.7	72.6	57.7	75.2	59.7	77.8	61.7	80.3
55.8	72.7	57.8	75.3	59.8	77.9	61.8	80.5
55.9	72.9	57.9	75.4	59.9	78.0	61.9	80.6

Prediction For All Wheats Except Durum

Metric Bulk Density = [1.292 x (TW)] + 1.419

(Prediction based on use of a 1-liter chondrometer apparatus)

Conversion Table

lb/bu	kg/hl	lb/bu	kg/hl	lb/bu	kg/hl	lb/bu	kg/hl
54.0	71.2	56.0	73.8	58.0	76.4	60.0	78.9
54.1	71.3	56.1	73.9	58.1	76.5	60.1	79.1
54.2	71.4	56.2	74.0	58.2	76.6	60.2	79.2
54.3	71.6	56.3	74.2	58.3	76.7	60.3	79.3
54.4	71.7	56.4	74.3	58.4	76.9	60.4	79.5
54.5	71.8	56.5	74.4	58.5	77.0	60.5	79.6
54.6	72.0	56.6	74.5	58.6	77.1	60.6	79.7
54.7	72.1	56.7	74.7	58.7	77.3	60.7	79.8
54.8	72.2	56.8	74.8	58.8	77.4	60.8	80.0
54.9	72.4	56.9	74.9	58.9	77.5	60.9	80.1
55.0	72.5	57.0	75.1	59.0	77.6	61.0	80.2
55.1	72.6	57.1	75.2	59.1	77.8	61.1	80.4
55.2	72.7	57.2	75.3	59.2	77.9	61.2	80.5
55.3	72.9	57.3	75.5	59.3	78.0	61.3	80.6
55.4	73.0	57.4	75.6	59.4	78.2	61.4	80.7
55.5	73.1	57.5	75.7	59.5	78.3	61.5	80.9
55.6	73.3	57.6	75.8	59.6	78.4	61.6	81.0
55.7	73.4	57.7	76.0	59.7	78.6	61.7	81.1
55.8	73.5	57.8	76.1	59.8	78.7	61.8	81.3
55.9	73.6	57.9	76.3	59.9	78.8	61.9	81.4

U.S. WHEAT ASSOCIATES

USWHEAT.ORG

USDA Federal Grain Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

USDA.GOV