



USDA Beef Carcass Grading Instrument Enhanced Grading (IEG) Program

1 Purpose

This document provides the requirements for establishments that wish to utilize the Instrument Enhanced Grading (IEG) Program for applying the *United States Standards for Grades of Carcass Beef* (U.S. Beef Grading Standards).

2 Scope

This document sets forth the requirements for monitoring plant personnel applying the U.S. Beef Grading Standards utilizing an approved instrument. Applicants desiring to participate in this program must submit to the Quality Assessment Division (QAD) a plant program that addresses all aspects and requirements set forth in this document to include documentation and procedures for corrective actions. Grading activities utilizing the grading instrument by the licensed plant employee will be in accordance with the U.S. Beef Grading Standards. Application of the U.S. Beef Grading Standards will be monitored and verified by a QAD grader utilizing this document and the applicant's approved plant program.

3 References

USDA QAD Instrument Assessment Systems for Livestock Carcasses and Carcass Products

[*United States Standards for Grades of Carcass Beef*](#)

[*QAD 500 Procedure: Beef, Bullock, and Bull Grading Methods and Procedures*](#)

[*QAD 515 Procedure: Beef Carcass Instrument Grading Procedures*](#)

4 Responsibilities

4.1 Plant Responsibilities

- a. Ensuring proper validation of the instrument.
- b. Daily documentation of validation parameters.
- c. Ensuring that the QAD grader is notified when the instrument does not properly validate.
- d. Ensuring that the instrument is not used until properly validated.
- e. Validation of the instrument at the beginning of the shift.
- f. Ensuring that the instrument operator is properly trained, and training is documented.
- g. Ensuring proper image capture.



- h. Ensuring the proper training of qualified plant employees possessing a combination of education and/or meat related experience commensurate of the role and responsibility of applying the U.S. Beef Grading Standards utilizing the instrument.
- i. Ensuring plant employee applying the U.S. Beef Grading Standards has been licensed by QAD to apply the grade standards which includes conducting traditional grading when a usable image is not available under the following circumstances.
 - 1. When the instrument is properly functioning, a certified plant employee may traditionally grade up to 2% of the carcasses presented per shift with the plant remaining subject to Normal sampling levels as noted in Table I.
 - 2. When the instrument is not properly functioning, following the QAD grader being made aware, a licensed plant employee may traditionally grade all carcasses presented for a period of time not to exceed 1 hour per shift during which the plant will transition to Tightened sampling as noted in Section 5.
- j. Ensuring that preventative and corrective actions are taken when observations and findings indicate potential noncompliance.
- k. Ensuring that a documented quality control system is in place to monitor and identify issues related to sawing, ribbing, carcass splitting, or other presentation defects, on a continuous basis, throughout each shift. Quality Control documentation will be made available to the QAD grader upon request.
- l. Assuring carcasses are adequately chilled and ribbed a minimum of ten minutes prior to presentation for instrument grading or traditional grading.
- m. Ensuring that the instrument technology is operated in accordance with the manufacturer's guidance.
- n. Providing instrument assessment data and ribeye images (color or black and white) to the QAD grader monitoring the system as requested.
- o. Ensure images are sharp and clear (properly focused and not blurred).
- p. Ensure the ribeye surfaces are free of processing debris that would negatively impact instrument prediction.
- q. Ensure camera placement includes the 12th-13th rib cross section.
- r. Ensure control measures are being conducted to verify proper alignment of camera mechanism on carcass surface.
- s. Provide the QAD grader with a copy of the unprocessed and processed images for each carcass selected for the AQL review of image capture.



- t. Ensure that licensed plant employee follows Section 7 *Official Grade Determination Phase* of [QAD 515 Procedure: Beef Carcass Instrument Grading Procedures](#).
- u. Obtain and provide the appropriate computer monitor, as approved by the National Meat Supervisor, to use for virtual correlations, to ensure uniformity.

4.2 Quality Assessment Division Responsibilities

- a. Provide adequate English and Spanish resources for plants to properly train qualified employees to satisfactorily complete licensing testing.
- b. QAD and the National Meat Supervisor or designee will administer the licensing test to the plant employee to ascertain knowledge of the grading standards. The scope of the written examination will be limited to the content covered in the available QAD training resources and the validation and operation procedures specific to the instrument(s) utilized by the plant. Correlations for marbling will be conducted in person or utilize ribeye images. Testing will focus on pragmatically evaluating the ability of a plant employee to satisfactorily designate final USDA grades and appropriately assign certified program standards under QAD monitoring.
- c. The QAD grader will review, understand, and verify the applicant's approved plant program.
- d. Utilize the Program Monitoring Procedures noted below in Section 5.
- e. Verify, as applicable, that the instrument(s) is/are on an approved list via serial numbers, etc.
- f. Verify that all components (camera head and controller box) have the same ID number for camera numbers >300. For camera numbers < 300 verify that all components (camera head, cable, and controller box) have the same ID number.
- g. Daily completion of the QAD Grading Checklists (Exhibit A, B).
- h. Conduct traditional grading, temporarily, as noted below in Section 5.

5 Program Requirements

5.1 Program Monitoring Procedures

The IEG program will be continuously monitored by QAD to ensure the application of the U.S. Beef Grading standards are correct and to identify opportunities to continuously improve the program. The monitoring procedures that QAD follows within a plant are to be developed and submitted by applicants as part of their plant program for QAD approval. These monitoring procedures must allow methods that provide QAD the ability to conduct continual unbiased



evaluation of a plant’s IEG program according to the frequencies listed in the appropriate Monitoring Tables I, II, and III.

Methods may include, but are not limited to:

- a. Random selection of carcasses post-grading to be made available for a QAD grader to assess in an appropriately lighted area.
- b. The applicant may provide a means where a QAD grader can view the instrument data and unprocessed and processed images of randomly selected carcasses post grading along with the applied grades of those carcasses.
- c. A combination of both a. and b.

All defects observed by the QAD grader during the monitoring process will be recorded and shared with the applicant in a timely manner. Also, any incorrect assignment of grades observed by the QAD grader during the monitoring process will be corrected so that the proper USDA grades are applied to the carcasses.

TABLE I. MONITORING (Normal)

Slaughter Rate Number of cattle per shift	Sample Size (Number of carcasses)	Accept/Reject Criteria (Normal Level of Review)
Up to 1000	80	5/6
1001 to 1600	120	7/8
1601 to 2200	160	9/10
Over 2200	200	11/12

Factors that may be the cause of an inaccurate grade designation include, but not limited to:

- Maturity
- Dark cutting characteristics
- Blood splash
- Callous
- Improperly ribbed carcasses
- Improper sawing
- Bone dust/sawing debris/fat on the ribeye that causes the instrument to provide an invalid marbling score
- Improper placement of the instrument



5.2 Changing Levels of Monitoring Activities

- a. If during a single shift the QAD grader records inaccurately graded carcasses exceeding the acceptable level noted in Table I, the plant will be moved to Tightened sampling for the next production day for that shift. Tightened sampling levels are in Table II.
- b. Tightened sampling procedures will continue for three (3) consecutive days. If after three (3) consecutive days the plant demonstrates that they have taken corrective action they will move back to normal sampling procedures. Corrective action may include re-evaluation of the plant employee, by QAD by means of a written correlation.
- c. If the QAD grader observes/records more than the acceptable number of inaccurately graded carcasses while on tightened sampling the plant will go to traditional grading by QAD graders, minimum of two (2) per shift, for a 1-week period of time. The applicant will be responsible for all associated travel costs and per diem incurred to travel additional graders to their location.
- d. After one-week of traditional grading by QAD graders, the plant may be allowed to return to utilizing licensed plant personnel to apply the grades, pending adequate corrective and preventative actions have been taken. The program will resume with three (3) consecutive days of tightened monitoring, with acceptable results, prior to returning to normal sampling.
- e. Reduced Sampling - If monitoring shows that grades and certification are properly applied per Table I under Normal levels for 20 consecutive days, then sampling frequency is reduced per Table III. Monitoring remains at the Reduced levels unless the maximum number of defects is exceeded. If this number is exceeded, monitoring switches to the Normal level.

Table II – Monitoring (Tightened)

Slaughter Rate Number of cattle per shift	Sample Size (Number of carcasses)	Accept/Reject Criteria (Tightened Level of Review)
Up to 1000	80	3/4
1001 to 1600	120	5/6
1601 to 2200	160	7/8
Over 2200	200	9/10



Table III – Monitoring (Reduced)

Slaughter Rate Number of cattle per shift	Sample Size (Number of carcasses)	Accept/Reject Criteria (Tightened Level of Review)
Up to 1000	50	3/4
1001 to 1600	80	5/6
1601 to 2200	120	7/8
Over 2200	160	9/10

- 5.3 Gross Non-Compliance** - QAD management may suspend the approval of the plant’s application of carcass grades and identification of Carcass Specifications when significant numbers of obvious mis-gradings occur, beyond those being monitored under reduced, normal or tightened monitoring procedures. Actions to identify and correct the non-conformance by the applicant will be immediately addressed.
- a. If during a single shift the QAD grader records inaccurately graded carcasses exceeding the acceptable level noted in Table IV, the plant will be moved to Tightened sampling for the next production day for that shift. This will be the same sampling rate.
 - b. Tightened sampling procedures will continue for three (3) consecutive days. If after three (3) consecutive days the plant demonstrates that they have taken corrective action they will move back to normal sampling procedures. Corrective action may include re-evaluation of the plant employee, by QAD by means of a written correlation.
 - c. If the QAD grader observes/records more than the acceptable number of inaccurately graded carcasses while on tightened sampling, the plant will go to traditional grading by QAD graders, minimum of two (2) per shift, for a 1-week period of time. The applicant will be responsible for all associated travel costs and per diem incurred to travel additional graders to their location.
 - d. After one-week of traditional grading by QAD graders, the plant may be allowed to return to utilizing licensed plant personnel to apply the grades, pending adequate corrective and preventative actions have been taken. The program will resume with three (3) consecutive days of tightened monitoring, with acceptable results, prior to returning to normal sampling.



Table IV – Continual Monitoring

Slaughter Rate Number of cattle per shift	Sample Size (Number of carcasses)	Accept/Reject Criteria (Review of holding cooler)
Up to 1000	40	3/4
1001 to 1600	60	4/5
1601 to 2200	80	5/6
Over 2200	100	6/7

5.4 Non-Conformances (NC) - The QAD grader will:

- a. Issue NC’s (Exhibit B) for program deviations and/or deficiencies observed during monitoring activities outside of the designated monitoring/sampling noted in Table I, Table II, or Table III.
- b. Require a written response to each NC within one business day of receipt of the NC. The NC response will include actions taken to correct as well as prevent reoccurrences of the nonconformance.
- c. The QAD grader will retain copies of NC’s and applicant’s responses in the files. The QAD grader will provide copies of NC’s and applicant’s responses to the immediate QAD supervisor, QAD Office and the National Meat Supervisor.

Depending on the severity of the NC, failure to respond to NC’s and to take corrective actions, within the specified timeframe may cause suspension of the program.

5.5 Licensing of Plant Employees

The National Meat Supervisor or designee will license qualified plant employees responsible for program integrity and application of the U.S. Beef Grading Standards. This will be accomplished through a process that includes both a written exam, a virtual marbling correlation using images with known expert calls and a cooler correlation for all other grade factors. The qualified plant employee must achieve a passing score on both the written (70% or higher) and correlation (80% or higher) sections of the testing. (**Note:** Carcasses and digital images used in a correlation for the purpose of licensing plant employees must represent a full range of factors that will adequately demonstrate the individual’s knowledge, skills, and ability to perform authorized duties.)



Upon satisfactory completion of training and testing, plant employees will be licensed to perform authorization grading duties, including identification for Carcass Specifications where applicable. Licensing of plant employees will be required to be renewed every two years by the National Meat Supervisor or designee. This will include both a written exam, digital image correlation(s) for marbling, and a cooler correlation for all other grade factors. After the completion of two license cycles (4 years) for licensed company employees, QAD Management may suspend the written test requirement for those licensed company employees that have shown sustained accurate application of the U.S. Beef Grading Standards and integrity for the program.

In addition, a record designating that each licensed plant employee has completed and passed the required tests, signed by the QAD Director and the licensed plant employee, will be issued and must be on file at the applicant's facility as well as the QAD headquarters office. When QAD is requested to assist in the training of the plant's employee, the applicant will incur any additional costs at the unscheduled rate, including travel costs associated with the training of their designated employees.

5.6 Continuing Evaluation of Licensed plant employee

The licensed plant employee will be evaluated and tested on a continuing basis to ensure adequate knowledge of the U.S. Beef Grading Standards and Carcass Specification requirements. Evaluations will occur monthly, via written tests and written cooler correlation and/or digital image correlation. At least one of the monthly correlations each quarter will include a digital marbling correlation using images with known expert calls with other grade factors done on a written cooler correlation. The licensed plant employee is expected to maintain a high level of knowledge of the requirements for the position, and a high level of integrity in support of QAD programs.

5.7 QAD Equipment

Where applicable, USDA stamps used for identifying carcasses will be provided by the QAD. USDA stamps and roller brands will be secured by USDA employees when not in use. Only trained plant employees or QAD graders are authorized to use this equipment. Misuse of issued equipment may cause suspension of the plants approved program.

5.8 Meetings

The integrity of QAD programs must be maintained at all times. The QAD grader will interact with the company and schedule meetings as needed to discuss issues and/or observations for promoting continuous improvement of the program. The applicant will record minutes detailing the issues discussed during the meetings. Copies of the minutes will be maintained for the files in the grading office.



6 Applications

6.1 Submission of Proposals

Prospective applicants are required to submit a written plant program which must be approved prior to the commencement of activities associated with this program. The plant program must address each required area and outline specific procedures used to ensure that these requirements are met. Each applicant will submit an electronic copy to the National Meat Supervisor and Grading Services Branch Chief. Applicants may also send a hard copy of their program to:

USDA, AMS, L&P, Quality Assessment Division
Grading Services Branch Chief
1400 Independence Avenue, Stop 0258
Washington, DC 20250

The National Meat Supervisor will notify applicants of their program status within 20 working days of receipt of the plant program.

6.2 Amendments to Programs

Amendments to approved programs will be submitted to the QAD for review and approval prior to implementation. The National Meat Supervisor or designee will notify the applicant of amendment status within 10 working days of receipt and will issue a notice to the applicant indicating amendment approval or denial.

6.3 Charges for Providing Service

The applicable QAD scheduled hourly fee will be charged for the in-house QAD grader performing the monitoring activities. The unscheduled hourly fee and all travel costs incurred for additional graders, if needed, will be borne by the applicant.

7 Change Record

The following changes were made to the January 16, 2024 revision of this document:

- a. Changed certified to licensed.
- b. Added Section 4.1 *Plant Responsibilities*: h, i, t, and u.
- c. Revised Section 4.2 *Quality Assessment Division Responsibilities*: a, b, and h.
- d. Revised Section 5.1 *Program Monitoring Procedures*
- e. Added marbling correlation and digital images to Section 5.5 *Certifying Plant Employees*
- f. Added digital marbling correlation to Section 5.6 *Continuing Evaluation of Certified plant employee*



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