



**TECHNICAL NOTICE**  
**January 2009**

**THE DEPARTMENT OF AGRICULTURE (USDA) PROCEDURES FOR YIELD GRADING OF  
BEEF CARCASSES AFTER REMOVAL OF THE KIDNEY, PELVIC AND HEART FAT  
DURING THE HARVEST PROCESS**

**1. Overview:**

USDA's Agricultural Marketing Service (AMS) has established a method to enhance the accuracy of USDA Yield Grade assessment of beef carcasses through an actual measurement of the Kidney, Pelvic, and Heart (KPH) fat that is removed during harvest.

The Livestock and Seed (LS) Program will approve procedures on a plant-by-plant basis that meet the specific performance requirements to measure and display the KPH yield grade adjustment factor. Once an establishment is approved under this procedure, a measured KPH yield grade adjustment factor shall be used to assess USDA yield grade of carcasses that have their KPH removed.

**2. Purpose and Scope:**

This Technical Notice sets forth the procedures for evaluation of the KPH component in the determination of the official yield grade at facilities that remove the KPH fat from the carcass during the harvest process. These procedures require hot carcasses to be weighed prior to and immediately following KPH fat removal. The official USDA Yield Grade for that beef carcass may only then be determined when the AMS agent is presented a displayed KPH yield grade adjustment factor.

**3. Reference Documents:**

- a. Beef, Bullock, and Bull Grading Methods and Procedures, Meat Grading and Certification Branch Instruction 500 (August 23, 2006).
- b. Code of Federal Regulations, Title 7, Subtitle B, Chapter I, Subchapter C, Part 54. Meats, Prepared Meats, and Meat Products (Grading, Certification and Standards).
- c. Official United States Standards for Grades of Carcass Beef (January 1997).
- d. MIL-STD-1916 Department of Defense Test Method Standard - DOD Preferred Methods for Acceptance of Product (April 1996).

**4. Applicability to Current Standard:**

The method outlined in this document pertains to the Official United States Standards for Grades of Carcass Beef (January 1997). The following as quoted specifically applies to this methodology.

“The amount of kidney, pelvic, and heart fat considered in determining the yield grade includes the kidney knob (kidney and surrounding fat), the lumbar and pelvic fat in the loin and round, and the heart fat in the chuck and brisket area which are removed in making closely trimmed retail cuts. The amount of these fats is evaluated subjectively and expressed as a percent of the carcass weight. As the amount of kidney, pelvic, and heart fat increases, the percent of retail cuts decreases -- a change of 1 percent of the carcass weight in these fats changes the yield grade by 20 percent of a yield grade.”

## Removal of the Kidney, Pelvic And Heart Fat

### 5. Performance Requirements

#### 5.1 Methodology:

The amount of KPH fat will be determined during the harvest process using the following procedures.

5.1.1. Carcass weights shall be made using properly calibrated weight scales.

5.1.2. The carcass must be weighed Hot Carcass Weight (HCW) prior to the removal of the KPH fat.

5.1.3. The carcass shall be re-weighed immediately after the removal of the KPH fat ( $HCW_{wo\ KPH}$ ).

5.1.4. No additional trimming will be allowed between the measurement of the original HCW and the  $HCW_{wo\ KPH}$  with KPH fat removed unless the trimming was requested by the USDA Food Safety and Inspection Service.

5.1.5. Each individual side will have the following information presented to the AMS agent at time of grading:

(a) HCW;

(b)  $HCW_{wo\ KPH}$ ;

(c) The KPH Yield Grade Adjustment Factor in tenths;

The adjustment factor is determined from the weight removed due to actual KPH using the following formula:

$$\text{KPH YG Adjustment Factor} = 20 \times \left[ \frac{(\text{HCW} - \text{HCW}_{wo\ KPH})}{\text{HCW}} - 0.035 \right]$$

The calculated adjustment factor is rounded to the nearest tenth of a yield grade.

5.1.6 The carcass may be yield graded when presented to the AMS agent if the KPH yield grade adjustment in tenths is presented to the AMS agent at the time of grading. When only one side of a carcass is presented for yield grade assessment, the full KPH yield grade adjustment factor shall be used.

Should carcasses presented for yield grade assessment indicate a pattern in procedural noncompliance with the establishment's documented program of in-plant procedures (average remaining fat depth in the internal kidney, pelvic, and heart fat area exceeds one-half of an inch), the AMS agent shall utilize the KPH yield grade adjustment with caution and visually account for any remaining KPH fat on the carcass. For each 0.5% KPH fat that remains on the carcass, the AMS agent will add 0.1 to the displayed adjustment factor to ensure uniform and accurate yield grade evaluations.

5.1.7. These requirements do not supersede any regulatory requirements of the USDA through other authorities.

## Removal of the Kidney, Pelvic And Heart Fat

### 5.2. *Examples:*

Example 1:

An 800 lb carcass having 32 lbs of KPH fat removed (4.0 % KPH) would have a KPH YG adjustment factor of +0.1. The formula for calculating the KPH YG adjustment factor then becomes:

$$\text{KPH YG Adjustment Factor} = 20 \times \left[ \frac{(800 - 768)}{800} - 0.035 \right] = +0.1$$

Example 2:

An 800 lb carcass having 20 lbs of KPH fat removed (2.5 % KPH) would have a KPH YG adjustment factor of -0.2. The formula for calculating the KPH YG adjustment factor then becomes:

$$\text{KPH YG Adjustment Factor} = 20 \times \left[ \frac{(800 - 780)}{800} - 0.035 \right] = -0.2$$

Example 3:

The AMS agent determined that not all of the KPH fat was cleanly removed and that a visual estimate indicated that 4 lbs of additional KPH fat remained. The carcass had a HCW of 800 lb carcass and the displayed KPH YG adjustment factor was -0.2. Since 4 lbs of remaining KPH fat equates to 0.5% (4 lb divided by 800 lbs times 100%), the adjustment factor is corrected by 0.1 (for each 0.5% KPH fat that remains, 0.1 will be added to the displayed adjustment factor). The equivalent KPH YG adjustment factor would be:

$$\text{KPH YG Adjustment Factor} = -0.2 + 0.1 = -0.1$$

### 5.3. *Establishment Approval Process:*

Procedures for the implementation and verification of these methods that meet the specific performance requirements to measure and display the KPH yield grade adjustment factor will be approved on a plant-by-plant basis. An establishment must submit a documented program of in-plant procedures to the MGC Branch that ensures accurate and precise determinations are made by properly calibrated weight scales. Once assessed and deemed appropriate under this Technical Notice, the KPH yield grade adjustment factors shall be used to assess yield grade in the official USDA grading process of carcasses that have the KPH removed during harvest. A copy of the current approved establishment documentation for measuring and displaying the KPH yield grade adjustment factor will become a reference to the MGC Quality Plan for that establishment.

## 6. **Procedural Assessment:**

The MGC Branch will conduct onsite monthly reviews of the KPH removal and weighing processes. The review also includes a validation of the information presented to the AMS agent at time of grading. At the discretion of the MGC management, more frequent reviews may be conducted when deficiencies are detected or as other observations may dictate (see sections entitled *Procedural Assessment for Cause* and *Procedural Assessment Due to Serious Noncompliance* below). A plant representative should be offered the opportunity to observe the review process. Evidence regarding compliance shall be determined by evaluating KPH removal from a sample of carcasses selected randomly from a one-hour production interval of the carcasses to be graded that

## Removal of the Kidney, Pelvic And Heart Fat

day. The process shall be considered acceptable only if no nonconforming carcasses are found upon review of the sample carcasses. Should one or more nonconforming carcasses be found during the review of the sampled carcasses, then the following actions shall occur.

- (a) Plant management shall be notified;
- (b) AMS agents shall utilize the KPH yield grade adjustment with caution and visually account for any remaining KPH fat on the carcass.

The following shall be used in the review process.

### 6.1. Evidence of compliance

Fat depth evaluation shall be determined using the fat remaining from the:

- (a) Kidney knob fat;
- (b) Lumbar and pelvic fat in the loin and round; and,
- (c) Heart fat in the chuck and brisket area.

Compliance is indicated when all three of the valuations are less than or equal to ½ inch.

### 6.2. Carcass Sampling

Carcass sampling shall be performed at one of three verification levels: normal, tightened, or reduced. The normal stage of assessment shall be used as the initial verification level.

Thereafter, the sampling verification level in effect shall continue unchanged except where the switching procedures given in Section 6.3 require change. The sample size is based on the average number of carcasses graded per hour and the current verification level (Table 1).

**Table 1.**  
**Sample Size Plan for Assessment of Compliance in the Removal of KPH Fat**

Average Carcasses per Hour	Verification levels		
	Tightened	Normal	Reduced
	Sample Size		
2–170	32	12	5
171–288	32	12	6
289–544	32	16	8
545–960	40	20	10

Note: When the production interval size is less than or equal to the sample size, 100 percent of the interval size shall be reviewed.

All carcass samples shall be taken randomly during a 1-hour production interval using a random sampling plan. The time at which sampling occurs shall also be randomized throughout the normal hours of production. Plants operating two or more shifts will be sampled as a single production shift.

### 6.3. Switching Procedures

(See figure 1)

6.3.1 Normal to tightened. When normal reviews are in effect, a tightened review shall be instituted when two (2) within the last five (5) or fewer reviews indicate unacceptable performance.

6.3.1. Tightened to normal. When tightened reviews are in effect, normal reviews shall be instituted when the following conditions are both satisfied: the cause of a

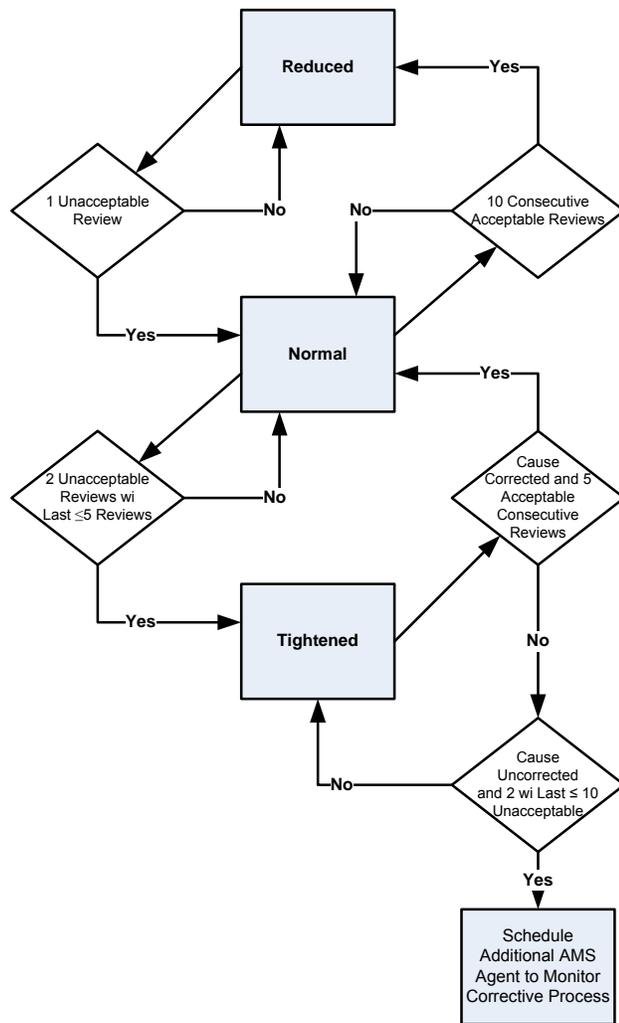
## Removal of the Kidney, Pelvic And Heart Fat

noncompliance is addressed by the plant and approved by MGC, and, five (5) consecutive reviews indicate acceptable procedural compliance.

6.3.3. Normal to reduced.  
When normal reviews are in effect, reduced reviews shall be instituted when ten (10) consecutive reviews indicate acceptable procedural compliance.

6.3.4. Reduced to normal.  
When reduced reviews are in effect, normal reviews shall be instituted when one (1) review indicates an unacceptable performance.

When two (2) within the last ten (10) or fewer consecutive reviews indicate an unacceptable performance under a tightened verification level, MGC Management shall schedule an additional AMS agent to ensure that the cause of noncompliance is corrected and that the carcasses impacted by the noncompliant action be graded as accurately as possible.



**Figure 1.** Process Flow Chart for Switching Rules in Reviewing Beef Carcasses for Removal of KPH Fat.

The LS Program reserves the right to discontinue the establishment's approval if reviews remain tightened for a period of time. When the KPH removal procedures are restarted after discontinuation, it shall be instituted at the same verification level when the procedures were ceased.

In those circumstances when instrument use is interrupted because of mechanical or electrical reasons, resumption of use shall resume using the verification level at the time of the interruption.

### 6.4. *Procedural Assessment for Cause*

MGC management shall have the responsibility to substantiate the cause for concern for a procedural assessment for cause. There should be sufficient prior evidence of

## Removal of the Kidney, Pelvic And Heart Fat

noncompliance to make a determination whether or not an assessment for cause is appropriate.

### **6.5. Procedural Assessment Due to Serious Noncompliance**

In those instances where non-trivial procedural noncompliance is discovered during a regular assessment review, the MGC Management shall determine if the establishment should temporarily suspend KPH fat removal procedures pending a determination of re-establishment of compliance to the requirements of this Technical Notice.

This Technical Notice is subject to revision at any time by the LS Program.

Requests for approval shall be submitted to:

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Approved:  /S/ Martin E. O'Connor January 22, 2009 .

Martin E. O'Connor, Chief

Standards, Analysis and Technology Branch