

DOCUMENT RESUME

06470 - [B2067066]

Department of Agriculture's Beef Grading: Accuracy and Uniformity Need To Be Improved. CED-78-141; B-136888. July 21, 1978. 44 pp. + 5 appendices (12 pp.).

Report to the Congress; by Elmer E. Staats, Comptroller General.

Issue Area: Food: Grain Inspection and Commodity Grading Programs (1709).

Contact: Community and Economic Development Div.

Budget Function: Agriculture: Agricultural Research and Services (352).

Organization Concerned: Department of Agriculture.

Congressional Relevance: House Committee on Agriculture; Senate Committee on Agriculture, Nutrition, and Forestry; Congress.

Authority: Agricultural Marketing Act of 1946 (7 U.S.C. 1621). H.R. 12373 (95th Cong.). =7 C.F.R. 2853.

Beef grading provides a basis for price quotations among feeders, packers, suppliers, retailers, and others along the marketing chain and a system for consumers to show their preferences. Findings/Conclusions: In 29 slaughter plants visited by GAO, 21% of 2,215 carcasses were misgraded, and most errors involved overgrading. Beef grading was not consistent from one section of the country to another. More accurate measurements of beef carcass characteristics are needed to correct problems resulting from the subjective nature of grading. Grading inaccuracy has also resulted from management problems. For example: a standard for grading accuracy has not been established, stations varied in methods of improving grader performance, supervisors did not always follow grader monitoring procedures, grading took place under conditions which increased the likelihood of errors, and packers used an informal complaint system rather than a formal process for resolving disputed grades--this could result in harassment of graders. The current grade standards do not fully meet the needs of the beef industry or of consumers. Value differences are not always clear and, because beef sold at retail is not always marked with an official grade, beef can be represented as being of a better quality than it actually is. Recommendations: The Secretary of Agriculture should: establish a grading accuracy standard and require graders to meet this standard before being placed in a plant to grade carcasses and require periodic retesting, take steps to insure that graders do not grade carcasses when they cannot make an accurate determination because certain conditions have not been met, require packers to use the formal appeal system for redetermining grades and limit the use of informal appeals, establish criteria on when incorrect grade markings should be corrected and insure that they are uniformly applied, develop a public education program to increase consumer awareness concerning grades, and initiate research on factors not in current standards which may influence meat quality and

revise standards if warranted. (HTW)

7/21/78
BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

Department Of Agriculture's Beef Grading: Accuracy And Uniformity Need To Be Improved

The Department of Agriculture's beef grading program serves as a basis for price quotations among feeders, packers, suppliers, retailers, and others along the marketing chain. GAO found that grading was not always accurate or consistent from one section of the country to another.

The Department needs to

- increase research efforts to develop instruments to accurately measure beef carcass characteristics,
- establish a grading accuracy standard,
- improve its management of the program, and
- resolve questions about the adequacy and usefulness of the current beef grade standards.



CFD-78-141
JULY 21, 1978



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-136888

To the President of the Senate and the
Speaker of the House of Representatives

Fundamental improvements are needed in the Department of Agriculture's voluntary beef grading program to make it more reliable and useful to industry and consumers. This report discusses the need for increased research to develop instruments to accurately measure carcass characteristics and ways for Agriculture to improve its management of the program.

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Director, Office of Management and Budget, and to the Secretary of Agriculture.

James B. Stacks
Comptroller General
of the United States

D I G E S T

Under the Department of Agriculture's voluntary fee-for-service grading program, 14 billion pounds of beef, or 56.5 percent of the commercial production of beef for fiscal year 1977, were graded. GAO and its beef grading expert found that grading was not always accurate and consistent.

Beef grades provide a national language for buying and selling meat and serve as a basis for price quotations among feeders, packers, suppliers, retailers, and others along the marketing chain. Also, the grades are to provide a system for consumers to relay their preferences for different meat qualities back to the producers. (See pp. 1 and 9.)

GAO visited 29 slaughter plants in 12 States where its beef grading expert regraded a total of 2,215 carcasses. Of these, 474 (21 percent) were misgraded. Agriculture field supervisory personnel generally agreed with the expert's findings. The majority of errors (62 percent) involved overgrading which benefited the packers and, in turn, meant higher prices to consumers. (See pp. 10 to 12.)

Also, beef grading was not consistent from one section of the country to another. Carcasses with the same characteristics were being graded Good in one part of the country and Choice in another part. This can provide a competitive advantage to packers in some geographic areas and distort quality and price relationships to consumers' advantage or disadvantage. (See p. 13.)

Beef grading is highly subjective, and accuracy and uniformity problems in the beef grading program are likely to continue until instruments to more accurately measure beef carcass characteristics are developed. Until recently, Agriculture relied on industry to develop such instruments, and progress has been slow. GAO recommends that Agriculture increase its

research efforts to develop instruments to accurately measure beef carcass characteristics used to determine grades. (See pp. 14 and 29.)

MANAGEMENT PROBLEMS

Agriculture's management of the beef grading program has been lax and this has contributed to grading inaccuracy. A standard for grading accuracy which graders must meet before being placed in plants had not been established. In addition, main stations varied in how they attempted to improve grader performance and supervisors were not always following grade-monitoring procedures. (See pp. 15 to 19.)

In some cases grading was occurring under conditions which increased the likelihood of grading errors. Carcasses were graded even though they had not been properly ribbed, adequately chilled, or held long enough between ribbing and grading. In some cases carcasses were moving past graders at speeds too great to permit accurate grading. (See pp. 19 to 23.)

Although Agriculture's formal appeal process for resolving disputed grades requires packers to pay for supervisory regrading if less than 10 percent of the original grades are wrong, packers generally were using an informal complaint system under which they did not have to pay for regrading. Agriculture officials agreed that this informal system could be used to harass graders. Also, grading supervisors generally did not require grades marked on carcasses to be changed when there were major grade inaccuracies. (See pp. 23 and 24.)

Agriculture has taken or proposed several actions to improve the beef grading program. However, more fundamental improvements are needed. (See pp. 26 to 29.) Accordingly, GAO recommends that the Secretary of Agriculture, among other things:

- Establish a grading accuracy standard for determining a satisfactory level of performance by graders.

- Require graders to meet the grading accuracy standard before being placed in a plant to grade carcasses and to be periodically retested to insure that their grading proficiency remains acceptable.
- Take steps to insure that graders do not grade carcasses when they cannot make an accurate determination because some conditions, such as the carcass not being properly chilled or ribbed, have not been met.
- Require packers to use the formal appeal system for redetermining grades and limit the use of informal appeals for this purpose.
- Establish criteria on when incorrect grade markings on beef carcasses should be corrected and insure that the criteria are uniformly applied by grading supervisors. (See pp. 29 and 30.)

BEEF GRADE STANDARDS

The current grade standards do not fully meet the needs of the beef industry and the consuming public. Value differences in beef are not always made clear to the consumer and consumer preferences are not readily identifiable to beef producers. Also, because beef sold at retail is not always marked with an official grade, it can be represented as being of a better quality than it actually is. This causes consumers to be confused. (See pp. 33 to 41.)

To make the beef grade standards more useful to both industry and consumers, GAO recommends that the Secretary of Agriculture

- develop an aggressive public education program to increase consumer awareness of the meaning and use of grades and
- initiate research on those factors not in the current standards which may influence meat quality and revise the standards if warranted. (See p. 42.)

AGENCY COMMENTS

Although Agriculture disagreed with some GAO observations, overall it agreed with the report and generally endorsed the recommendations. (See pp. 30 and 42.)

C o n t e n t s

	<u>Page</u>
DIGEST	i
CHAPTER	
1 INTRODUCTION	1
History of beef grading	1
Program organization and costs	2
Beef grade standards	3
Grading procedures	6
2 FURTHER ACTIONS NEEDED TO IMPROVE THE BEEF GRADING PROGRAM	9
Grading inaccuracies	10
Instruments should be developed to measure grading factors	14
Problems with program management	15
Penalties against plants have little financial impact	24
USDA's actions to strengthen the grading program and our evaluation and conclusions	26
Recommendations to the Secretary of Agriculture	29
Agency comments and our evaluation	30
3 OBSERVATIONS ON BEEF GRADE STANDARDS	33
Usefulness of grades can be improved	33
Controversy over grade factors	35
Proposed legislation	41
Conclusions	41
Recommendations to the Secretary of Agriculture	42
Agency comments	42
4 SCOPE OF REVIEW	43
APPENDIX	
I Schedule showing severity of quality grade errors identified by our beef grading expert	45
II Schedule showing severity of yield grade errors identified by our beef grading expert	46

APPENDIX

Page

III	Summary of comments we received relating to the 1976 revisions in the beef grade standards	47
IV	Letter dated June 8, 1978, from the Administrator, Food Safety and Quality Service, Department of Agriculture	49
V	Principal Department of Agriculture officials currently responsible for administering activities discussed in this report	56

ABBREVIATIONS

GAO	General Accounting Office
USDA	U.S. Department of Agriculture

CHAPTER 1

INTRODUCTION

During fiscal year 1977 U.S. Department of Agriculture (USDA) graders graded and stamped about 14 billion pounds of beef--56.5 percent of the commercial production of beef for the year--under its voluntary, fee-for-service grading program. USDA beef grades provide a national language for buying and selling beef and serve as a basis for price quotations among feeders, packers, suppliers, retailers, and others along the marketing chain. Also, the grades are to provide a system for consumers to relay their preferences for different beef qualities back to the producers.

We made this review to evaluate the beef grading program's effectiveness, focusing on grading accuracy and uniformity, usefulness of the grades to consumers, and the adequacy of the beef grade standards. The following consultant with expertise in the grading standards and in beef grading assisted us in this review.

Dr. Dell M. Allen
Associate Professor
Department of Animal Sciences
and Industries
Kansas State University

HISTORY OF BEEF GRADING

USDA adopted standards for grades of carcass beef in 1926, and Federal grading of beef began on an experimental basis in 1927. The grading was the direct result of efforts by a group of cattle producers called the Better Beef Association. The association believed that beef graded for quality would increase consumption and stimulate production of more and better quality cattle. It was looking for a system through which consumers could relay their preferences back to producers.

USDA established a voluntary, fee-for-service beef grading program in 1928. In 1946 the Agricultural Marketing Act (7 U.S.C. 1621 et seq.) directed and authorized the Secretary of Agriculture to

--develop and improve grade standards to encourage uniformity and consistency in commercial practices and

--provide voluntary, fee-for-service grading for agricultural products, including beef, to facilitate marketing of products and to provide consumers with the opportunity to obtain the quality products they desire.

Because grading is voluntary, some slaughter plants do not use the grading services. In addition, packers can instruct graders to stamp only those carcasses which meet a certain grade such as Prime or Choice, yield grades 1, 2, or 3. This means graders may not examine every carcass in a plant and of those carcasses they do examine, they will stamp only the carcasses which meet the specific grades as requested by the packer.

PROGRAM ORGANIZATION AND COSTS

The Meat Quality Division of USDA's Food Safety and Quality Service is responsible for providing meat grading services for beef, lamb, veal, calf, and pork. In addition, the Division assists in research and development to improve grade standards, certifies that Federal meat purchases meet Government contract requirements (acceptance service), provides to producers and feeders data on carcass characteristics (carcass data and beef carcass evaluation service), certifies the physical condition of meat product shipments in dispute (product examination service), and provides services to insure compliance with contracts for meat purchases. The Meat Quality Division's programs are carried out by its headquarters office in Washington, D.C., and by 11 field offices (main stations) located throughout the country.

As of November 1977 about 400 meat grading personnel (graders and supervisors) were assigned to the 11 main stations. Each main station has a supervisor, an assistant supervisor, and two or three supervisory meat graders. Main station supervisory personnel travel from plant to plant checking the accuracy of graders' work.

Graders are assigned to the plants on the basis of plant needs. Some graders work full time at one plant, while others provide grading services to several small plants. Wherever feasible, graders are rotated among plants on a monthly basis.

There are also four national technical supervisors who report directly to Washington headquarters and travel throughout the country visiting main stations to check on grading uniformity. An effort is made to schedule

the national technical supervisors' visits so that all four review each main station.

The Meat Quality Division's costs for fiscal year 1977, including costs for providing beef grading services, totaled \$13.1 million. Of this amount, \$12.7 million was reimbursed from fees charged for services and the remaining \$400,000 was appropriated funds used for improving meat standards.

The Service has set hourly rates to be charged plants for grading services on the basis of both the direct and indirect costs of providing the services. Direct costs include the supervisors' and graders' salaries, supplies and equipment, and transportation. Indirect costs include headquarters administration costs, financial services, and information costs, all of which are allocated among the meat grading program and other Division programs.

BEEF GRADE STANDARDS

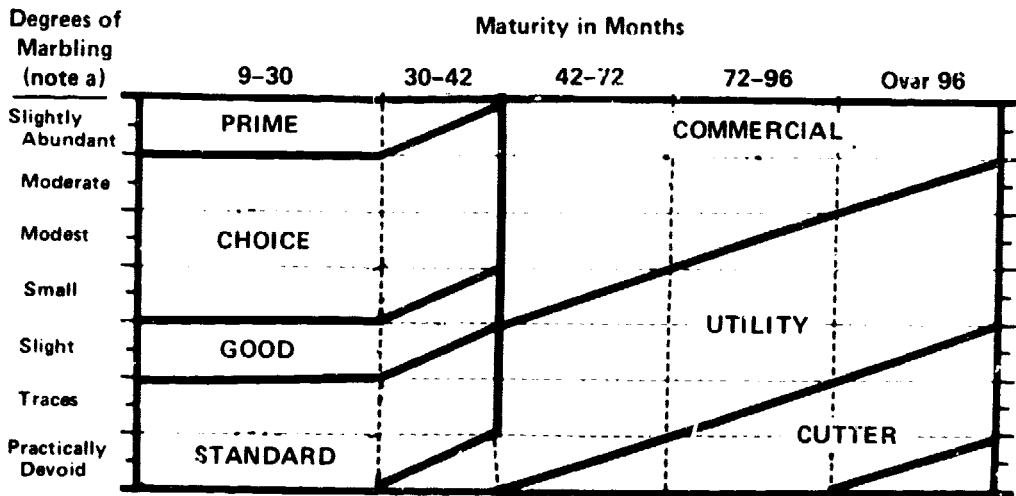
The beef grade standards are designed to measure the quality and yield of the carcass. Before 1976 beef could be graded for quality, yield, or both. In 1976, however, the beef grade standards were revised to require that all graded beef be identified for both quality and yield grade.

The quality grades are based on criteria such as marbling and maturity, which research indicates predict palatability (tenderness, juiciness, and flavor) and consist of (in order of decreasing palatability) Prime, Choice, Good, Standard, Commercial, Utility, Cutter, and Canner. The yield grades (1, 2, 3, 4, and 5) are based on criteria such as amount of fat and thickness of muscle and indicate the amount of usable meat--major retail cuts--a carcass will yield after waste fat has been trimmed off. Yield grade 1 signifies the highest yield of retail cuts, and yield grade 5 signifies the lowest yield.

The quality grade of a carcass is determined by visual observation and, therefore, is totally subjective. The quality is determined primarily by the graders' visual appraisal of the degree of marbling (flecks of fat within the ribeye muscle between the 12th and 13th ribs) and the maturity (physiological age) of the carcass. Maturity is primarily determined by evaluating the size, shape, and ossification (hardening) of the bones and cartilages and to a lesser degree the color and texture

of the lean meat. The following chart, adapted from USDA regulations, shows the relationship between the degree of marbling, maturity of the carcass, and the quality grade.

RELATIONSHIP BETWEEN MARBLING, MATURITY, AND CARCASS QUALITY GRADE



a/ The chart does not show the three top degrees of marbling—very abundant, abundant, and moderately abundant—since the minimum amount of marbling required for a carcass to be graded prime is slightly abundant.

The following pictures obtained from USDA illustrate the different degrees of marbling used in the beef grade standards.

DEGREES OF MARBLING USED IN THE BEEF GRADE STANDARDS



1



2



3



4



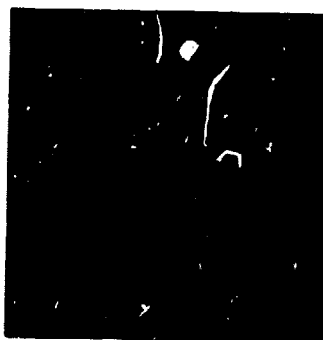
5



6



7



8



9

Illustrations adapted from negatives furnished by New York State College of Agriculture, Cornell University

1—Very abundant

2—Abundant

3—Moderately abundant

4—Slightly abundant

5—Moderate

6—Modest

7—Small

8—Slight

9—Traces

(Practically devoid not shown)

The yield grade is based on an equation which contains four characteristics, one of which--weight--is objectively measured and two others which can be (but generally are not) objectively measured using a grid and ruler. These characteristics and how they are determined are as follows.

<u>Characteristic</u>	<u>Method of determination</u>
Amount of external fat	Measure or estimate fat thickness over the ribeye muscle and subjectively adjust for abnormal distribution of external fat over the carcass.
Area of the ribeye muscle	Measure or estimate the area of the ribeye muscle.
Amount of kidney, pelvic, and heart fat	Estimate the amount of kidney, pelvic, and heart fat as a percent of the carcass weight.
Warm carcass weight (weight before chilling)	Plant weight given in pounds on a tag which is attached to the carcass.

Using the yield grade equation, the yield grade can be calculated to the nearest tenth of a yield grade. However, yield grades are expressed in whole numbers, and any fractional part of a yield grade determination is always dropped. For example, if a carcass is graded as a 3.9, it will be designated as a yield grade 3, not rounded to yield grade 4.

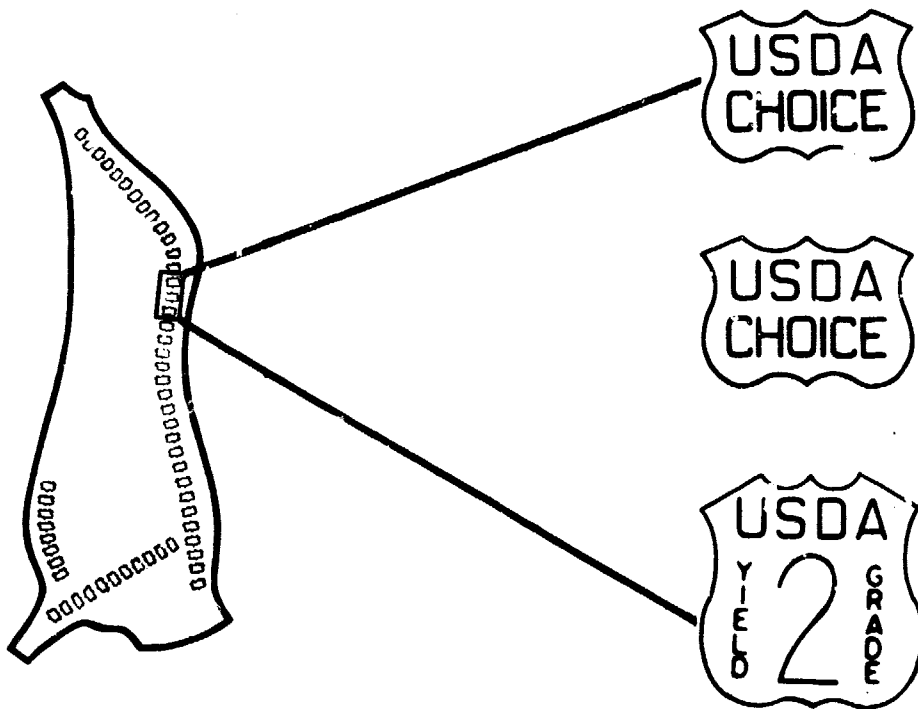
GRADING PROCEDURES

Before a carcass can be graded, it must be properly chilled. (The usual chill time before grading is 24 hours.) This allows the quality traits, especially marbling, to become apparent. This is important because marbling is one of the major factors used to determine the quality grade. The carcass must be split down the back into two sides and must also be cut between the 12th and 13th rib (ribbed) to expose the ribeye. Either one or both of the carcass sides may be ribbed. The grades are determined on the basis of the best side.

Grading takes place in a plant's cooler where carcasses are presented for grading on either stationary rails (rail grading) or rails moved by chains (chain grading).

In rail grading the carcasses are stationary and the grader walks by each carcass to evaluate grade factors. In chain grading the grader is stationary and a chain moves the carcasses past the grader. Large plants using the chain method run as many as 336 carcasses an hour past the grader.

After determining the quality and yield grades, the grader stamps the grades on the carcass and then the carcass is roller branded (see chart below) down both halves to show the grades.



The following picture shows a carcass which has been ribbed and graded and is being roller branded.



RIBEYE
MUSCLE

Source: USDA

CHAPTER 2

FURTHER ACTIONS NEEDED TO IMPROVE THE BEEF GRADING PROGRAM

In regrading 2,215 USDA-graded beef carcasses at 29 plants, our beef grading expert found that 21 percent of the carcasses examined had been misgraded. Main station supervisory personnel generally agreed with his findings. He also determined that grading standards were not being uniformly applied in different parts of the country. Most errors resulted in carcasses being graded at a higher quality or yield, which provided a competitive advantage to some packers and increased prices to consumers.

The Food Safety and Quality Service has not established grading accuracy standards against which grader performance can be judged. Also, technical and management problems in the program undoubtedly contributed to error rates. National supervisors have not been totally effective in achieving uniform grading across the country. USDA has not exercised leadership to develop instruments to overcome technical grading problems causing errors. Supervisory reviews to improve poor grader performance vary in intensity and effectiveness, and review procedures are not diligently followed.

Further, the Service has not been forceful in dealing with packers. Carcasses are sometimes graded under conditions conducive to making errors. Appeal processes--to resolve packer/grader disputes over assigned grades--which could cause packers to pay for regrading have not been used. Recognized grading errors are not always corrected. Penalties levied against packers violating Federal regulations are usually not severe.

In September 1977 USDA announced a series of administrative actions to improve the accuracy and uniformity of beef grading. As of February 1, 1978, USDA had implemented several of the planned actions which included

--increasing main station supervisory staff by 20 percent and

--increasing the frequency of national supervisory reviews of main stations from 13 to 25 a quarter.

In addition, on January 23, 1978, USDA published in the Federal Register a proposed requirement that beef carcasses be cut to expose the ribeye muscle at least 30 minutes before grading. Although these actions and additional proposals

will strengthen the beef grading program, other improvements are still needed to solve the problems discussed below.

GRADING INACCURACIES

The Service has not established accuracy standards that graders are expected to attain while grading beef carcasses. Therefore, supervisors have no specific criteria for determining whether graders are doing a satisfactory job of grading.

To observe grading operations and check on the accuracy and uniformity of grading, we and our expert visited 29 slaughter plants in 12 States. The grading at these plants was under the supervision of six main stations. Main station supervisory personnel accompanied us during our visits. As the table below shows, our expert regraded a total of 2,215 carcasses. ^{1/} In his opinion 474, or 21 percent, were misgraded. Error rates among main stations ranged from 17 to 26 percent.

<u>Main station</u>	<u>Carcasses regraded</u>	<u>Carcasses with incorrect grades</u>				<u>Percent incorrect</u>
		<u>Quality</u>	<u>Yield</u>	<u>Both</u>	<u>Total</u>	
Omaha, Neb.	354	34	35	3	72	20
Amarillo, Tex.	246	48	15	1	64	26
Kansas City, Mo.	260	22	20	2	44	17
Martinez, Calif.	499	44	52	5	101	20
Princeton, N.J.	419	44	53	8	105	25
Chicago, Ill.	<u>437</u>	<u>38</u>	<u>46</u>	<u>4</u>	<u>88</u>	20
Total	<u><u>2,215</u></u>	<u><u>230</u></u>	<u><u>221</u></u>	<u><u>23</u></u>	<u><u>474</u></u>	21

The supervisory personnel accompanying us agreed with our expert's grade determinations on 78 percent of the misgraded carcasses. On the other 22 percent, the supervisory

^{1/}In commenting on this matter, USDA officials noted that the report should clearly state that our expert was not grading under the same conditions as USDA graders. Our expert used regrading procedures normally followed by USDA main station supervisory personnel when they visit plants to review a grader's work. This means our expert had more time to evaluate a carcass and could use grading instruments as needed. However, our expert's purpose was to determine how well USDA graders did their jobs under the conditions in which they work, not to see how well he could grade carcasses under the same conditions.

personnel believed that the grader's original grade determinations were correct. In most of the latter cases, the difference between our expert's grade determinations and the supervisory personnel's determinations was not more than 10 percent of a degree of marbling or more than 0.1 of a yield grade.

The Service has not specifically defined major grading errors. However, our beef grading expert considered quality and yield grade errors as major when the grade stamped on the carcass was either more than 20 percent of a degree of marbling out of the proper quality grade or more than 0.2 of a yield grade out of the proper grade. Service headquarters officials concurred with our expert's definitions. Using these definitions about 11.2 percent (247) of the 2,215 carcasses regraded by our expert had major grading errors. (For additional information on severity of grading errors our expert found, see apps. I and II.)

At individual plants the percentages of carcasses with incorrect grades ranged from 0 percent at one plant to 36 percent at another plant. The range of error percentages at the 29 plants was as follows:

<u>Percent error range</u>	<u>Number of plants</u>
0 to 9.9	3
10.0 to 19.9	8
20.0 to 29.9	16
30.0 to 36.1	<u>2</u>
Total	<u>29</u>

When advised of the results of our expert's review, plant officials usually did not comment on the percentages of carcasses found to be misgraded. Those officials who commented were divided on whether the grading provided by the Service was satisfactory. At one chain-type plant, where our expert found that 27 of 119 carcasses (23 percent) were misgraded, the plant manager said he believed the Service's grading was satisfactory considering the subjective nature of grading and the speed at which carcasses passed the grader--in this case about 300 an hour. At another plant where our expert found 9 of 52 carcasses (17 percent) were misgraded, the plant owner said that the Service's graders working at his plant undergraded beef carcasses, compared with graders in other parts of the country. He said he had received beef graded Choice from other parts of the country which would only be graded Good by the Service's graders working at his plant.

Majority of grading errors benefit packers

Of the total 497 grading errors ^{1/} our expert identified, 308, or 62 percent, involved overgrading and 189, or 38 percent, involved undergrading as shown in the table below. To our knowledge the grade on only one carcass was corrected as a result of the regrading. (See p. 24 for further discussion on correcting grades.) Because higher grades generally bring higher prices, the majority of the grading errors would have benefited the packers and, in turn, meant higher prices to the consumer.

<u>Main station</u>	<u>Total errors</u>	<u>Grades which should have been:</u>			
		<u>Lower (note a)</u>		<u>Higher (note b)</u>	
		<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Omaha, Neb.	75	58	77	17	23
Amarillo, Tex.	65	58	89	7	11
Kansas City, Mo.	46	29	63	17	37
Martinez, Calif.	106	72	68	34	32
Princeton, N.J.	113	52	46	61	54
Chicago, Ill.	<u>92</u>	<u>39</u>	42	<u>53</u>	58
Total	<u>497</u>	<u>308</u>	62	<u>189</u>	38

a/Grades on carcasses in most cases increased carcass value.
 b/Grades on carcasses in most cases decreased carcass value.

For the overgrading cases, 79 percent of the quality grade errors involved misgrading Good carcasses as Choice and 46 percent of the yield grade errors involved misgrading yield grade 4 carcasses as yield grade 3s.

Using the USDA-reported average wholesale dressed meat prices for the Midwest in August 1977 (when we visited some plants) and assuming that a steer beef carcass weighed 700 pounds, a packer would have received

--\$47, or 6.7 cents a pound, more for a carcass that should have been graded Good/yield grade 2 but was graded Choice/yield grade 2, and

--\$24, or 3.4 cents a pound, more for a carcass that should have been graded Choice/yield grade 4 but was graded Choice/yield grade 3.

^{1/}The 497 grading errors involved 474 carcasses (see table on p. 10) of which 23 had both quality and yield grade errors.

Some nonuniformity in the application of beef grade standards still exists

Beef industry representatives have long alleged that USDA's beef grading is not consistent from one part of the country to another. Our expert found that graders located in different parts of the country varied somewhat in applying the grade standards to carcasses which had the same characteristics.

After observing grading operations at six main stations, our expert concluded that uniformity differences existed among all six main stations. In most cases he considered these differences as minor and, because of the subjectivity involved, he believed they could not be corrected until instruments were developed to more accurately measure beef characteristics. However, he did find that one main station was requiring about one-fifth and one-third of a marbling degree less for carcasses to grade Choice and Prime, respectively, than another main station. Therefore, some carcasses which would be graded Good and Choice in one area were being graded Choice and Prime, respectively, in another area. Because of the price differentials associated with different grades, the packers having carcasses graded in the first area could be provided a competitive edge, compared with packers having carcasses graded in the second area.

Another indication of the inconsistent application of beef grade standards is the erratic pattern among the six main stations in percent of errors that involved overgrading.

<u>Overgrading errors</u>	<u>Percent range among main stations</u>
Quality grade errors	35 to 100
Yield grade errors	20 to 72

Similar erratic error patterns existed within main stations. For example, at five of the six plants visited in one main station, from 0 to 35 percent of the quality grade errors involved overgrading; however, in the sixth plant 89 percent of the quality grade errors involved overgrading. This main station had a similar problem in yield grading. At two plants only 1 of 13 yield grade errors, or 8 percent, involved overgrading; however, at two other plants 95 percent of the total yield grade errors involved overgrading.

National technical supervisors review main station operations to insure that Service regulations and policies are followed. Their principal function is to insure uniform

application of the beef grade standards among main stations. During fiscal year 1977 national technical supervisors visited the main stations included in our review 36 times and reported only minor uniformity problems on three occasions.

On two occasions the national supervisors believed the grading line for Good carcasses was a little low at one main station. At another main station the national supervisors believed the grading line for Prime carcasses was low. However, these problems did not involve the two main stations discussed on page 13 and we were unable to determine why the national supervisors had not found this uniformity problem.

In June 1978 Service officials told us that a proposal was being drawn up to improve the national technical supervisors' effectiveness in insuring grading uniformity.

INSTRUMENTS SHOULD BE DEVELOPED TO MEASURE GRADING FACTORS

Until instruments are developed to accurately and quickly measure beef characteristics, accuracy and uniformity problems will continue. Progress within USDA and the industry in developing reliable instruments for measuring carcass characteristics has been slow. Graders must visually estimate and subjectively evaluate carcass characteristics to determine the quality and yield grades to be assigned to beef carcasses. Other manual techniques could be used to measure yield, but they are impracticable from a time and cost standpoint and impossible to use on fast-moving chain-type operations.

Although USDA has performed research on the beef grade standards, only limited research has been undertaken to develop instruments to measure beef carcass characteristics. One company, in conjunction with several beef industry organizations, is developing a hand-held meter to measure the degree of marbling in the ribeye muscle. In August 1977 one of the organizations reported to the Service that, although progress was slow, it was encouraged by what had been accomplished. This same company is also trying to develop a machine to objectively measure the amount of lean meat in a beef carcass. The tests associated with this machine have been inconclusive.

Also, the Service and the National Aeronautics and Space Administration's Jet Propulsion Laboratory at Pasadena, California, will each provide \$5,000 to have the laboratory study the feasibility of using available technology such as ultrasound and infrared light to measure carcass characteristics used in determining grades.

The Administrator and other top Service officials told us that one of the basic problems in grading was the subjectivity involved in determining grades. They said instruments were needed to evaluate carcass characteristics.

PROBLEMS WITH PROGRAM MANAGEMENT

The Service has been lax in managing the beef grading program. In our opinion this has contributed to the percent of misgraded carcasses our expert found. (See p. 10.) The following sections detail those aspects of program management we believe need to be improved.

Limited effectiveness of the Service's supervision and administration

Because beef grading is highly subjective and grades assigned to carcasses can have a significant financial impact on packers (see p. 12), graders' work is continually reviewed by the packer. This environment leads to constant pressure on graders and may affect their grading accuracy. Accordingly, it is essential that the Service provide effective administration and supervision of the beef grading program to maintain the program's integrity. However, the effectiveness of the Service's administration and supervision has been limited because it has not

- established a standard for grading accuracy which a grader must meet before being placed in a plant to grade beef or which can be used to measure a grader's day-to-day work as being acceptable or unacceptable,
- provided specific directions to field supervisors on how to improve poor grading performance or for taking disciplinary actions against graders when unsatisfactory grading continually occurs, or
- insured that supervisors follow current procedures for monitoring grader performance.

Standard needed to measure grader performance

The Service does not have a standard for grading accuracy that graders must meet before being placed in plants. Such a standard could be used (1) to insure that all new graders are grading at a minimum acceptable level, (2) to measure graders' performance through daily supervision and periodic retesting, and (3) as a basis for taking consistent corrective actions against graders whose daily performance is unacceptable.

Under past procedures graders were required to complete 6 months of training before being placed in plants as official graders. These persons were assigned to trainee classes. Each class normally spent 3 weeks at a university and 1 week at headquarters; the remaining time was divided among the different main stations. Written examinations were given during training to test trainees' knowledge of grading standards. At the end of the training period, trainees were required to perform written correlations. For the correlations a committee of headquarters and main station personnel pre-selected carcasses and determined the grades, including specific carcass characteristics such as percent of degree of marbling, maturity range, ribeye size, and percent of fat to carcass weight. Then the trainees graded the carcasses and recorded the grades, including specific carcass characteristics. This grading was compared with the committee's grading and any errors were discussed with each individual.

Trainees were not required to successfully pass either written examinations or correlations. According to a headquarters official, the tests were used for discussion purposes and to identify those areas where trainees needed improvement.

Correlation results for individuals in two classes that completed training in June and December 1977 showed a wide variance of grading ability. For example, as shown in the table below, trainee error rates for determining quality grades ranged from 0 to 63 percent while error rates in determining yield grades ranged from 0 to 50 percent.

<u>Class completed</u>	<u>Number of trainees</u>	<u>Quality grade error rates</u>		<u>Yield grade error rates</u>	
		<u>Range</u>	<u>Average</u>	<u>Range</u>	<u>Average</u>
----- (percent) -----					
June 1977	16	8 to 42	24	0 to 50	24
December 1977	17	0 to 63	29	0 to 40	21

The correlations were held at various main stations; therefore, all the trainees did not grade the same carcasses. However, we believe the wide range in error rates indicated diverse grading abilities among the trainees and the need for all graders to meet a minimum level of grading accuracy before being placed in plants to grade beef. In June 1978 the Service Administrator told us that a new training program had been implemented which will improve the quality of training offered to graders. Each training session, which will last 10 to 12 weeks according to the official, will include extensive testing procedures to measure the trainees' progress.

Test results were not available at the time we finalized this report because the first training session was still in progress.

Need to revise procedures for
improving grader performance

Although main station supervisory personnel may find numerous grading errors while checking graders' daily performance, positive corrective actions are not always taken because the Service has not issued specific criteria for determining when or what actions should be taken. As a result, main stations have reacted differently in trying to improve grader performance. Records at two main stations also showed that one was more aggressive than the other in taking action against graders who continually performed unsatisfactorily.

Main station supervisors' only criterion for evaluating a grader's everyday performance is set forth in Service Instruction 302-1, which defines performance levels used on the Service's employee appraisal form. The performance level for a grader's quality of work to meet normal position requirements is as follows:

"Work has some errors. Sometimes makes errors that result in embarrassment for his supervisor. Is notable neither for his orderliness nor his lack of it. Plans and organizes his work with about the same degree of proficiency."

Because of this general criterion, supervisors must rely on their own judgment in evaluating graders' performance. Main station supervisors in Omaha and Kansas City said that such factors as severity of grading errors, the amount of time graders have to grade carcasses, the condition of the carcasses, and whether the carcasses are in the middle of the grade or are borderline, are considered in determining whether graders' performance is satisfactory.

Grading supervisors check graders' daily performance by visiting plants and regrading carcasses. At Omaha unsatisfactory grading was handled during supervisory reviews of a grader's work. That is, the supervisor would point out and discuss the errors with the grader. The Omaha main station supervisor said that if the grader's performance continued to be unsatisfactory, that grader would receive additional supervisory reviews.

At Kansas City unsatisfactory grading was also initially handled during supervisory reviews of a grader's work. However, in October 1976 the main station established a formal

training program for graders who were performing unsatisfactorily. According to the main station supervisor, two graders have been required to attend this program. In addition, during 1976 this main station held formal refresher training sessions for its graders. Because of the training to be given graders involved in the Service's takeover of the Department of Defense acceptance work, the main station decided not to use these refresher training sessions in 1978.

The Kansas City main station also charted each supervisory evaluation of a grader's performance. If a grader received a series of unsatisfactory evaluations, the main station supervisor wrote a letter of reprimand to the grader. From January 1975 through August 1977, the main station sent seven letters of reprimand to seven different graders for unsatisfactory grading performance. During the same period seven letters were sent to Service headquarters initiating disciplinary action on two graders. As a result, one grader was suspended on two different occasions for a total of 7 weeks and his within-grade salary increase was withheld for 7 months. Another grader was suspended on one occasion for 3 weeks.

During the same period the Omaha main station did not send any letters of reprimand to graders or letters to headquarters initiating disciplinary action against graders even though one grader's performance was cited as needing improvement or as being unsatisfactory on six different occasions between January and July 1976. The main station supervisor said that the grader was not reported to headquarters because the main station considered the grader's overall performance as satisfactory.

The training provided by the Kansas City main station and its efforts to improve grader performance may have contributed to the lower percentages of carcasses found misgraded there as compared with the Omaha main station. (See p. 10.)

Supervisors were not following grader monitoring procedures

Service procedures require that grading supervisors keep an up-to-date record on work performance for each grader, including grading data which will help both the supervisor and the grader recognize any trend toward unsatisfactory grading performance. This data is to be collected during supervisory reviews. Although Kansas City maintained more detailed records than Omaha, our review of work performance records and interviews with supervisory personnel at both

main stations showed that the work performance records' usefulness was diminished because supervisors did not always

- document the severity of grading errors,
- show all grading errors noted in a grader's work,
- indicate the grading factors in which a grader needed improvement, and
- show the type of assistance given to the grader.

Kansas City and Omaha main station supervisors agreed that supervisory personnel probably were not going into sufficient detail in preparing the grader performance records.

Grading is occurring under conditions that decrease accuracy

Because of the subjectivity of the current beef grading program, it is essential that graders only grade carcasses that have been properly presented for grading and only grade at a speed that does not decrease the accuracy of their grading. However, our expert found that some were grading under conditions that increased the likelihood of grading errors. The following conditions were the more important ones contributing to inaccurate grading.

- Excessive speed at which carcasses passed the grader.
- Excessive trimming of external fat to alter yield grades.
- Carcasses not being (1) properly ribbed, which may distort the size of the ribeye muscle and/or the amount of visible marbling in the ribeye muscle, (2) adequately chilled, which may affect the amount of visible marbling and color of the lean, or (3) held long enough between ribbing and grading so that the marbling and color has enough time to fully develop.

Grading accuracy affected by speed at which carcasses pass graders

USDA main station supervisors and headquarters personnel said that quite often chain speeds are too fast for graders to do an accurate job. In these situations supervisors said they instruct graders not to make grade determinations on borderline carcasses, but to let the carcasses be channeled to stationary rails where the grader has more time to evaluate grade characteristics.

We recognize that individual ability is a factor affecting grader performance. However, as shown in the following table, the average error rate was higher in plants where carcasses hung on moving chains passed the grader at hourly rates exceeding 300 than in plants where they passed at slower rates or in plants where rail grading was occurring.

<u>Type of plant</u>	Number of plants	<u>Carcasses</u>		Per- cent in error
		<u>Regraded</u>	<u>With grading errors</u>	
Rail	16	1,005	200	20
Chain (140 to 280 carcasses an hour)	8	695	148	21
Chain (300 to 330 carcasses an hour)	<u>5</u>	<u>515</u>	<u>126</u>	24
Total	<u>29</u>	<u>2,215</u>	<u>474</u>	21

Generally, main station supervisory personnel consider chain speeds excessive if more than 280 carcasses pass the grader hourly. They said that although graders are encouraged to work at their own speed, they are hesitant to let many carcasses go by without grading because

--this requires the grader to evaluate the carcass a second time,

--of potential harassment from plant personnel when large numbers of carcasses are not graded, and

--of individual pride in being able to grade a large number of carcasses on a high-speed chain.

Packers do not favor reducing chain speed. For example, in commenting on a study of USDA's meat inspection program, a representative of a large packer headquartered in the Midwest said that:

"If the production speed of our slaughter plants is reduced five percent that would translate into a loss in carcass revenue of \$4.5 million per year. * * * For (name deleted) alone to recover lost revenue resulting from a five percent chain speed reduction, the resultant increase in price of meat products would cost 20 cents per year for every man, woman and child in the United States."

A plant representative in another plant, whose chain was passing about 300 carcasses by the grader every hour, said that rather than slow down the chain, he would prefer that the

grader pass those carcasses which are on the borderlines between grades. In June 1978 a Service official said a plan was being developed for a study to determine how much time a grader needs to accurately grade a carcass. The study will begin late in 1978. The information from this study will be used to develop standards for regulating the number of carcasses graded an hour.

Some plants are trimming external fat to improve yield grades

When the external fat around the ribeye muscle has been trimmed more than the remainder of the external carcass fat, the grader has to guess the original fat thickness. This increased subjectivity leads to more yield grading errors. Our review showed that errors caused by trimming favor the packer.

USDA meat inspection regulations require that such things as grubs (wormlike larva) and bruises be trimmed off carcasses to insure wholesomeness. Grading regulations permit these carcasses to be graded only if an accurate determination of the yield grade can be made and only if a minor amount of external fat has been removed.

The Service's national supervisors continually report that some plants are unnecessarily trimming external fat around the ribeye muscle. In addition, our expert found that in one plant virtually all 87 carcasses checked had obviously been deliberately trimmed around the ribeye muscle. Our expert and a main station supervisor believed that this trimming contributed to the 12 yield grade errors found, all of which were in favor of the packer.

Main station records showed that graders at this plant had been reporting excessive trimming at least 14 months before our visit. A main station supervisor said that the plant has continually denied doing any trimming beyond that required by meat inspection personnel. However, shortly after our visit the main station obtained concurrence from meat inspection personnel that the plant was trimming excessively around the ribeye muscle. According to the main station supervisor, the excessive trimming ceased after a meeting with plant management.

Improper ribbing of carcasses contributes to grading errors

When a carcass is improperly ribbed (cut at an angle), the size of the ribeye muscle and/or the amount of marbling in the ribeye muscle can be distorted. This can lead to

increased grading errors. Carcasses that have been improperly ribbed are eligible for grading only if an accurate grade determination can be made.

By regulation (7 C.F.R. 2853.104 (e,f)), each carcass presented for grading must be ribbed in a manner which will adequately expose the distribution of fat and the cross sectional area of the ribeye. In our expert's opinion, improper ribbing contributed to grading errors in six plants. Grading errors at these plants ranged from 15 to 26 percent.

Generally, plant officials either agreed that improper ribbing could cause increased grading inaccuracy or did not express an opinion. For the most part, they believed that the situation would improve when either the employee doing the ribbing became more experienced or upon completion of a planned plant expansion which would provide better working conditions.

Inadequate chilling and grading too quickly after ribbing increases grading errors

Carcasses must be adequately chilled--usually for 24 hours--and be ribbed a minimum time--30 minutes is generally accepted--before grading so that certain carcass characteristics, such as marbling, color, texture, and firmness of the lean, are fully evident. Service instructions state that a packer is to present carcasses for grading only after adequate chilling. However, Service instructions and regulations do not define a minimum time for chilling or specify the elapsed time necessary between ribbing and grading.

In our expert's opinion, inadequate chilling contributed to grading inaccuracies in five plants. The inadequate chilling was caused by such problems as (1) hot carcasses being placed in a cooler next to carcasses partially chilled and (2) too small a refrigeration system for the number of carcasses being slaughtered each day. Plant officials generally acknowledged the chilling problems but were noncommittal on attempts that would be made to correct the problems.

In three plants our beef grading expert observed that some carcasses were graded from 1 1/2 to 5 minutes after being ribbed instead of the desired 30 minutes. A main station supervisor said that when the time between ribbing and grading is substantially less than 30 minutes, a grader may tend to overgrade the carcass because he may anticipate that more marbling will become visible later. At times more marbling does not become visible, and these carcasses are misgraded.

On January 23, 1978, USDA published in the Federal Register a proposed requirement that at least 30 minutes elapse between the ribbing and grading of carcasses. As of June 1978 the Service was evaluating the comments on this proposal.

Need to have packers use the formal appeal system

The Service's appeal process enables a packer to have carcasses regraded by at least two national level supervisors whenever it is not satisfied with grading results. If less than 10 percent of the carcasses are misgraded, the packer must pay for the costs of the appeal. However, the Service also allows a packer to have carcasses regraded by supervisory personnel (up to and including the national level) under an informal complaint system at no additional cost to the packer regardless of the percent of carcasses found misgraded. Use of the informal complaint system may be a form of grader harassment.

According to USDA officials, the formal appeal process has not been used in 5 years. However, a Service headquarters official estimated that under the informal complaint system, main station supervisors have made numerous trips and national supervisors have made 25 to 30 trips each year to regrade disputed carcasses.

During the period May through October 1977, for example, the Omaha main station received 25 requests from packers under the informal complaint system for supervisory reviews involving 2,730 carcasses. Twenty-four of the requests concerned carcasses which had not been roller branded because the grader evaluated them as not meeting the Choice grade. The other request concerned carcass yield grades. The reviews were made at no additional cost to the packers, although 20 of the 25 reviews showed that less than 10 percent of the carcasses had been misgraded. If these requests had been made under the formal appeal process, the packers would have had to pay for those 20 reviews.

Service officials agreed that packers could use the informal complaint system in some cases to harass graders by constantly requesting that their work be reviewed. For example, one packer had requested 10 supervisory reviews from the Omaha main station during the period June through October 1977. A total of 992 carcasses were involved, and the main station supervisors found that 65 (7 percent) had been misgraded.

Main station supervisors were not in favor of eliminating the informal complaint system. They said that they could

control the number of reviews by taking a firmer stand with packers that may be using the system to harass graders.

In October 1977 we discussed nonuse of the formal appeal system with headquarters officials. In June 1978 headquarters officials told us that a proposal to revise and use the system was being developed.

Major grade inaccuracies on beef carcasses should be corrected

Grading supervisors generally do not require that incorrect grades be removed from misgraded carcasses and be replaced with the correct grade unless the packer requests them to do so. Accordingly, grades shown on beef carcasses do not always accurately reflect the quality and yield of the carcasses.

Service regulations provide that grading supervisors take appropriate action to correct grading errors if the carcasses are still owned by and located at the establishment where they were misgraded. However, Kansas City and Omaha main station supervisors said that if a carcass is overgraded, they generally do not require that the grade be removed and replaced with the correct grade because removing the grade could mutilate the carcass and decrease its value. They said that if the incorrect grade on the carcass lowered the value of the carcass, they ask the packer if he wants the grade corrected, and packers usually only request that the grades be changed when such a change will increase the value of the carcass.

Main station supervisors said that specific guidelines covering the nature and degree of errors which should be corrected would be beneficial. In June 1978 headquarters officials agreed that there was a need for establishing specific guidelines to determine when grading errors should be corrected.

PENALTIES AGAINST PLANTS HAVE LITTLE FINANCIAL IMPACT

Under Service regulations grading services can be denied or withdrawn from plants for such violations as bribery, removal of grading stamps without appropriate trimming of outside fat, excessive trimming of carcasses around the rib-eye muscle, or harassing a grader. Although the Service has taken administrative actions against plants for violations of meat grading regulations, these actions appear to have little financial impact on the plants in that most plants continued to receive grading services. For example, from

October 1, 1972, through September 30, 1977, the Service took administrative actions against 39 meat plants for violations of grading regulations. As the following table shows, grading was withdrawn on only five occasions, and on one occasion a plant was prohibited from bidding on Government meat contracts for 1 year.

<u>Type of violation</u>	<u>Administrative penalties imposed</u>	<u>Number of plants</u>
Bribery of graders	Consent orders	a/ 23
	Debarment	<u>b/</u> 1
Alteration of grading stamps or certificates	Letters of warning	2
	Service withdrawn: 30 days	1
	60 days	1
Unauthorized use of freezer stockpile certificate	Letters of warning	1
Use of unauthorized grading stamps	Letters of warning	2
Removal of USDA grading stamps	Letters of warning	2
	Service withdrawn: 5 days	1
	3 days	1
Improper labeling of meat as graded	Letters of warning	3
	Service withdrawn: 30 days	<u>1</u>
Total		<u><u>39</u></u>

a/In these cases, the Service initiated action to withdraw grading services. However, grading was not withdrawn because each plant signed a consent order, which stipulated that the plant must take certain actions, such as instituting information programs for advising all employees of the consequences of any violation of the consent order or Federal regulations. If any provisions of the consent order or any grading regulations are violated, the consent orders provide that grading service be withdrawn for 1 year.

b/Plant was prohibited from bidding on Government meat contracts for 1 year.

Although most plants convicted of bribing graders have signed consent orders, recent developments indicate that this administrative penalty may not be effective in preventing

further violations of grading regulations. As of June 2, 1978, a hearing had been held for one plant, under a consent order, that had been accused of subsequent violations of grading regulations. The decision on this hearing was pending at the time we finalized this report. The Service had also filed a complaint against another plant under a consent order for violating grading regulations. A hearing date had not been set.

Also, USDA has announced that it will explore methods and procedures to make it easier to assess more stringent penalties against packers, including immediate withdrawal of grading services. In June 1978 a Service official said that the Service plans to draw up a proposal in this area.

Service officials agreed that in the past USDA had not dealt forcefully with packers guilty of grading offenses. As a result, the Service established an agency-wide compliance division. The Administrator believes that this division will be able to deal more quickly and consistently with violations of grading regulations.

USDA'S ACTIONS TO STRENGTHEN THE GRADING PROGRAM AND OUR EVALUATION AND CONCLUSIONS

The foregoing sections detailed some of the numerous problems and deficiencies related to the present beef grading program. During our review the Service announced a series of administrative actions to improve beef grading and has implemented several of these actions. A key question in this regard is whether such remedial action will result in the fundamental program improvements that our review showed are needed.

Agency actions

In September 1977 USDA announced a series of administrative actions to improve the accuracy and uniformity of beef grading. Among the actions the Service has implemented are:

- Increasing the frequency of national technical supervisory reviews of main stations from 13 to 25 a quarter, or a little over 2 visits per main station each quarter.
- Increasing the total number of supervisors in the main stations from 42 to 50.
- Directing main stations to increase the supervisory time spent with trainees and graders and to hold at

least one written correlation with each trainee and grader each month.

- Increasing main station and national technical supervisory reviews at destination points--points where the graded carcasses are shipped after leaving the packing plant--from 170 to 255 annually.
- Requiring that training meetings for all Service staff include discussions on the need for high standards of conduct in performing duties.

Our evaluation and conclusions

Although USDA's administrative actions and proposed changes to the Federal meat grading regulations will strengthen the present beef grading program, more fundamental improvements are needed.

Accuracy and uniformity problems in the beef grading program will continue until instruments to accurately measure beef carcass characteristics are developed. Until recently USDA has relied on industry to develop such instruments, and progress has been slow. Because of its responsibility to provide accurate and uniform grading, USDA must increase its research efforts in developing instruments to measure beef carcass characteristics used to determine grades.

In addition, the Service needs to evaluate how the national technical supervisors carry out their responsibilities to insure grading uniformity among all main stations. During fiscal year 1977 the national technical supervisors' reviews of the main stations included in our review disclosed only minor uniformity problems on three occasions. However, our expert found uniformity problems between two of the six main stations we visited. National technical supervisory reviews of these main stations did not disclose any uniformity problems.

To help insure grading accuracy and uniformity, the Service needs to establish a grading accuracy standard. With the grading expertise available in the Service, such a standard could and should be developed without further delay. Once a standard is established, graders should be required to meet it before being placed in a plant to grade beef. The standard should also be used to measure, through daily supervision and periodic retesting, a grader's performance as either acceptable or unacceptable. If graders cannot meet the standard, they should be prevented from performing official grading. A standard for grading accuracy could be used as a basis for supervisors to take consistent corrective

action against graders whose day-to-day performance is unsatisfactory. Our review at the main stations (see p. 17) showed that main stations were not consistent in taking action to improve graders' performance.

We believe that if the Service establishes a specific grading accuracy standard and if the standard is uniformly applied to all graders, the wide variances in error rates between plants (see p. 11) would be reduced. To insure that the standard is uniformly applied would require the Service to set up a high-level, permanent testing team whose members would be independent from day-to-day grading. We recognize that any standard for work performance must take into consideration the subjectivity involved in measuring carcass characteristics used to determine grades and the conditions under which graders must work.

The Service needs to provide specific guidance to main station supervisors on when and what actions should be taken when a grader's performance is unsatisfactory. With the establishment of specific guidelines, the potential for main stations' failing to improve unsatisfactory grading performances should be greatly diminished.

The Service needs to insure that grading supervisors keep an up-to-date record on each grader's work performance and record the results of their supervisory reviews of graded carcasses. These records, when properly completed and compared over a time period, could serve as a basis for counseling graders, identifying graders' training needs, and alerting supervisors to unsatisfactory grading trends.

We believe that the close working relationship between the Service and the beef industry has resulted in some graders grading carcasses under conditions which cause grading errors. Therefore, supervisors must insure that graders refuse to grade carcasses when they cannot make an accurate grade determination because of such factors as carcasses (1) passing by them too quickly on the chain-type operations, (2) being trimmed excessively to alter the yield grades, (3) not being properly ribbed or chilled, or (4) not being held long enough between ribbing and grading. As discussed on pages 21 and 23, USDA is taking steps to insure that carcasses are presented for grading only after they meet certain conditions that will enable the grader to make a more accurate grade determination. In addition, the Service needs to make it clear to graders that when carcasses presented for grading do not meet all conditions required in the regulations, they should not be graded.

The Service should require packers to use the formal appeal system. When packers are required to use this system, the potential for their using supervisory reviews as a form of grader harassment should be reduced.

The Service needs to provide guidance to main stations on when incorrect grade markings should be removed from beef carcasses. Main station supervisors generally are not requiring that incorrect grades be removed from misgraded carcasses and replaced with the correct grade unless the packer requests them to do so. Accordingly, grades shown on beef carcasses do not always accurately reflect the quality and yield of the carcasses.

We believe the Service needs to be more forceful in penalizing packers who violate grading regulations. Although USDA has announced it will explore methods and procedures to make it easier to assess more stringent penalties against packers, it is too early to evaluate whether its efforts will be successful.

RECOMMENDATIONS TO THE SECRETARY OF AGRICULTURE

We recommend that to improve the accuracy and uniformity of USDA's beef grading program, the Secretary of Agriculture:

- Increase USDA's research efforts to develop instruments to accurately measure beef carcass characteristics used to determine grades.
- Evaluate how national technical supervisors can improve the way they carry out their responsibilities to insure grading uniformity among all main stations.
- Establish a grading accuracy standard for determining a satisfactory level of performance by graders.
- Require graders to meet the grading accuracy standard before being placed in a plant to grade carcasses.
- Retest graders periodically to insure that their grading proficiency remains acceptable.
- Establish specific corrective action main stations should take when unsatisfactory grading is observed.
- Insure that grading supervisors record all grading errors and use these records as a basis for counseling and training graders.

- Take steps to insure that graders do not grade carcasses when they cannot make an accurate determination because some conditions, such as the carcass not being properly chilled or ribbed, have not been met.
- Require packers to use the formal appeal system for redetermining grades and limit the use of informal appeals for this purpose.
- Establish criteria on when incorrect grade markings on beef carcasses should be corrected and insure that the criteria are uniformly applied by grading supervisors.

AGENCY COMMENTS AND OUR EVALUATION

USDA advised us by letter dated June 8, 1978 (see app. IV), that it agreed overall with our report and generally endorsed our recommendations. USDA said the conditions we identified during our review and the recommendations we propose should be evaluated against the backdrop of a severe understaffing problem which faces the Service's Meat Quality Division. USDA anticipates, however, about a 60-percent increase in the meat grading staff between June 1978 and October 1979. This increase is connected with the Service's new responsibilities for a quality assurance program for Federal Government food procurements.

USDA applauded the selection of our beef grading expert but said he should have been assisted by a small panel of persons of comparable scientific achievement and should have graded carcasses just before or at the same time as its graders and under the same conditions. In our opinion selecting one expert was adequate to help determine how effective the beef grading program is and to identify any changes needed to make it more effective. In addition, our expert was accompanied by main station supervisory personnel who agreed (see p. 10) with our expert's grade determinations on 78 percent of the misgraded carcasses. Our expert did not grade under the same conditions as USDA graders. Instead, he used regrading procedures normally followed by USDA main station supervisory personnel when they visit plants to review graders' work. Our expert's purpose was to determine how well USDA graders did their jobs under the conditions in which they work, not to see how well he could grade carcasses under those same conditions.

USDA said that because carcasses are moved to breaking rooms or shipped shortly after grading, our expert probably only had borderline or controversial carcasses available for regrading. This was not the case. Our expert confined

his regrading to only those carcasses which had been graded and stamped and whose assigned grades were not being challenged by the plant or being held for further review by graders. Carcasses whose grades were being challenged or which were being held for further review were normally easy to identify because they were put on a separate rail or tagged.

USDA said that grading errors of less than 20 percent of a degree of marbling and 0.2 of a yield grade are difficult to detect and supervisors find it nearly impossible to keep them from reoccurring. USDA also believed that our report should concentrate only on errors that exceeded these tolerances. Although we agree that minor errors are difficult to detect and consistently correct, we believe that including these errors demonstrates the subjectivity of the grading service and the need for USDA to develop instruments to accurately and quickly measure beef carcass characteristics. In addition, all errors regardless of their magnitude result in distorted beef prices, whether in favor of the packer or the consumer.

The table on page 10 shows that our expert found that 474 (21 percent) of the 2,215 carcasses he regraded were misgraded. USDA commented that it believed that only 230 carcasses, or 10 percent, had been misgraded. It should be noted that the 230 refers to carcasses which had incorrect quality grades only. An additional 221 carcasses had incorrect yield grades. Also, 23 carcasses contained both incorrect quality and yield grades.

Although USDA concurred in our assessment that it must develop better procedures for evaluating and improving graders' performances, it said it was somewhat unfair to say that no specific criterion of grading accuracy is used. It said that errors noted are a part of a supervisor's evaluation even though no specific percentage of error is used as a pass/fail point applied uniformly to all graders in all situations. We realize that supervisors use errors as part of their evaluations. However, as pointed out on page 17, the only Service-wide criterion for evaluating a grader's everyday performance to meet normal position requirements is set forth in Service Instruction 302-1, which states in regard to errors that "Work has some errors. Sometimes makes errors that result in embarrassment for his supervisors." We believe this is too general and results in inconsistencies.

We believe the Service needs to establish a grading accuracy standard. Once a standard is established, graders should be required to meet it before being placed in a plant to grade beef. The standard should also be used to measure,

through daily supervision and periodic retesting, a grader's performance as either acceptable or unacceptable. A standard for grading accuracy could be used as a basis for supervisors to take consistent corrective actions against graders whose day-to-day performance is unsatisfactory.

CHAPTER 3

OBSERVATIONS ON BEEF GRADE STANDARDS

Current beef grade standards do not fully meet the needs of the beef industry and consumers. Value differences in beef are not always signaled to the consumer and consumer preferences are not readily identifiable to beef producers. As a result, beef offered for sale can be represented as being of a better quality than it actually is, and consumers are confused over the quality of beef for sale in retail stores.

Research is needed to see if the beef grade standards can better serve consumer as well as industry needs. There are disputes about the relevance and value of the different components of the current quality standards. Also, under present grading regulations, carcasses can be graded with all of the kidney, pelvic, and heart fat left in place or with some or all of these fats removed. When these fats are removed before grading, adjustments are made in the yield grade equation. This can detract from the accuracy and uniformity desired in yield grading.

USEFULNESS OF GRADES CAN BE IMPROVED

Beef grade standards were established to provide, among other things, a system through which consumer preferences could be signaled back through the marketing chain to producers. However, consumers were not a strong force in formulating grades, and the standards have been used to facilitate the commercial exchange of beef, another major objective of the standards. In addition, some consumers do not understand grading terminology while others, even if they understand the grades, select beef products on the basis of factors other than USDA grades.

Although most fed beef is examined for grade by USDA graders, beef cuts are often displayed and sold in retail stores without a USDA grade. Because grading is voluntary USDA graders may not examine every carcass in a plant, and of those carcasses they do examine, they will only stamp the carcasses which meet the specific grades as requested by the packer. USDA officials and industry representatives told us that packers and retailers can get a better price by marketing the remaining beef without a USDA grade designation. The buying and selling of meat without a USDA grade designation means that consumers may be paying the same for beef from Good carcasses as they are for beef from Choice carcasses. In addition, some stores sell ungraded beef under brand names which include the word "choice."

In such cases the consumer has no opportunity to show a preference for a particular quality of meat, and beef producers cannot readily distinguish consumer preferences. These practices appear inconsistent with one of the original objectives of the standards and can cause consumer confusion and misunderstanding.

In the January 23, 1978, Federal Register, USDA proposed changing the regulations to require that beef, lamb, and mutton offered for sale to consumers be marked either with the traditional quality grade or with a new stamp "U.S. Ungraded." Both graded and ungraded meat would have to be labeled as such all the way through the marketing chain and final sale to consumers. The proposed labeling changes are intended to make grades more informative to consumers and to eliminate the practice of representing ungraded meat as being a higher quality than it actually is. USDA headquarters officials said widespread opposition was expected from the beef industry. As of June 1, 1978, the Service was evaluating the comments on the proposal. In addition, the Service is developing a contract for a consumer survey to determine consumer reaction to the term "U.S. Ungraded."

Consumer unfamiliarity with USDA grades

According to USDA officials, many consumers are still unfamiliar with USDA grade terminology. Personnel representing retailer and consumer organizations told us that consumers consider price, appearance (color), and the lean to fat ratio rather than USDA grades in choosing beef.

Studies have also shown that consumers are confused about USDA grades and that if consumers understand the grades, they may not always use them in selecting beef for consumption. For example, a 1976 study ^{1/} pointed out that when shoppers were questioned about the factors they looked for in beef steaks, they usually preferred better trimmed cuts with less bone and with a color indicating "freshness." Another important factor was the price per pound of alternative cuts. The study concluded that even if consumers know the proper order of USDA grades, they do not always use the grades in selecting beef for home consumption because they may (1) choose steaks by factors other than USDA grades and (2) be unable to visually identify the grades of steaks which are not labeled.

^{1/}J.A. Miller, D.G. Topel, and R.E. Rust, "USDA Beef Grading: A Failure in Consumer Information?" Journal of Marketing, Vol. 40, Jan. 1976, pp. 25-31.

The results of an Iowa State University survey conducted in the spring of 1973 in Des Moines, Iowa, showed that 40 percent of the participants were able to list the three top grades in proper order unaided, 54 percent were able to arrange the grades in proper order when provided a list, and 6 percent were unable to arrange the grades in proper order even with a list. The report pointed out, however, that the participants volunteered to participate in the survey, so it was assumed that their knowledge of the beef grading system would be greater than that of a representative sample of all U.S. homemakers.

As part of a consumer study to be completed in September 1978, USDA's Economics, Statistics, and Cooperatives Service is gathering data on consumers' preferences in buying beef, such as the amount of external fat on steaks and the amount of marbling in beef cuts. According to the proposal, the study will also attempt to determine the extent of consumers' reliance on USDA grades.

USDA headquarters has a consumer and meat specialist who conducts a program to inform consumers about meat selection by cut and by grade and about meat preparation. The specialist travels throughout the country lecturing, making television appearances, and participating in radio and newspaper interviews. Also, the Service informs consumers about the meaning of grades through four "How to Buy" publications (on beef steaks, beef roasts, lamb, and meat for the freezer). Neither the Kansas City nor Omaha main stations, where we evaluated how the beef grading program was managed, had instituted formal consumer information programs on the meaning and use of grades.

CONTROVERSY OVER GRADE FACTORS

Many industry representatives, university personnel, and consumer groups are critical of the grade standards because:

- They believe the 1976 revisions had some unfavorable effects on the beef industry.
- They believe adequate research has not been done to substantiate the relevance and influence of various factors on beef tenderness, juiciness, and flavor.
- The yield grade equation can be used to permit possible deception in beef marketing.

Effect of 1976 revisions

Major revisions have been made to the beef grade standards through the years. The most recent significant revisions were proposed in the Federal Register on September 11, 1974, to be effective April 14, 1975. After several court challenges, the revised standards were implemented on February 23, 1976. The principal changes to the standards were:

- Conformation (the shape or external appearance of the carcass) was eliminated as a factor in quality grading.
- All graded beef (except bull carcasses) was required to be identified for both quality and yield grades.
- The maturity-marbling relationships required for the Good, Choice, and Prime grades were changed. Marbling requirements for the Prime and Choice grades were lowered and the Good grade was made more restrictive by increasing the marbling requirements and reducing the maximum maturity permitted.

The overall general purposes of the revisions were to encourage (1) production of slightly leaner beef carcasses and (2) price differentials between carcasses with different combinations of quality and yield grades which more accurately reflect the carcass values. Some of the other benefits USDA expected from the revisions were to:

- Reduce the feeding time necessary for slaughter cattle to make the Choice and Prime grades.
- Increase the amount of beef that qualifies for the Choice and Prime grades.
- Make the Good grade more appealing to consumers who want beef that is leaner than the Choice grade, thereby increasing the number of cattle marketed under the Good grade.
- Make the eating quality in the Choice and Good grades more uniform.

According to a June 1977 USDA study, 1/ the revisions accomplished one of the major objectives--price differentials

1/Kenneth E. Nelson, "Economic Effect of the 1976 Beef Grade Changes," Technical Bulletin No. 1570, Economic Research Service, USDA, June 1977.

between carcasses of different yield grades increased. In addition, the study showed that the percentages of carcasses being graded Prime and Choice increased. This, however, was attributed partly to the revisions and partly to feedlot operators feeding their cattle longer because of slumped market conditions. Some cattle were being held longer in hope of a price rise.

The study also showed that some developments during the 8 months following the revisions were the opposite of those expected. Heavier or fatter rather than leaner cattle were marketed and fewer cattle were marketed under the Good grade. Also, as stated above, cattle were fed longer rather than shorter periods because of market conditions. These developments may have occurred because the industry did not have time to adjust to the revisions or USDA may have simply misjudged the effect the revised standards would have on beef marketing.

Our interviews with 7 USDA officials and 39 officials representing 23 organizations and 5 groups along the beef marketing chain indicated considerable disagreement about the effect of the 1976 revisions. (See app. III for a summary of the comments we received.) Although some individuals said that the revisions had produced some benefits, most indicated that they had an unfavorable effect on the meat industry.

Relevancy of current quality standards

USDA beef quality grades are determined by maturity of the animal; marbling in the ribeye muscle; and color, texture, and firmness of the lean portion of the ribeye muscle. However, there are many different views among the beef industry, USDA, university personnel, and consumers about the relevance and influence of these characteristics. Many individuals believe that such characteristics as color, firmness, and texture of the lean, which are included in the standards, are relatively unimportant indicators of beef quality, while other purportedly more important quality indicators are not included.

The controversy over the quality grade standards apparently stems from the lack of convincing evidence to substantiate the relevance and influence of the current grade criteria on beef quality. For example, in a report prepared for us, our beef grading and standards expert advised that:

--Research efforts in identifying how important marbling is as a criterion for measuring eating qualities in beef have largely been disappointing. Researchers have failed to identify significant differences in tenderness caused by marbling but have shown that

marbling is a statistically significant factor in flavor and juiciness. Researchers, however, believe that marbling is not advantageous enough to warrant the great importance placed on it in the grade standards.

- No research work has shown that color of lean has any influence on eating qualities. However, color of the lean is extremely important with respect to consumer acceptability and, as such, is considered an important criterion.
- Texture of lean has been identified through studies of tissue structure as contributing to tenderness of meat. However, differences in lean texture that can be identified visually have not shown the same relationship.
- Firmness of lean has not been shown to contribute significantly to eating qualities.

Some USDA and industry officials, university personnel, and consumer groups also told us that adequate research has not been done to substantiate the relevance and influence of various factors on beef palatability. They stated that the USDA beef quality standards do not include certain important quality indicators and suggested several alternatives. These include:

- USDA quality grades for beef should be based on nutritional values such as protein.
- Genetics and heredity are important factors that should be related to quality grade.
- Carcasses which have been treated, such as being conditioned, aged, tenderstretched, electrically stimulated, or enzymatically or mechanically tenderized, should be eligible for identification at least one grade higher than that indicated by visual grade criteria.
- The method by which the beef is produced (that is, the ration of feed and length of time on feed) may determine the eating quality of beef but are not factors in USDA quality grade standards.

USDA is currently analyzing data from a beef quality study, the main objective of which is to determine the adequacy of the various marbling-maturity relationships (see chart, p. 4) for predicting palatability. According to a Service headquarters official, preliminary results of this study

show a high correlation between the current standards' marbling-maturity relationships and beef palatability. The 1,000 carcasses used in this study had different degrees of marbling in the ribeye and were selected from different maturity groups. These preliminary results conflict with the results of another USDA quality study completed in 1977.

The 1977 study, which covered 240 steer carcasses of only one maturity group, 9 to 30 months, concluded that the correlation between marbling and palatability was small. However, according to one official, this study covered too few carcasses and too narrow a range of carcass characteristics--such as maturity and sex--to provide conclusive results. The study also cautioned against implementing any changes in beef quality standards before other sources of variation (such as maturity) are examined.

An additional objective of the current study is to try to identify alternate criteria for determining beef quality. However, according to a USDA official, only factors that are observable and measurable on a carcass (such as the texture or color of lean) will be investigated. Such factors as nutritional values, genetics, heredity, type of feed, and length of time the animal was on feed will not be included in this study.

In response to our question about the adequacy of the criteria for beef quality grades, our expert on the beef grade standards stated the following which we believe sums up the controversy over the quality factors:

"Most meat science researchers would answer this question by stating that the USDA criteria for evaluating quality for the most part shows little relationship to what actually evolves in the way of eating quality. They would also acknowledge that at this time they know of no other easily measurable traits that will do any better job than those which the USDA uses."

Kidney, pelvic, and heart fat should be removed before grading

Under present grading regulations, carcasses can be graded with all of the kidney, pelvic, and heart fat left in place or with some or all of these fats removed. Removing these fats before grading does not change the amount of usable meat from the carcass. However, because the weight of this fat is eliminated, the ratio of usable meat to total carcass weight is increased. Removing kidney, pelvic, and heart fat requires an adjustment in the yield grade equation, which improves the yield grade and increases the price on certain carcasses.

Packers are identifying, often with assistance from Service graders, carcasses with yield grade 4 characteristics whose yield grades can be improved by removing the kidney, pelvic, and heart fat. Packers then remove enough of these fats for the carcasses to be graded yield grade 3 and sold at yield grade 3 prices. Because the fatness and amount of usable meat in these carcasses are more typical of yield grade 4 carcasses, some of these carcasses are, in effect, overgraded and overpriced to retailers and consumers.

A main station supervisor told us that when the Department of Defense and large retailers realized that they were paying yield grade 3 prices for carcasses that would yield the number of retail cuts of yield grade 4 carcasses, they insisted that the Service make some distinction by marking these carcasses in a different manner. As a result, all carcasses graded after removal of kidney, pelvic, and heart fat must be identified by placing two yield grade stamps on the short loin of each side and reverse roller branding so the grade designations appear upside down. However, the significance of this difference in classification is not fully understood by all beef purchasers.

Personnel at the University of Wisconsin studied the incidence, economics, and ethics of converting carcasses from yield grade 4 to yield grade 3 by removing kidney, pelvic, and heart fat. The study results were presented in a report dated May 18, 1977, which concluded, among other things, that:

- Possibly half the yield grade 4 carcasses in one-third of the packing plants are being converted to yield grade 3 by removing kidney, pelvic, and heart fat before grading.
- Some suppliers and small retailers did not realize that (1) the practice of converting yield grades existed and (2) compositional differences may occur as a consequence of yield grade conversion by removal of cavity fat. Most suppliers paid yield grade 3 prices for converted carcasses.
- The system for identifying converted yield grade beef is poor because (1) boxed beef and wholesale cuts make yield grade differentiation difficult and (2) grade stamps on certain types of packaged beef are very difficult, if not impossible, to read.

On January 23, 1978, USDA proposed in the Federal Register that kidney, pelvic, and heart fat be eliminated as a factor in the yield grade equation and that the kidneys and the

fat surrounding the kidneys, pelvic region, and heart be removed from the carcasses before being presented for grading. The proposed changes are intended to eliminate confusion over the difference in classification of carcasses graded with the kidney, pelvic and heart fat removed and make it possible to uniformly yield grade and mark beef. Comments from interested persons on this proposal were due by May 1, 1978. As of June 1, 1978, the Service was evaluating the comments on this proposal.

PROPOSED LEGISLATION

A bill (H.R. 12373) introduced in April 1978 would establish a task force within USDA to develop new beef grading standards based on health and nutrition as well as consumer, farmer, and industry acceptance. The bill's sponsor said that consumers are confused and deceived by the current standards and that the current standards are based on the unhealthy premise that the best meat contains the most fatty marbling. The bill was referred to the House Agriculture Committee. Hearings have not been scheduled because of higher priority work.

CONCLUSIONS

If USDA's grade standards are to provide an adequate system through which consumer preferences can be signaled back through the marketing chain to producers, the grade designations must be carried through to the retail meat counters. Allowing packers the option of grade stamping selected beef and marketing the remainder without any grade designation precludes value differences from being signaled to consumers and makes it difficult for producers to distinguish consumer preferences. USDA's proposal to require both graded and ungraded meat to be labeled as such all the way through the marketing chain should aid in achieving one of the original objectives of the standards. However, implementation of this proposal should be accompanied by a public education program designed to inform consumers on the meaning and use of grades. This program should assist consumers in making informed value judgments in the marketplace.

Increased confidence in the credibility of grade standards is necessary to alleviate the controversy over the relevance and value of the different components that comprise grade standards and over the effect of the 1976 revisions. Research is needed to see if beef grade standards serve

industry and consumers alike. Confusion over the difference in classification of carcasses with these fats removed would be eliminated and yield grading would become more uniform.

RECOMMENDATIONS TO THE SECRETARY
OF AGRICULTURE

We recommend that to make the beef grade standards more useful to both industry and consumers, the Secretary of Agriculture

--develop an aggressive public education program to increase consumer awareness of the meaning and use of grades and

--initiate research on those factors not in the current standards which may influence meat quality and revise the standards if warranted.

AGENCY COMMENTS

USDA said it agreed with our recommendations. (See app. IV.)

CHAPTER 4

SCOPE OF REVIEW

We reviewed legislation, regulations, instructions, various reports and studies, and records relating to USDA's beef grading program. At the Federal level we interviewed USDA officials from the Food Safety and Quality Service, the Agricultural Research Service, and the Economic Research Service. 1/

We visited meat grading main stations in Martinez, California; Chicago, Illinois; Kansas City, Missouri; Omaha, Nebraska; Princeton, New Jersey; and Amarillo, Texas. At two main stations--Kansas City and Omaha--we evaluated management of the beef grading program by reviewing main station records in detail, interviewing supervisors and graders, and visiting selected plants. At the other main stations, we discussed various aspects of the beef grading program with main station supervisors and visited selected plants.

To observe grading operations and check on accuracy and uniformity of grading, we visited a total of 29 slaughter plants--4 in California, 4 in Illinois, 2 in Kansas, 2 in Missouri, 3 in Nebraska, 1 in New Jersey, 1 in Iowa, 3 in Ohio, 2 in Pennsylvania, 2 in Washington, 2 in Wisconsin, and 3 in Texas. Our beef grading expert regraded a total of 2,215 USDA-graded carcasses at these plants.

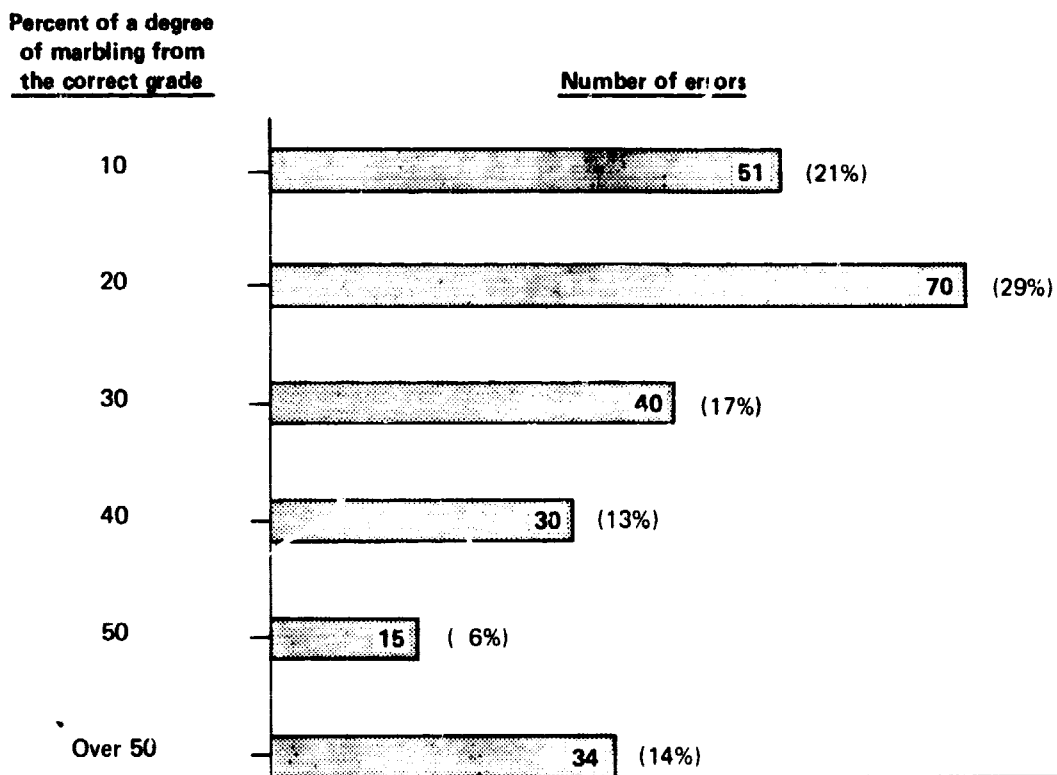
At most of the plants, our expert regraded all of the graded carcasses that were accessible. At some of the larger plants, however, time did not permit regrading of all such carcasses. In these latter cases, generally 80 to 100 carcasses were reviewed at each plant. Carcasses in dispute--those where the plant challenged the original grading--were excluded by our expert. These carcasses were generally borderline and were on a separate rail or were tagged.

We also discussed grading accuracy and uniformity and the usefulness of beef grade standards with our grading expert, producers, feeders, packers, retailers, and consumer group representatives.

1/Pursuant to Secretary's Memorandum No. 1927, dated Oct. 5, 1977, and Supplement 1, dated Dec. 19, 1977, the Agricultural Research Service was merged into a new Science and Education Administration and the Economic Research Service was merged into a new Economics, Statistics, and Cooperatives Service.

We discussed with the Service's Administrator and other top Service officials the results of our review and USDA's announcement of proposed actions to improve the accuracy and uniformity of beef grading.

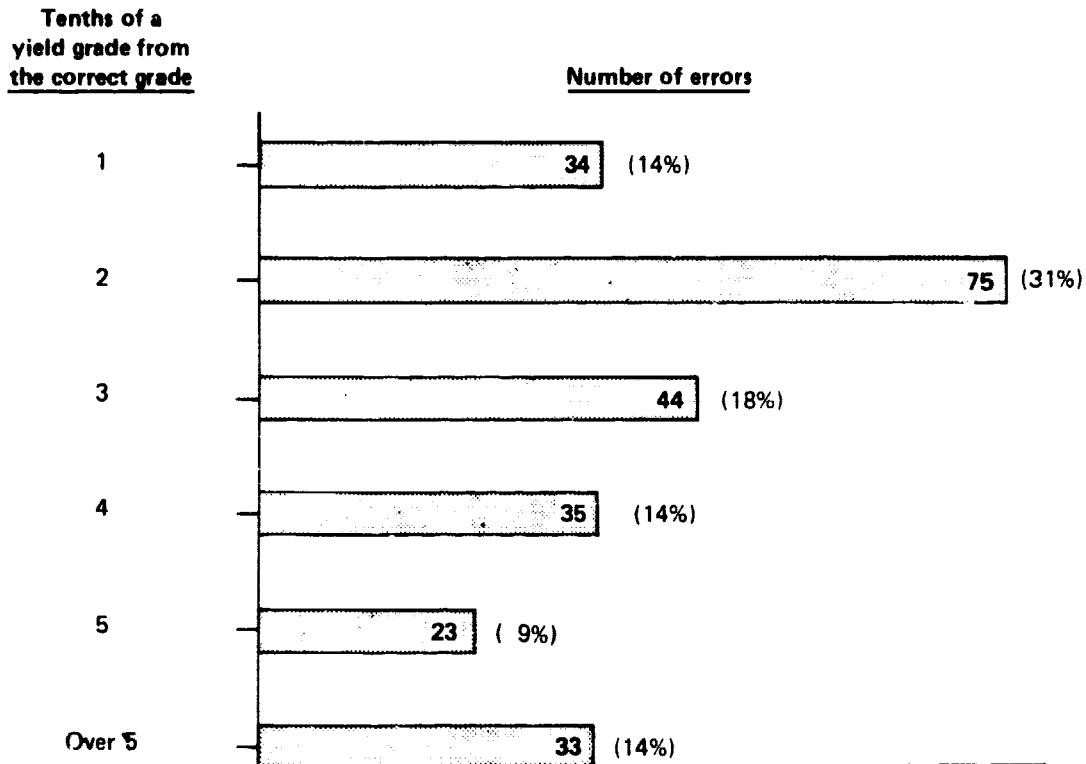
**SCHEDULE SHOWING SEVERITY OF QUALITY GRADE ERRORS
IDENTIFIED BY OUR BEEF GRADING EXPERT (NOTE a/)**



a/ The schedule does not include the 13 quality grade errors our beef grading expert believed were caused by the grader miscalculating carcass maturity.

Note: Of the 240 errors shown in the table, 119 (50 percent) were classified as major because they were more than 20 percent of a degree of marbling out of the proper grade.

**SCHEDULE SHOWING SEVERITY OF YIELD GRADE ERRORS
IDENTIFIED BY OUR BEEF GRADING EXPERT**



Note: Of the 244 errors shown in the table, 135 (55 percent) were classified as major because they were more than 0.2 of a yield grade out of the proper grade.

SUMMARY OF COMMENTS WE RECEIVED RELATING TO
THE 1976 REVISIONS IN THE BEEF GRADE STANDARDS

1. Reductions in minimum requirements for Prime, Choice, and Standard grades.
 - a. Large commercial feeders have reduced feeding time.
 - b. The amount of beef grading Choice and Prime has increased.
 - c. Retailers who felt they could not get the same high quality beef in the new Choice grade started buying Prime.
 - d. Skepticism was widespread among chainstore buyers in the first few weeks after the grading changes, with many chains maintaining their previous beef specifications.
 - e. Broad characteristics in the Choice grade cause differences in palatability.
2. Officially graded carcasses must be identified for both quality and yield grades.
 - a. Large commercial feeders have reduced feeding time.
 - b. Some retailers are offering \$2 per hundredweight premium for yield grade 2 carcasses over yield grade 3 carcasses.
 - c. Chainstores can buy each yield grade carcass at its true value rather than buying by the carload at an average price.
 - d. Choice yield grades 4 and 5 carcasses previously marketed as Choice with no yield grade designation are now marketed as ungraded.
 - e. This aids the concentration of power into the hands of large buyers and sellers of beef.
 - f. Generally, no premium is paid for yield grades 1 and 2, whereas yield grade 4 carcasses are being discounted up to \$8 per hundredweight.
 - g. The price of grain had a greater influence on the length of feeding period than the revisions.

3. Increased marbling requirements for Good.
 - a. Good is a more consistent and reliable grade than before the revisions.
 - b. Retailers in some parts of the country stopped carrying graded products, and packers dropped grading services.
 - c. Retailers have not started merchandising the Good grade.
4. Eliminating conformation.
 - a. Conformation contributed nothing to the eating qualities of beef and removal helped to reduce subjectiveness of grading.
 - b. Feeders in the South must feed their cattle longer for them to qualify for the Good grade.
 - c. More beef is marketed ungraded as house brands.
 - d. Retailers have added minimum conformation requirements to their purchase specifications.
5. Reduction in the maximum maturity allowable in the Good and Standard grades.
 - a. Cleaned up the standards and made them less confusing.

UNITED STATES DEPARTMENT OF AGRICULTURE
FOOD SAFETY AND QUALITY SERVICE
WASHINGTON, D.C. 20250

JUN 8 1978

Mr. Henry Eschwege
Director, Community and
Executive Development Division
General Accounting Office
Washington, DC 20548

Dear Mr. Eschwege:

I have your letter of May 17 transmitting your draft report entitled "Department of Agriculture's Beef Grading Program: How to Improve Its Reliability." I am pleased to submit the Food Safety and Quality Service (FSQS) comments on the draft report but regret that the short time frame established by the General Accounting Office (GAO) did not allow us time for more thorough analysis.

We applaud the selection of Dr. Dell Allen as the GAO expert on beef grading. Dr. Allen is recognized by the meat industry and scientific community for his work in meat grading. It is unfortunate, however, that only one expert was retained on the project, especially since one of the principal criticisms leveled against the program is the subjectivity of the grading process. Because of the subjectivity factor, we believe Dr. Allen should have been assisted by a small panel of persons of comparable scientific achievement.

The FSQS is in overall agreement with your draft report, and we generally endorse the recommendations you made to the Secretary of Agriculture which appear on pages 38 and 50. Our comments will respond in detail to these recommendations, and we will also discuss some areas where the agency disagrees with GAO observations or where we believe the report could be improved by additional information.

Introduction

While the introduction to the report indicates that grading is a user-funded program, it does not emphasize the impact these cost considerations would have on many of the changes recommended. Similarly, we believe the conditions your staff discovered during your study as well as the recommendations you propose should be evaluated against the backdrop of the severe understaffing problem^{1/} which faces the Meat Quality Division. You should also be aware, and the report should reflect, that we anticipate an increase of about 60 percent in the meat grading staff between now and October 1979 in connection with the agency's new responsibilities for Government-wide quality assurance.

^{1/} Personnel Management Assistance Review conducted by AMS October-November 1976.

GAO note: Page numbers in this letter refer to pages in the draft report and may not necessarily correspond to the page numbers in the final report.

Mr. Henry Eschwege

On page 4, the draft defines quality grades. We submit the following as a more accurate description of the purpose of quality grades: "The quality grades are based on criteria such as marbling and maturity which, research indicates, predict palatability." We would also recommend a revised definition on yield grades: "Yield grades are based on criteria such as amount of fat and thickness of muscle which are associated with the amount of usable meat."

Chapter 2

The present Administration within the U.S. Department of Agriculture (USDA) is committed to improving the beef grading program and has demonstrated its commitment by proposing significant changes in the program and by our strict enforcement of the relevant law and regulations. Accordingly, we are especially interested in your recommendations for improving this activity.

Page 9 of the draft describes how Dr. Allen regraded carcasses and the results of the regrading. We believe the sample of carcasses used in the review likely affected the results. Ideally, Dr. Allen should have graded the carcasses just prior to or contemporaneously with the grader and under the same conditions in order that the sample be representative of all carcasses graded. This would reduce the possibility that the characteristics could change from the time they were originally graded until they were reviewed. Also, since it is normal practice for most packers to ship or to move carcasses to breaking rooms shortly after they are graded, those remaining in a cooler and available to Allen for review were probably borderline or controversial carcasses or those being held for further review by graders.

We concur with Dr. Allen's designation of 20 percent of a degree of marbling and 0.2 of a yield grade as a logical division between major and minor errors. Errors below these levels are difficult to detect and are nearly impossible for supervisors to obtain corrective action among graders. Many experienced graders and supervisors consider such errors largely a "matter of opinion," with the opinion of the ranking official present being the correct grade. Because of the subjectivity, we believe the report could be more meaningful and more useful to USDA if the material on pages 10-15 concentrated on major errors observed.

Standards to measure grading accuracy would be helpful in evaluating grading performance as indicated on page 10 of the report and in related discussions on pages 18-21 and 35-36. However, absolute measures of accuracy likely would be of limited value. They could be used as guidelines for applying supervisory judgment necessary because of varying conditions. The standards envisioned would represent an extension and quantification of the system now used to determine the readiness of employees to assume grading duties, evaluate performance on the job, and

Mr. Henry Eschwege

trigger corrective action and supervisory followup necessary to maintain accuracy. It is somewhat unfair to state that no specific criteria of grading accuracy are used. Errors noted are a part of the supervisor's evaluation, even though no specific percentage of error is used as a pass/fail point applied uniformly to all graders in all situations.

The table on page 11 indicates that 21 percent of the carcasses were incorrectly graded. Since 230 carcasses were misgraded, it would appear that the correct figure should be 10 percent. Again we suggest that the report emphasize that while Dr. Allen regarded carcasses at his leisure, FSQS graders were working at line speeds of perhaps 330 animals per hour. We also regret the vague, nonspecific complaint (page 12, page 14) and suggest that the complainant be identified and asked to supply some specifics on his charge or that these passages be eliminated from the final report.

Also on page 12, your discussion of grading errors benefiting packers should be corrected to reflect major errors.

The Service is aware of the lack of uniformity in applying grade standards and will work to see that this problem is speedily corrected. You mention on page 15 that a proposal to improve the national technical supervisors' effectiveness was delayed because of other priorities. Acting Deputy Administrator Kimbrell advises that his work on the other project, Government-wide quality assurance, is proceeding satisfactorily and he is now devoting time to the uniformity proposal.

We fully agree that developing instruments to accurately and quickly measure the characteristics of meat would be desirable as pointed out on pages 16, 17, and elsewhere. Such an objective approach also would indeed contribute to more accurate and uniform grading. We regularly have reviewed research on objective measures of differences in meat which might be applied in grading. We regret that little progress has been made on practical measures of this nature. The explanation of the current effort by USDA and the Jet Propulsion Laboratory shown on page 17 is not entirely correct. That project is designed to determine the feasibility of further investigating the possible use of relatively new sensing techniques, such as those developed in space technology, to measure grade characteristics in meat. Thus, the project is looking at more than just the possible application of infrared technology to meat grading.

The Service has already taken steps to improve the quality of training offered to graders. Arrangements were made for the California State University at Chico to provide 10-12 weeks of intensive training for several groups of 35-50 new employees. With the help of the University

Mr. Henry Eschwege

staff members providing the training, extensive testing procedures have been designed and included in the program to measure progress of the trainees. Results are not yet available since the first training session is still in progress. We will alter the curriculum and refine the procedures, including testing methods, on the basis of our experience with this first class. We also believe graders' performance could be substantially improved if graders are periodically retested and retrained as needed. However, our present shortage of staff makes this nearly impossible. It would be more realistic, and more nearly possible, to apply such retesting procedures first to those graders deemed marginal in performance.

We concur in your assessment that we must develop better procedures for evaluating and improving graders' performances. Similarly, we agree that grading occurs under the less than optimal conditions you describe. The Service also shares your apprehension about the speed at which beef is graded. However, we do not expect industry to tolerate a slower pace in packing houses; rather we hope to proceed with our study mentioned (page 25) which addresses the time required to accurately grade a carcass. In the long run, however, it is obvious that science must provide graders with appropriate tools and techniques to keep pace with the needs of the modern meat industry.

Your report reflects (page 28) that our January 1978 proposal^{2/} offered 30 minutes as a standard time between ribbing and grading. The comments on this aspect of the proposal were almost uniformly negative. We expect the final regulation will recommend a shorter interval.

We are in general agreement with your observations about the informal appeal process, however, the Service's present manpower would not permit us to abandon the informal system. A more reasonable approach would be to use it more judiciously and to proceed promptly with our revisions (p.29) of the formal process. We also accept your evaluation (p.30) that more specific guidelines should be developed to describe the circumstances under which the grades marked on carcasses must be changed.

The Food Safety and Quality Service is aware that, in the past, the Department did not deal forcefully with packers guilty of grading offenses. For this reason, I established an agencywide compliance division which reports to a department administrator. I believe that this centralized office can move more expeditiously, equitably, and consistently than our previous structure would allow. We are working with the Department's Office of the Inspector General (OIG) to develop a "Statement of Determination" which will permit FSQS investigation of

^{2/} FR Vol. 43, No. 15, January 23, 1978

Mr. Henry Eschwege

matters when OIG is not immediately available or in those cases where primarily administrative rather than legal sanctions will be instituted. This will allow FSQS to move more swiftly since FSQS priorities would be controlled from within.

Specific legislation has been drafted to amend the Federal Meat Inspection Act and the Poultry Products Inspection Act to provide for the withdrawal of inspection services in a more timely fashion. We propose to include withdrawal of service under the Agricultural Marketing Act as well.

Chapter 3

The observations you make about beef grade standards we believe to be essentially sound. It should be emphasized at this point though, that grade standards are entirely different from the problems of reliability and accuracy which we believe are the central thesis of the report. However, on page 40 you assert that the practice of selling ungraded meat under house brands which include the word "choice" is a grading problem when, in fact, it is an aspect of meat labeling. The study of consumer preferences referred to on page 42 is being conducted by ESCS, not FSQS.

As indicated on page 42, the main stations do not conduct consumer education programs. A very limited program, financed by trust funds, is conducted by the Washington headquarters. These efforts are supplemented and assisted by the FSQS Information Division's five regional offices. A major part of the effort to inform consumers about the meaning of grades is through the four "How to Buy" publications (on beef steaks, beef roasts, lamb, and meat for the freezer). These pamphlets, particularly the one on beef roasts, are enormously popular and have been among the most widely read of all USDA publications in recent years.

You may wish to indicate in your final report that FSQS is developing specifications for a contract for a consumer survey to determine reaction to the term "U.S. Ungraded" which is a major part of one of the January 1978 proposals. That survey will also provide some information on consumer awareness of U.S. grades.

You recommended that kidney, pelvic, and heart fat be removed before grading. As you indicated, this issue was a part of our grading proposal. However, we have received a large number of negative comments from renderers who claim that this change would cause serious dislocation in their industry.

Mr. Henry Schrege

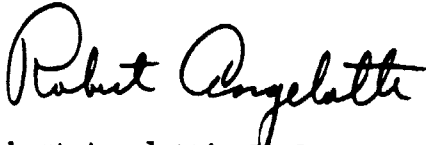
It is our understanding that no action is contemplated on H.R. 12373, and for this reason we have not recommended an administrative position.

We support your recommendations relative to a more aggressive consumer education program on the meaning and use of beef grades and the need for research on those factors not reflected in current standards which may influence meat quality.

I enclose a memo with attachments from SEA which reflects their views on the report.

I trust our comments and the remarks of SEA will be helpful in preparing the final report and welcome your interest in the Department's beef and grading activities.

Sincerely,

A handwritten signature in cursive script that reads "Robert Angelotti". The signature is written in dark ink and is positioned above the typed name and title.

Robert Angelotti, Ph.D.
Administrator

UNITED STATES DEPARTMENT OF AGRICULTURE
SCIENCE AND EDUCATION ADMINISTRATIONOFFICE OF THE DIRECTOR
WASHINGTON, D. C. 20250

JUN 8 1978

Subject: Draft of a Proposed Report Prepared by the Staff of the GAO, Entitled "Department of Agriculture's Beef Grading Program: How to Improve its Reliability"

To: Robert Angelotti, Administrator
Food Safety and Quality Service

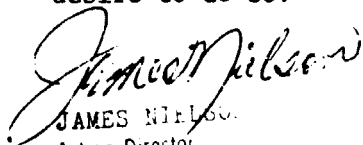
A copy of the above named report was sent to us by Mr. Harry Eschwege, Director, U.S. General Accounting Office. Along with the draft was the suggestion that we review it and submit any comments to you for consideration in forming your response to his organization.

Specific comments made by the scientists who were asked to aid us in the review are attached in unedited form. Feel free to use them however you see fit.

While the report tends to be negative in tone about the entire grading operation, it does contain factual material that vitiates this position

We believe that the staff of the GAO exhibited a degree of naivete in its discussion of the need to utilize objective techniques when grading meat. The physical sciences have just developed sufficient basic information to permit the rational development of objective, nondestructive, meat quality measuring devices that can operate at high speed in an economically feasible fashion. The fact that they are not now used is because they don't exist. Development of these tools and their application will require either increased funds and manpower for research, or a redirection of present research effort into this important area.

We hope our comments will be useful and are prepared to discuss our views of the report in more detail should you or your associates desire to do so.


JAMES NILSON
Acting Director
Science and Education

2 Enclosures:
Draft Report
Specific Comments

GAO note: Enclosure contained additional comments of an editorial nature which were considered in finalizing the report, but are not reproduced here.

PRINCIPAL DEPARTMENT OF AGRICULTURE OFFICIALS
CURRENTLY RESPONSIBLE FOR ADMINISTERING ACTIVITIES
DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
SECRETARY OF AGRICULTURE: Bob Bergland	Jan. 1977	Present
ASSISTANT SECRETARY FOR FOOD AND CONSUMER SERVICES: Carol Tucker Foreman	Mar. 1977	Present
ADMINISTRATOR, FOOD SAFETY AND QUALITY SERVICE: Dr. Robert Angelotti	July 1977	Present