



Agricultural Marketing
Service

April 2014

Commodity
Procurement Staff

AMENDMENT NO. 2

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SUPPLEMENT 212 TO THE AMS MASTER SOLICITATION

FOR THE PURCHASE OF FRESH CHILLED BONELESS BEEF PRODUCTS FOR FURTHER PROCESSING INTO FULLY COOKED ITEMS FOR DISTRIBUTION TO FEDERAL FOOD AND NUTRITION ASSISTANCE PROGRAMS

This Amendment is issued to make the following changes to Supplement 212 to the AMS Master Solicitation, dated May 2012:

1) The document is renamed:

“Supplement 212 to the AMS Master Solicitation for the Purchase of Fresh Chilled Boneless Beef Products for Further Processing into Fully Cooked Items for Distribution to Federal Food and Nutrition Assistance Programs.”

2) Section III. Instructions For Submission of Technical Proposal, is revised in its entirety to read as follows:

A. *Submission*

The format in Exhibit B shall be used in preparing the technical proposal. The supplier shall submit the technical proposal as an email file attachment to the COTR (darin.doerscher@ams.usda.gov and steve.whisenant@ams.usda.gov). The technical proposal must be submitted in its entirety. If the file size of the technical proposal is too large to send in a single email, it may be divided and sent in multiple emails (i.e. Part 1, Part 2, Part 3, etc.). The collection of attachments and appendices may be submitted as a separate document, as well.

B. *Technical Proposal Revisions*

Changes to a supplier’s technical proposal may be submitted to the COTR in response to the USDA program amendments, clarification requests, pre-award and post-award assessments, monitoring program, or at the request of the supplier. Maintenance of the integrity and clarity of each technical proposal is critical. All technical proposal revisions must meet the following criteria:

- 1. Any changes to a technical proposal made by the supplier after its initial submittal shall be accomplished by submitting replacement pages or an entire technical proposal. A cover letter must be submitted with the changes identified and an explanation of the need for the change. The supplier shall include the revision date and the appropriate page*

number(s).

2. Changes from the original technical proposal shall be **highlighted** and deletions in ~~strikeouts~~.

- 3) Replace Exhibit A, Checklist and References to Applicable Bid and Contract Provisions, dated May 2013, with the attached version, dated April 2014. Changes are indicated in blue font.
- 4) Remove Exhibit C. The external portal site and this request form are no longer utilized for technical proposal submission.
- 5) Replace Attachment I, Technical Requirements Schedule for USDA Purchases of Fresh Chilled, Boneless Beef for Further Processing (TRS-BB-2013), dated May 2013, with the attached Federal Purchase Program Specification (FPPS) for Fresh Chilled, Boneless Beef for Further Processing Into Fully Cooked Items, dated April 2014.

All other terms and conditions remain unchanged.

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees, and applicants for employment on the bases of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, or all or part of an individual's income is derived from any public assistance program, or protected genetic information in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases will apply to all programs and/or employment activities.)

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SUPPLEMENT 212 TO THE AMS MASTER SOLICITATION

EXHIBIT A
Dated April 2014
Page 1 of 1

**CHECKLIST AND REFERENCES TO APPLICABLE BID AND CONTRACT PROVISIONS
FRESH CHILLED BONELESS BEEF PRODUCTS FOR FURTHER PROCESSING INTO FULLY COOKED ITEMS**

PRODUCT DESCRIPTION					OFFER/CONTRACT PROVISIONS		
WBSCM Material Description	Specifications Listed in Priority Order	WBSCM Material Number	Packaging and Packing	Minimum Offer Unit Size/Shipping Unit	Tolerance Section	Delivery Period	Federal/State Plants Section I.D.
BEEF FRESH CHILLED BNLS COMBO-20/2000 LB	Federal Purchase Program Specification (FPPS) for Fresh Chilled, Boneless Beef for Further Processing Into Fully Cooked Items, dated April 2014.	100155	20 lined combo bins packed to approximately 1,850 to 2,250 lbs. in each combo bin	40,000 lbs. 20 combo bins	NONE	3-day delivery period	Federal & State
BEEF FRESH CHILLED BNLS GRASS FED CMB-20/2000 LB	Federal Purchase Program Specification (FPPS) for Fresh Chilled, Boneless Beef for Further Processing Into Fully Cooked Items, dated April 2014.	110091	20 lined combo bins packed to approximately 1,850 to 2,250 lbs. in each combo bin	40,000 lbs. 20 combo bins	NONE	3-day delivery period	Federal & State



APPROVED

**FEDERAL PURCHASE
PROGRAM SPECIFICATION
(FPPS) FOR FRESH CHILLED,
BONELESS BEEF FOR
FURTHER PROCESSING
INTO FULLY COOKED ITEMS**

Contracting Officer Technical Representative (COTR)
Agricultural Marketing Service (AMS)
Livestock, Poultry and Seed (LPS) Program
Food Safety and Commodity Specification (FSCS) Division
Room 2628 S-Bldg, Phone: (202) 692-0342

Supersedes: TRS-BB-2013 May 2013 – Changes from
previous requirements in [blue](#)

Effective: APRIL 2014

100 SCOPE

101 This FPPS – Boneless Beef (BB) – 2014 is for use by a contractor of the Department of Agriculture (USDA), AMS, Commodity Procurement Staff (CPS) to deliver fresh-chilled (never previously frozen) boneless beef for further processing [into fully cooked items](#).

200 APPLICABLE DOCUMENTS

210 The following documents are incorporated as part of this USDA, FPPS-BB-2014:

210.1 Quality Assessment Division (QAD) Procedures Manual.

210.2 Food Safety and Inspection Service (FSIS) Directive 10,010.1 Revision 3.

210.3 Applicable Supplement to AMS Master Solicitation.

300 CHECKLIST OF REQUIREMENTS

301 The contractor's technical proposal must describe a process plan with a documented quality control program that includes procedures, records, forms, etc., that demonstrate conformance with the following Checklist of Requirements. The COTR may request changes to the technical proposal at any time.

310 MATERIAL REQUIREMENTS FOR FRESH-CHILLED BONELESS BEEF

311 Domestic Origin and Harvest (Slaughter) Requirements – The harvester's quality control program must be documented and have received a satisfactory onsite capability assessment by QAD prior to supplying materials for the program. Additionally, each plant is subjected to verification audits conducted by QAD during production activities that

demonstrate their adherence to the documented program. Boneless beef shall be derived from cattle harvested at facilities that comply with the following origin and harvest requirements.

- 312 Domestic Origin - All beef will originate from U.S. produced livestock as defined within the Supplement.
- 313 Humane Handling - All cattle shall be humanely handled in accordance with all applicable FSIS regulations and AMS requirements.
- 314 Spinal Cord Removal – All spinal cord tissue must be removed during the harvesting process.
- 315 Pathogen Intervention – The harvest process must include at least two pathogen intervention steps. One of the intervention steps must be a critical control point (CCP) in their FSIS recognized harvest process Hazard Analysis Critical Control Point (HACCP) plan and the CCP intervention(s) must be scientifically validated to achieve a three log reduction of enteric pathogens.
- 316 Carcass Testing - Routinely test carcasses for *Shiga-toxigenic Escherichia coli* O157:H7 (including O157:H7 and O157:Non-Motile (NM); herein referred to as *E.coli* O157:H7) at CCP to verify effectiveness of interventions.
- 317 Grass Fed – When specified in the invitation, boneless beef destined to be labeled as grass fed shall be supported by documentation and the FSIS approved label which substantiates such a claim.
- 318 [Residue Prevention – Harvest and production establishments must have a Hazard Analysis Critical Control Point \(HACCP\) system to control veterinary drug, pesticide, and environmental contaminant residues per FSIS regulations. Helpful information is available in the FSIS Compliance Guide for Residue Prevention 2013](#)
- 319 Boneless Beef Requirements
- 319.1 Traceability – Boneless beef shall be traceable to sources that comply with the above domestic origin and harvest requirements.
- 319.2 Handling - All boneless beef must be maintained in excellent condition. The contractor's technical proposal shall include detailed production scheduling that addresses time and temperature controls necessary to maintain excellent condition of the boneless beef.
- 319.3 Boneless beef commonly referred to by the industry as XF trimmings (e.g., Beef Fat with Visible Lean) is not allowed as a standalone raw material source.

- 319.4 Objectionable materials - The following objectionable materials shall be excluded:
- 319.4.1 Major lymph glands (*prefemoral, popliteal, and prescapular*), thymus gland, sciatic (*ischiatric*) nerve (lies medial to the outside round), internal fat (kidney, pelvic, and heart fat).
- 319.4.2 All bone, cartilage, shoulder tendon, elbow tendon, silver skin from the outside round, *sacrociatic* ligament, opaque periosteum, serous membrane (*peritoneum*), tendinous ends of shanks, *patellar* ligament (stifle joint), *gracilis* membrane (from the inside round), *achilles* tendon, back strap and *abdominal tunic*.
- 319.5 Mechanical Separation - Boneless beef that is mechanically separated from bone with automatic deboning systems, advanced lean (meat) recovery (AMR) systems or powered knives, will not be allowed.
- 319.6 Lot - A lot shall consist of a single combo sized bin of approximately 2,000 pounds of boneless beef produced within a day, between “cleanup to cleanup” (see APPENDIX C) and that is from a single harvester or from a single processor.
- 319.7 Microbial Testing – All lots of fresh chilled boneless beef must be tested for all [indicator organisms](#) listed in APPENDIX B. All samples will be sent to the AMS designated laboratory (ADL).
- 319.7.1 Sample Preparation and Handling - The ADL will be responsible for supplying procedures for sample preparation, and submission. The laboratory shall require contractors to submit this form as an official record with each sample. The laboratory will also be responsible for supplying shipping supplies (including sampling bags and shipping materials), to each contractor. Contractor’s technical proposal will include and describe sample collection and preparation procedures provided by the ADL.
- 319.7.2 Sample Selection
- 319.7.2.1 For Beef Manufacturing Trimmings – The composite sample will be selected as described within FSIS Directive 10,010.1 Revision 3 (N-60 Sections 8, 9 and NOTE).
- 319.7.2.2 [For every lot of beef Manufacturing Trim, one sample will be prepared from five \(5\) pieces of trim from five \(5\) different pieces of beef product. The sample for indicator organisms \(aerobic plate count, total coliform and generic *E. coli*\) will weigh 25 grams ± 10 percent.](#)
- 319.7.2.3 When boneless beef has been exposed to any anti-microbial treatment, no sample units shall be selected for at least 15 minutes after such treatment. All anti-microbial treatments (e.g. techniques and procedures)

administered during production and post-production shall be described in the supplier's technical proposal.

- 319.7.2.4 If the contractor plans to do microbiological testing in addition to that required by AMS, the technical proposal must identify in detail such testing, including location of sample collection, frequency of sample collection, and intended use of testing results. AMS will make a determination of whether such additional sampling and testing constitutes "prescreening," in which case it will not be allowed.
- 319.7.3 Testing and Results
- 319.7.3.1 The microbiological testing for all **indicator organisms** will be in accordance with the applicable AMS-approved testing methodologies.
- 319.7.3.2 When the critical limit is exceeded for **indicator organisms**, the boneless beef contractor will notify the COTR of the final disposition of the affected lot.
- 319.7.3.3 The ADL will record results of all **indicator organisms'** analysis in a format that can be easily captured and analyzed.
- 319.7.3.4 The ADL will record all results on spreadsheets and calculate the process capability (CPU) for **indicator organism** tests performed on production lots as outlined in Section 319.7.4.
- 319.7.3.5 Any lot that exceeds the critical limit criteria of APPENDIX B cannot be delivered to the USDA.
- 319.7.4 Statistical Process Capability – The statistical process capability of a boneless beef contractor to comply with microbial requirements will be based on the assessment of calculated process capability (CPU) derived from the individual combo test results representing one (1) 2,000 pound combo lot randomly selected by the ADL from every five (5) consecutive individual 2,000 pound combo lots produced each production day. In the event that a production day concludes with less than five (5) consecutive individual 2,000 pound combo lots, a randomly selected test result will be utilized from one of the remaining lots. The spreadsheets will be maintained so that process capability assessment on the twenty (20) lots can be determined as described within APPENDIX B. Test results involving all boneless beef offered for testing for AMS purchase programs will be monitored by AMS and the contractor, to determine individual lot acceptance and/or capability of their process according to APPENDIX B. Ineligible boneless beef contractor may re-enter the program under conditional status provided corrective actions have been submitted for review and approved, implemented and a satisfactory onsite **corrective action** audit by QAD has been conducted. Upon notification by the COTR that the plan has adequately addressed the issues that resulted in the

ineligible status determination, the boneless beef contractor may re-enter the program under conditional status.

319.7.5 Contractor's Responsibility - The contractor will provide results and process capability status (as applicable) involving each lot of boneless beef to be delivered to the USDA. Test results and process capability status (as applicable) for individual lots shall be provided to the QAD agent upon request. In the event a boneless beef contractor has been deemed ineligible, and wants to continue in the program, the ineligible boneless beef contractor may re-enter the program under conditional status provided corrective actions have been submitted for review and have been deemed approved, implemented and a satisfactory onsite [corrective action](#) audit by QAD has been conducted. Upon notification by the COTR that the plan has adequately addressed the issues that resulted in the ineligible status determination the boneless beef contractor may re-enter the program under conditional status.

319.7.6 [Supplier request to remove samples from AMS testing must be submitted and approved by COTR prior to sample removal from ADL testing.](#)

319.8 [Lots of boneless beef tested for indicator organisms only \(as described in 319.7\) cannot be diverted for use in ground beef products for delivery to USDA under FPPS-GB.](#)

320 STATE OF REFRIGERATION

321 Fresh-chilled boneless beef shall be maintained and delivered at a temperature not to exceed 40°F.

330 FAT LIMITATIONS

331 Requirements - The contractor will establish a target average of 15 percent fat of all boneless beef destined for all USDA destinations. The upper and lower specifications limits will be 18.0 and 12.0 percent fat respectively. Production lots with average fat results that are not within the upper and lower specification limits will not be shipped to USDA.

332 Process Capability -The processors capability (Cpk) value shall be one (1) or higher when the average results from twenty (20) consecutive production lots (which always will include the last production lot) are calculated.

333 Documentation - The contractor shall declare within their technical proposal:

333.1 Lot size, number of samples, selection and preparation procedures,

333.2 The laboratory and a test method,

- 333.3 Data management and storage of fat results,
- 333.4 Statistical Process Control (SPC) charting methods which will include a process capability report (histogram) that is capable of calculating a Cpk value (see Exhibit A).
- 334 Assessment by AMS - AMS reserves the right to:
- 334.1 Check production records of the recipient where the contractor's boneless beef is further processed;
- 334.2 Select and analyze samples at the further processor. The results may be used by the contracting officer as a "check" to determine if fat content is in compliance with the fat limitation requirements; and/or
- 334.3 Deem a contractor as unreliable for failure to comply with the above requirements.
- 340 PACKAGING AND PACKING**
- 341 The contractor's technical proposal and process will assure that all packaging, packing, closure, marking, and palletizing comply with the National Motor Freight Regulations and FSIS regulations and the requirements listed below. The contractor also must have procedures for verifying the net weight of shipping containers.
- 342 Packaging and Packing – The contractor shall bulk package the boneless beef within lined "combo bins" in such a manner to maintain the product in excellent condition. The combo bins of boneless beef shall be covered so that the container arrives at the destination intact.
- 343 Net Weight – The contractor shall have procedures that accurately determine the net weight of the boneless beef. Each filled combo bin shall weigh from 1850 to 2250 pounds. AMS reserves the right to perform net weight examinations at destination.
- 344 Marking of Containers – All shipping container markings shall include all information required by FSIS regulations and the following information:
- 344.1 The following statement: "Complies with FPPS-BB-2014 - Boneless Beef for Further Processing Into Fully Cooked Items":
- 344.2 A code number that will indicate traceability to production lot and date.
- 344.3 USDA Shield (at least 2 inches high).



- 344.4 Purchase Order Number.
- 344.5 Fat Declaration.
- 344.6 The appropriate material number listed in the table below for each of the items:

<u>Item</u>	<u>Material Number</u>
Boneless Beef Combo, Fresh	100155
Boneless Beef Combo, Grass Fed, Fresh	110091

Note: All labeling shall be illustrated in the Contractor’s technical proposal.

- 345 Total net weights per delivery unit - The delivery unit will be 40,000 pounds.
- 346 Sealing - All products must be delivered to AMS assigned destinations under seal with tamper proof, tamper resistant, serially numbered, high security seals that meet the American Society for Testing and Materials Standard (ASTM) F 1157-04 [and/or the International Organization for Standards \(ISO\) 17712-2010](#) as required under this Supplement. [Seals shall be \$\geq 1/8^{\text{th}}\$ inch diameter cable, high-security bolt, or equivalent.](#)

400 CONTROL OF NON-CONFORMING PRODUCT

401 The contractor must include a plan to assure that non-conforming product is not delivered under USDA contracts. The plan must address 1) control and segregation of non-conforming product, 2) removal of any USDA markings, and 3) disposition of non-conforming product, including vendor notification in writing to the COTR of final disposition (e.g., diverted to cooked product or destroyed).

500 QUALITY ASSURANCE

- 510 Warranty and Complaint Resolution
- 511 Warranty – The contractor will guarantee that the product complies with all specification requirements, technical proposal declarations, and provisions set forth in the program Supplement.

- 512 Complaint Resolution – Customer complaint resolution procedures will be included in the technical proposal. These procedures will include: a point of contact, investigation steps, intent to cooperate with AMS, and product replacement or monetary compensation. The procedures will be used to resolve product complaints from recipient agencies or AMS.
- 520 Checkloading – Invoice for payment must be supported by:
- 521 Recipient's signature on the bill of lading;
- 522 Consignee's receipt evidencing date shipped and received; or
- 523 Other commercial receipt evidencing delivery of the product.

APPENDIX A

DATA ENTRY AND PROCESS CAPABILITY VALUE

Data Entry

The ADL will record microbiological test results on spreadsheets and to have those spreadsheets readily available to AMS and its contractors/suppliers. Quantitative (plate count) results will be expressed as colony forming units (CFU) per gram or per ml reflecting the original sample measurement. Test results will be entered as a whole number (i.e., no decimal places, no preceding < (less than) symbol).

The ADL will provide the calculated process capability values (CPU, CI) in the spreadsheets so that the supplier’s process capability assessment can be determined, as described in APPENDIX B.

Process Capability Values – CPU or Cpk

The process capability value (CPU) is calculated by the ADL. CPU will be used for microbiological tests since these requirements only have an upper specification limit. Cpk will be used for fat testing requirements that have an upper and lower specification limit (see **Section 332**). The upper specification limits (USL) for microbiological requirements will be found in APPENDIX B. The calculations for CPU and Cpk are as follows:

<u>Calculation of process capability (CPU) with an upper specification limit only</u>	<u>Calculation of process capability (Cpk) with an upper and lower specification limit</u>
<p>Step 1. The first calculation will determine the Z-value (upper):</p>	<p>Step 1. The first set of calculations will determine the smaller value of the two Z-values (upper or lower):</p>
<p>Z-value (upper) = (USL – Process Average) / Standard Deviation</p>	<p>Z-value (upper) = (USL – Process Average) / Standard Deviation</p>
<p>Step 2. The Z-value divided by 3 will calculate the CPU:</p>	<p>Z-value (lower) = (Process Average – LSL) / Standard Deviation</p>
<p>CPU = Z-value (upper) / 3</p>	<p>Step 2. The smaller of the two Z-values (upper or lower) divided by 3 will calculate the Cpk.</p>
	<p>CPU = Z-value (smaller value of the upper or lower) / 3</p>

APPENDIX B

AMS BONELESS BEEF PROCESS REQUIREMENTS FLOW CHART

Quality Control Program – Prior to bidding on boneless beef contracts with the USDA, the documented quality control program as described within the approved technical proposal must have received a satisfactory onsite capability assessment by QAD. AMS will audit and monitor the program. The quality control program must specifically address management of microbial data to comply with the AMS Process Requirements Flow Chart and the following descriptions.

Process Assessment Status - A process assessment involves sampling and testing of 20 consecutive lots (which will include the last recorded result as defined within APPENDIX C) of boneless beef (see **Section 319.7.4**) destined for USDA contracts for the microbes listed within the table below.

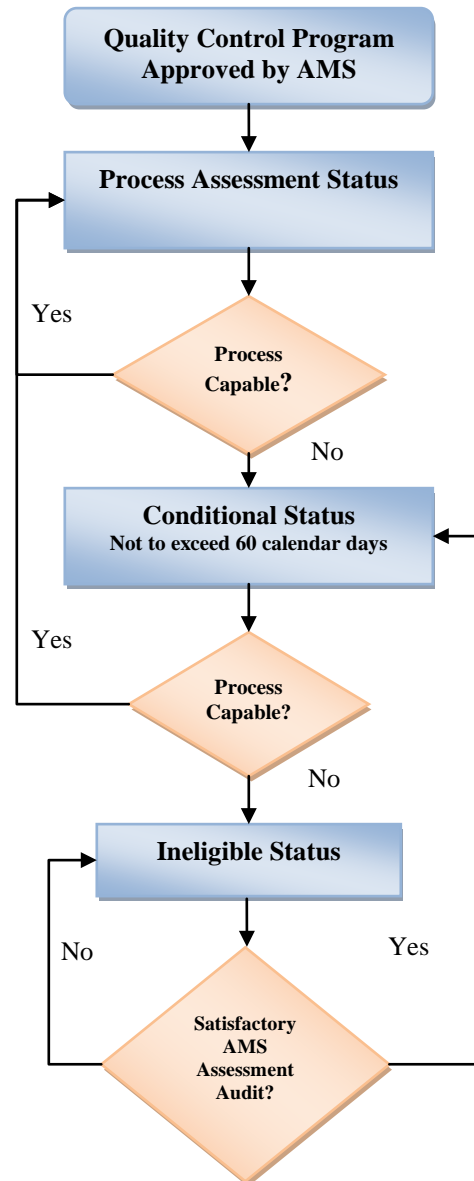
Process Capable? – Flow chart decision step that involves test results for up to 20 consecutive lots (which will include the last recorded result) recorded in spreadsheets, where the process capability (CPU or CI) value is calculated (See APPENDIX A) for evaluation. A process that is not capable shall be declared to the COTR immediately when results are known and will result in switching from process assessment status to conditional status or switching from conditional status to ineligible status when:

- The CPU values do not meet the levels specified in the table below;
- Two results exceed any of the critical limits in the table below; * or
- After 2 or more results, the CPU value is negative.*

*Immediate action will be taken prior to completion of 20 lots.

Conditional Status –To regain process capable status, the boneless beef contractor must notify the COTR that the process is not capable, and then have 20 consecutive results that meet the ‘**Process Capable**’ criteria within 60 calendar days or in accordance with a production schedule pre-approved by the COTR. Change in status begins after a cause and effect analysis has been performed and corrective actions have been implemented. The boneless beef contractor may also declare itself ineligible at any time.

AMS PROCESS REQUIREMENTS FLOW CHART



Ineligible Supplier/Contractor – An ineligible boneless beef contractor will not be allowed to supply boneless beef to USDA until a cause and effect analysis has been performed and corrective actions have been submitted to AMS for review and approved, implemented and a satisfactory AMS assessment audit has been completed. Once satisfactorily becoming eligible, subsequent production will be under **Conditional Status**. The AMS COTR reserves the right to declare a boneless beef contractor ineligible at any time.

AMS MICROBIAL REQUIREMENTS FOR BONELESS BEEF			
Microbial Test	USL (cfu)	Critical Limits (cfu)	CPU or CI Value
Standard Plate Count	50,000 / gram	100,000 / gram	CPU \geq 1
Total Coliforms	100 / gram	1,000 / gram	CPU \geq 1
<i>E. coli</i>	100 / gram	500 / gram	CPU \geq 1

APPENDIX C

GLOSSARY OF TERMS

Cause and Effect Diagrams – A cause and effect analysis is used to identify the cause or source of non-conformities. It categorizes the source as derived from impact on a process presented by Human, Machinery, Material, Methods, Environment, and Measurement (Test).

The Cause and Effect Diagram will assist in evaluating a process and assigning the appropriate control point (see Figure 1).

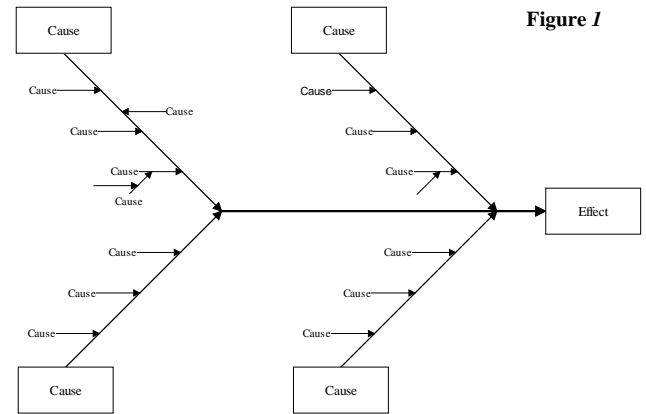


Figure 1

"Cleanup to cleanup" - Part of a HACCP program that the establishment has in place to support statistically distinguishing one portion of production from another. Production destined for USDA contracts is to be commenced on clean equipment. However, "cleanup to cleanup" without other supporting documentation may not be adequate to statistically distinguish one portion of production from another. If a sample analysis yields a positive result, any product produced in the same time frame with the same process or equipment is suspect, unless an intervention occurred that would indicate a change in the status of the process/equipment.

Control Charts – A control chart is a run chart with statistically derived upper and lower control limits (ucl and lcl). The control chart demonstrates if a process is in statistical control. When properly designed, control charts provide an early warning of problems allowing for adjustments to be made before production of non-conforming products. Microbial test results may be plotted on control charts for individual measurements and fat test results may be plotted on control charts featuring average and range of the fat test results (See Figure 2).

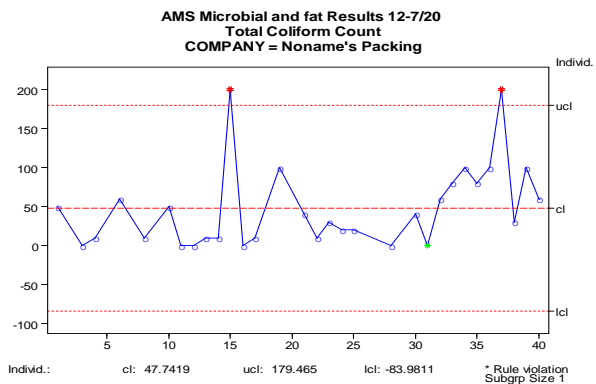


Figure 2

Cpk – Process Capability Value (Cpk) is a capability analysis index used to determine if a process can meet specification limits. A Cpk value of 1 indicates that the process is producing at least 99.73% within the specification limit. Cpk values of 1 for many organizations have become the minimum requirement. However, the larger the Cpk values the better. Cpk differs from other process capability analyses since it considers the process average along with the distribution of test results. Since there is no lower specification limit for USDA microbial requirements, the calculation for Cpk will not involve relating the process average with a lower specification limit.

CPU - Process Capability Value (CPU) is the same as Cpk except that there is no lower specification limit. The process performance index is correctly known as a Centered Process Capability Upper Specification Limit only (CPU) (See Figure 3).

Excellent Condition - All product must be in excellent condition (e.g., exposed lean and fat surfaces shall be of a color and bloom normally associated with the class, grade, and cut of meat and typical of meat which has been properly stored and handled). Cut surfaces and naturally exposed lean surfaces shall show no more than slight darkening or discoloration due to dehydration, aging, and/or microbial activity. The fat shall show no more than very slight discoloration due to oxidation or microbial activity. No odors foreign to fresh meat shall be present. Changes in color and odors characteristically associated with vacuum packaged meat in excellent condition shall be acceptable. Also, product shall show no evidence of mishandling. Beef must be maintained in excellent condition through processing, storage, and transit.

Flow Charts – Flow charts depict all of the steps of a process. Standard symbols are used to identify the start, finish, processing steps and decision steps. It can be used to simplify a complex process so that it can be analyzed (Figure 4).

Histograms – The histogram shows a pictorial representation of the frequency of distribution of microbial test results over time. Sometimes referred to as process capability charts, histograms compare the distribution of the test results with AMS specification requirements. Use histograms along with control charts to better understand process capability (See Figure 3).

Figure 3

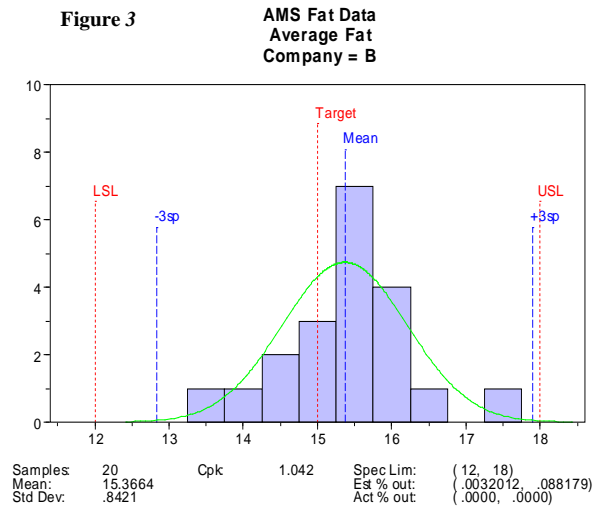
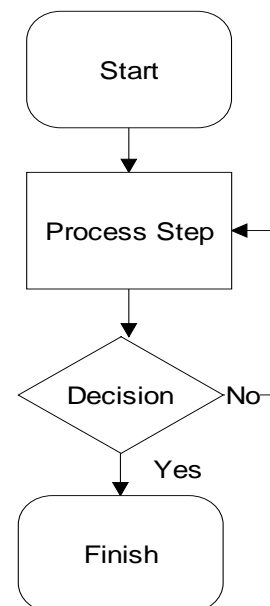


Figure 4



Pareto Diagrams – The Pareto diagram ranks the importance of different non-conformities. Typically, non-conformities are measured against frequency of occurrence. The Pareto analysis is helpful in identifying and justifying which problems will need to be solved first (see Figure 5).

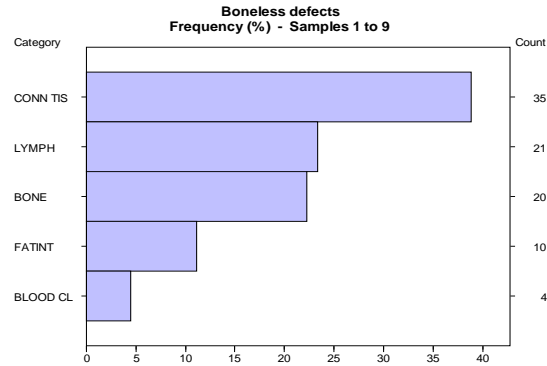
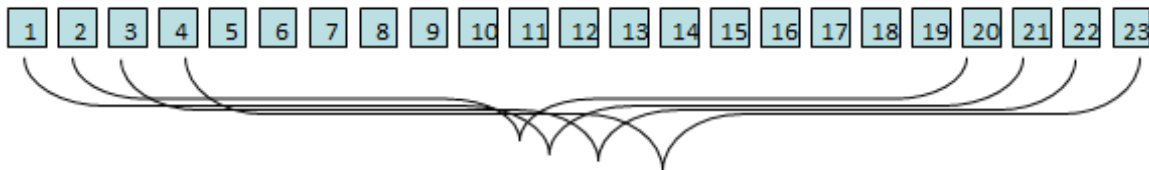


Figure 5

Process – For the purpose of this specification, a single process involves the input of a raw material on a production line with a value added activity resulting in a output that can be further processed or meet a customer’s need. A complex process involves output being another processes input. The production of ground beef is a complex process.

Process Capability Assessment on 20 consecutive lots – For the purpose of this specification, process capability assessments are conducted on data results from each lot for fat and microbial requirements. A process assessment involves sampling and testing of 20 consecutive lots (which always includes the last recorded result). Information from each lot will be evaluated with information from the preceding 19 lots (i.e., while in process assessment of the first 20 lots, the process was found to be capable, then assessment will continue on lot numbers 2-21). This has often been referred to as a ‘Rolling 20’. This assessment takes into account process variations that may be attributed to product, management, sources, and time (see Figure 6).

Figure 6



Random Sampling – A process of selecting a sample from a lot whereby each unit in the lot has an equal chance of being selected and is representative of the lot’s production.

Statistical Process Control (SPC) – SPC is the primary analysis tool of quality improvement. The objective of any quality improvement strategy is to identify and reduce the amount of variation. SPC analyzes the variation in a process and is the applied science that assists suppliers to collect, organize and interpret microbial and fat test results on processing of ground beef destined for USDA.

SPC provides tools to help measure, identify, and eliminate variation from customer requirements (see Table 1).

Table 1

Tools for Statistical Process Control	
Flow Charts	Scatter Diagrams
Pareto Diagrams	Run Charts
Cause and Effect Diagrams	Control Charts
Histograms	Capability Assessment

Upper and lower control limits (ucl and lcl) – Control limits are statistical calculations of the distribution of test results. Upper and lower control limits represent +/- 3 standard deviations of the process results. Data plotted outside the limits represent special causes of variation. A process may be considered “out of statistical control” when results are outside these limits. Upper and lower control limits are not to be confused with specification limits. A supplier wishing to be an eligible participant in the Boneless Beef Program shall have a process that is capable of producing within the specification limits (See figure 2).

Upper and lower specification limits (USL and LSL) – Normally, the customer sets the specification limits. The objective of the Boneless Beef Purchase Program is to procure from boneless beef processors that are statistically capable of meeting the upper specification limits specified within the [FPPS-BB](#). The specification limits reflect customer needs (See Figure 3).