Module 15. Records for Product Protection

Thermal Processing for Meat and Poultry Products Training
Product protection for thermally processed foods involves

- Thermal process records
- Critical factor control records
- Closure evaluation records
Recordkeeping requirements are throughout the canned food regulations.

The main sections dealing with recordkeeping, reviewing, and maintenance requirements are in sections 431.7 and 431.8.
Reasons for Keeping Records

1. Records demonstrate Compliance with regulations
   • Management is responsible for compliance with regulations
   • Civil and criminal penalties can be assessed against responsible parties
Reasons for Keeping Records

2. Records provide assurance of proper and safe application of thermal processes
   - They are the only permanent reference
   - They trace the history of the product

3. Careful review of records can give indication of problem
   - Responsible individual can take corrective action before the problem occurs
Records and Responsibilities

- Records that accurately reflect operating conditions during production must be kept.
- Data **must** be recorded by the designated person at the specific time the operation/condition occurs.
- Records must be reviewed by responsible establishment management.
Automatic recordkeeping may be integrated with thermal processing control systems.

Establishments should notify FSIS prior to use.

Automatic recordkeeping systems must be validated in accordance with 417.4(a)(1).
Record Retention

- Processing and container closure evaluation records **must** be retained for 3 years.
- FSIS permits storage at an alternate site during the last 2 years of the retention period.
The establishment is required to make records required by the regulations available upon request of the CSI.

Must allow inspection of records which verify:

- Process adequacy
- Container closure integrity
- Container coding system
Establishment must provide

1. Process schedule development records
2. Process schedules
3. Critical factors records
4. Time/temperature recording charts
5. Processing (retort or aseptic system) records
Establishment **must** provide
6. Container closure specifications/guidelines
7. Container closure/integrity records
8. Retort operation documentation
9. MIG calibration/accuracy records
10. Yearly retort maintenance records
11. Information on recycled or reused container cooling water
Establishment **must** provide

12. A process deviation log
13. Coding for each container
14. Initial distribution records
15. Product incubation results
16. A recall procedure
■ FSIS requires:
  • product, day, and year
  • establishment number on the label or container
If the establishment chooses to incubate product samples, they must maintain records for each incubation test, including:

- the product name,
- the container size and code,
- the number of containers incubated,
- in and out dates for incubation samples,
- incubation results, and
- copies of incubator temperature recorder.
Recalls

- The recall procedure must recall product to the consumer level.
- The establishment must include a plan to identify, collect, and control the recalled product.
Most operations must be kept within specific tolerances.

Conditions may be monitored through statistical quality control (SQC) charts.

Tabulated figures are difficult to analyze and time consuming.

Converting figures to points on a SQC chart makes analysis easier.
Statistical Quality Control Charts

- Indicate target and control limits
- Present a graphical picture
- A trend in data may forewarn of "out of control" situation
- Typically include:
  - Net weights,
  - Fill weights, and
  - Head space
Example of a Control Chart

![Control Chart Diagram]
Limitations of SQC Control Charts

SQC charts are

- not appropriate for monitoring batch operation critical factors, e.g., pH, product consistency
- not appropriate for retort temperature/time
The written retort/aseptic system operator records, critical factor records, and recording charts are the heart of process control program.

- They must be complete, accurate, and retained.

Recording charts **must** be identified to correlate with the written retort/aseptic system operator record.
- Measurements are usually kept on separate forms.
- Measurements are taken according to and at the frequency listed in the written procedure.
  - Measurements should be made at intervals sufficient to ensure that the CF remains within the limit in the process schedule.
The written records must identify:

- production date,
- product name and style,
- container size and code,
- process schedule including the minimum IT,
- additional information depending on the thermal processing system

Must include accurate temperature readings of the MIG thermometer and recording chart.
# DAILY PROCESS RECORD FORM FOR STILL RETORTS

**COMPANY NAME** __________________  **PLANT LOCATION** __________________  **DATE** __________

<table>
<thead>
<tr>
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</table>

**Note:** Allow headings for critical factors, such as maximum drained weight and minimum net weight etc. where applicable to scheduled process.

Signed (or initialed) by:
Operator or Designated Person: ______________________
Reviewed by ______________________  Date __________
**Computer-Generated Record Example**

**Computer generates data to be printed later.**

**Operator inputs limited data through key pad, touch screen, or other method.**

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**Computer-Generated Record Example**

**Tuesday, Feb 06, 2001**

**Vent 5 minutes to 230 deg F**

**ABC Bean Co. Steam Retort**

Log into Retort Control on 2-6-01 at 7:15:02

**REPORT FOR RETORT 1**

<table>
<thead>
<tr>
<th>RT</th>
<th>Cycle</th>
<th>Cook Date</th>
<th>Prod Code</th>
<th># Containers</th>
<th>IT</th>
<th>IT time</th>
<th>Oper ID</th>
<th>Temp</th>
<th>Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>2-06-01</td>
<td>Bean Broth 261A32</td>
<td>200</td>
<td>120</td>
<td>07:32:02</td>
<td>501</td>
<td>90</td>
<td>0</td>
</tr>
</tbody>
</table>

**ALARM**

07:35:00 ABORT VENT FAILURE

**OPERATORS NOTE:** Vent failure due to stuck steam valve on main steam supply line. Valve repaired at 7:40 am. Product was left in retort; process was started over at 7:50 am.

*Computer generates data to be printed later.*

*Operator inputs limited data through key pad, touch screen, or other method.*
The recording chart must identify:

- production date,
- container code,
- processing vessel number or other designation, and
- any other information needed to correlate the chart to the retort/aseptic system operator log.
Circular Recorder Chart
Strip Chart Recorder
- Operator must sign or initial processing records
- Management representative must review processing records, including critical factor records, within 1 working day of the actual process and date and sign or initial them.
Container Closure Inspection

- Container integrity is critical to maintaining commercial sterility.
- Records are proof that required examinations were accomplished.
Container closure records must include:
- container code,
- date and time of closure examination,
- measurements obtained, and
- any corrective actions taken
The establishment is required to make visual and teardown examinations of can seams.

- Conduct visual check on one container per closing machine head
<table>
<thead>
<tr>
<th>TIME</th>
<th>HEAD #</th>
<th>ACCEPT</th>
<th>REJECT</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>1</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:30 AM</td>
<td>2</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:05 AM</td>
<td>3</td>
<td></td>
<td>✔</td>
<td>SHARP SEAM NOTIFIED MAINTENANCE</td>
</tr>
<tr>
<td>10:10 AM</td>
<td>3</td>
<td>✔</td>
<td></td>
<td>ADJUSTED 2ND OP ROLLER</td>
</tr>
<tr>
<td>10:30</td>
<td>1</td>
<td>✔</td>
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</tbody>
</table>

Equipment adjustments should be recorded.
Seam Teardown Examination

- Destructive test that permits internal observation of seams
- Interval between observations should not exceed 4 hours
**Example of Seam Evaluation Records**

### Recording Double Seam Measurements

<table>
<thead>
<tr>
<th>Plant</th>
<th>Date</th>
</tr>
</thead>
</table>

**Can Supplier**

<table>
<thead>
<tr>
<th>Time</th>
<th>Spindle No.</th>
<th>Width</th>
<th>Thickness</th>
<th>Countersink Depth</th>
<th>Body Hook Length</th>
<th>Cover Hook Length</th>
<th>Overlap</th>
<th>Tightness Rating</th>
<th>Pressure Ridge</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Max.</td>
<td>Max.</td>
<td>Min.</td>
<td>Max.</td>
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**RECOMMENDED**

- Signed by (Container Closure Inspt)
- Reviewed by (Management Rep)
- Date

**Legend**

- N - No
- G - Good
- S - Severe

**Note**

Under remarks indicate all abnormal seam conditions which are observed such as Jumped Seams, Cut Overs, Cut Seams, Droops, Lips, etc. When adjustments are made, duplicate measurements of seam components should be recorded for the seaming station involved. Duplicate measurements should be shown in a color different from the original recording. Indicate under remarks when measurements are recorded after an adjustment has been made to the seaming station.
Example of Remarks Written in Records

<table>
<thead>
<tr>
<th>Max Ave</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>127/126</td>
<td></td>
</tr>
<tr>
<td>125/124</td>
<td>Excessive countersin'</td>
</tr>
<tr>
<td>135/133</td>
<td>Short overlap</td>
</tr>
<tr>
<td>126/125</td>
<td>Adjusted pressures</td>
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<tr>
<td>124/133</td>
<td>Resample head #3</td>
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</tbody>
</table>
Example of Double Seam Inspection Records
Glass Closure Evaluation Records

- Columnar or SQC format
- Visual and destructive examinations
### Example of Capper Evaluation Records

#### PACKAGE EVALUATION RECORD – AT CAPPER

<table>
<thead>
<tr>
<th>Time</th>
<th>Type Capper</th>
<th>Product Water Vac. and IT</th>
<th>Head Space</th>
<th>Cap Tilt</th>
<th>Pull Up</th>
<th>Sec.</th>
<th>Closure Impressions</th>
<th>Remarks</th>
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</table>

Signed by  (Container Closure Inspt.)

Reviewed by  (Management Rep.)
Example of Container Closure Records

<table>
<thead>
<tr>
<th>Item</th>
<th>Capacity</th>
<th>Cap Size &amp; Code</th>
<th>Product</th>
<th>Glass Mfg</th>
</tr>
</thead>
<tbody>
<tr>
<td>VACUUM (in/Hg) (3 readings)</td>
<td></td>
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<tr>
<td>TEMPERATURE OF PRODUCT</td>
<td></td>
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<tr>
<td>HEADSPACE (1/16&quot;) (avg. 3)</td>
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<tr>
<td>SECURITY (1.0&quot;) (read 3)</td>
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<tr>
<td>COMMENTS</td>
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<tr>
<td>Q.C. OPERATOR</td>
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</table>

THERMAL PROCESSING TRAINING

Signed by Container Closure Inspector
Reviewed by

Security readings outside dotted line specification notify mechanic. Outside solid line specification notify supervisor.
Container Closure Record Responsibility

- Signed or initialled by closure technician
- Management representative must review closure records within 1 working day of the actual production and date and sign or initial them
Written Records

- Use ink or permanent marker
- Recording errors:
  - Lined out
  - Correct entry is made
  - Initialled by person correcting the entry
Computerized or automated recordkeeping systems can be used for thermal processing, critical factor monitoring and container integrity testing provided they meet the requirements in FSIS regulations.

Automated recordkeeping systems for retorts and aseptic systems are usually integrated with thermal processing control systems.
FSIS has encouraged the industry to work cooperatively in the development of automated recordkeeping systems.

Computerized record systems must be validated.
Questions