Page B. Inspection of Butter Operations. (Form DA - 151 - 2)

Cream Processing

Item B1—Room Construction (58.126, 58.146d).

See the guidelines for Item A1—Room Construction.

Item B2—Lighting & Ventilation (58.126d, e).

See the guidelines for Item A2—Lighting & Ventilation.

Item B3—Pumps, Pipelines, & Valves (58.128, 58.146a).

See the guidelines for Items A3—Pumps, Pipelines, & Valves.

Item B4—Separator (58.128e).

A. Enclosed type separators.

Check the bowl, discs, disc cover and all miscellaneous parts of the separator for condition and cleanliness. Also, dismantle and check the inlet and outlet fittings, including those underneath the machine on bottom feed models. Stainless steel or carbon steel bowls and other product contact parts are unsatisfactory when pitted or not properly tinned. In such cases, recommend replacing the bowl and other parts with stainless steel, or retinning.

B. Clean-in-place enclosed type separators.

New separators should meet the *3-A Sanitary Standards for Centrifugal Separators and Clarifiers, Number 21-*. This standard became effective November 24, 2002. Separators built before this date are “grandfathered” and are free to move from plant to plant.

When the separator is a “CIP” type, the CIP cleaning regimen shall be operated by an automatic cleaning programmer following the recommendations of the separator manufacturer. It should be standard plant practice to disassemble CIP separators for routine inspection at regular intervals recommended by the manufacturer. Ask if this is being done and check plant

record-keeping in this regard. When the plant does not have a routine inspection program for CIP separators, recommend that one be initiated.

Inspecting CIP type separators at each survey is not necessary if the previous survey has shown satisfactory cleaning performance. Be sure to show on the report when CIP separators are inspected and what was observed. Also show which separator was inspected if the plant has several units. This information will be helpful to the inspector handling the subsequent survey in deciding whether or not to have a unit dismantled.

When these separators are dismantled for inspection, check for pitting or scoring of the skim and cream pumps. Also check for proper cleaning of the parts above the bowl and especially the bottom disks of the stack. When cleaning is found unsatisfactory, recommend that the plant open and inspect the unit frequently until they establish a satisfactory cleaning regimen. If the cleaning problem cannot be remedied promptly, management should obtain assistance from the separator manufacturer. During the next USDA survey dismantle and inspect the separator to verify that effective cleaning is being accomplished.

Most modern high efficiency, automatic self cleaning clarifiers and separators are not designed or constructed to permit the collection and recycling of the sludge ("shoot") for human food. The areas of the machines that contact the sludge during the desludging operation are not designed or constructed as sanitary product contact surfaces. Some cream separators and centrifugal fine savers are designed to reclaim the heavy phase for use in human food.

When self cleaning clarifiers or separators are encountered during routine plant inspections or cursory inspections, determine how the plant is handling the "shoot" material. If the material is being collected and recycled back into the human food process from unsanitary surfaces, recommend that the practice be discontinued immediately and that the material be handled as waste or animal feed. Failure of the plant to discontinue the practice will result in the INELIGIBLE status assignment for all products into which the recycled sludge is introduced.

Item B5—HTST Sealed _____ at _____ sec. _____° F (58.128, 58.334).

Use Item B6—HTST or Vat Pasteurizer to record any deficiencies noted concerning sanitation or fabrication.

Minimum pasteurization for HTST systems is 161° F for not less than 15 seconds for fluid milk and 166° F for not less than 15 seconds for cream. Any time-temperature relationship below these minimums shall be considered a category A deficiency. Cream for butter making requires a minimum of 185° F for not less than 15 seconds (when the vat method is used, cream for butter making shall be pasteurized at a temperature of not less than 165° F and held continuously for not less than 30 minutes). Longer times or higher temperatures can be used, but any time-temperature relationship above the minimum for cream but below the requirements for cream for butter making shall be a category B deficiency. If unsatisfactory, recommend correction and show what is wrong.

All HTST units shall be timed and sealed by an authorized agency. Review the certifying agency report and show the sealed hold time in forward flow and the "cut-out" divert temperature on the survey report for this item. Do not routinely report diverted flow hold time or "cut-in" temperature.

The HTST system should be timed and sealed semiannually to assure continued compliance with the *3-A Accepted Practices for Sanitary Construction, Installation, Testing, and Operation of High-Temperature Short-Time and Higher-Heat Shorter-Time Pasteurizer Systems, Number 603-*. When the HTST inspection report is dated more than six months previous, show a recommendation to have the official agency reinspect, time, and reseal the unit. Plant management shall also arrange such reinspection whenever there is alteration or replacement of HTST components that may affect the required temperature or hold time.

When reviewing an HTST system during a plant survey, several situations may arise which can have an impact on pasteurization and status of the plant. Listed below are several example situations and the appropriate follow-up.

A. Report is Dated More Than 6 Months Old, All Seals are Present and Intact.

Discuss the situation with plant management and show a recommendation on the survey report to have the official agency conduct the necessary equipment checks, time, and reseal the HTST unit. If the date of the last report is more than six months but less than one year old assign the deficiency to category E. If the report is dated more than one year old assign the deficiency to category D.

Since coordination and scheduling of the authorized regulatory authority is outside the control of the plant, the first occurrence of this situation would not by itself adversely affect plant status. However, since our plant survey program deals directly with the dairy plant and not the State Regulatory Authority, repeated occurrences will reflect adversely on plant status. If this situation persists, the National Field Director may reduce plant status to encourage compliance with the Dairy Grading Branch requirement.

B. A Regulatory Seal on The HTST System is Broken.

During the day-to-day operation of a dairy plant, situations may occur (such as a pump breakdown or a recorder failure) which require the breaking of a regulatory seal to continue operation. When a broken regulatory seal is noted during a plant survey, it shall be considered a serious deficiency because the safeguards that assure pasteurization may have been altered and complete pasteurization can no longer be assumed. If this situation occurs, the INELIGIBLE status applies unless the dairy plant management has taken the following steps.

Plant follow-up when a seal is broken.

1. Dairy plant management shall have immediately contacted the State Regulatory Authority (at the time the seal was broken, not the day of the survey) and requested the HTST system be reinspected, timed and resealed as soon as possible.

2. Following the above contact with the State (at the time the seal was broken, not the day of the survey), the dairy plant management shall telephone or fax the National Field Office to inform them that a regulatory seal has been broken and that the State Regulatory Authority has been contacted. They should also indicate the date scheduled for the HTST system component repair or replacement and, if known, the date scheduled for HTST system review.

When the HTST system has been inspected, timed, and resealed, plant management shall telephone or fax the National Field Office and inform them of HTST compliance. This discussion is to be confirmed with a follow-up letter or fax and a copy of the sealing report.

When they satisfy these parameters, the broken or missing seal may not by itself adversely affect plant status. However, if the authorized regulatory authority is unresponsive to the plant request and reinspection is not done in a timely manner, the National Field Director may assign the INELIGIBLE status.

C. Circumvention of HTST System Controls or Components.

When circumvention or failure of HTST system controls or components is noted (such as mixing raw and pasteurized milk, improper operation or bypass of the flow diversion device, removal or obstruction of a vacuum breaker, etc.) which effect the safety factors designed into the system or which circumvent the time-temperature relationship, the INELIGIBLE status shall apply (category A deficiency).

Item B6—HTST or Vat Pasteurizer (58.128, 58.334).

Cross out the nonapplicable part of this heading on the report to show the kind of equipment being inspected.

Examples:

B6. ~~HTST or~~ Vat Pasteurizer
or
B6. HTST ~~or Vat~~ Pasteurizer

Also, make recommendations under this item concerning any sanitation or condition deficiencies noted during inspection of the HTST or vat pasteurizer.

High–Temperature Short–Time Pasteurization (HTST).

The applicable 3-A document for HTST pasteurizers is *3-A Accepted Practices for Sanitary Construction, Installation, Testing, and Operation of High-Temperature Short-Time and Higher-Heat Shorter-Time Pasteurizer Systems, Number 603- .*

When an initial survey reveals an unsealed HTST installation that obviously does not comply with the 3-A Accepted Practice, recommend the INELIGIBLE status (category A deficiency). Also,

recommend timing and sealing by an authorized agency and in parentheses after the recommendation, show what parts of the system are missing or do not comply.

It is the responsibility of the regulatory agency to check for proper “3-A” engineering of the HTST system. In view of this, it is not necessary for the USDA inspector to conduct a detailed design evaluation to check for 3-A compliance. However, make a cursory check for deficiencies that might have developed since the official sealing date, such as an improper slope on the hold tube, divert line not free-draining, missing shut-off or vacuum breaker valves, wrong timing pump in use, etc. If such deficiencies are noted on officially sealed units, make appropriate recommendations and show supporting information on the report. The National Field Director will consider the possible effect on plant status and when necessary follow-up with management or the responsible regulatory agency about the discrepancies.

If the plant has excess cream intended for shipping and uses the HTST unit for pasteurization at a temperature lower than required for cream for butter making, either a dual controller-recorder will be necessary or the plant can add a dual diversion point control to their present unit as provided by the 3-A Accepted Practice. This will allow the plant to pasteurize two products with the same HTST unit by use of a manual operating switch using two different divert temperatures. In this case, the control switch is set at the higher divert temperature for the cream for butter and manually changed to the lower divert setting when processing shipping cream. The HTST operator should notate each chart to show clearly what product was run to correspond with the divert point shown by the pen arm. This information, when coupled with the operators notation about the kind of cream being pasteurized gives additional assurance that the proper divert setting was used. (For instance, “Cream for butter making, 185° F divert, 4-10 PM 5/8/96 LTR.”) Another alternative is to install separate recorder-controllers, each set and sealed to divert at the proper temperature.

A raw product constant level tank is <u>required</u> as “Component Equipment” when product-to-product heat regeneration is used. HTST systems that do not have regenerators are also often supplied with a constant level tank although it is optional. The fabrication criteria are the *3-A Sanitary Standards for Uninsulated Tanks for Milk and Milk Products, Number 32- .* However, do <u>not</u> expect the 3-A symbol to be on tanks in older existing HTST systems (the 3-A Sanitary Standards for Uninsulated tanks became effective February 2, 1975).

Here are a few special points to keep in mind concerning review of HTST constant level tanks:

1. Provision for use as a constant level tank is made in the Scope of 3-A Sanitary Standards for Uninsulated Tanks.

2. Removable covers for open top type tanks shall have downward flanges not less than ⅜-inch long.

3. The edges of all openings in the top of the tank shall extend upward at least ⅜ inch.

4. The tank bottom must be pitched at least ¼ inch per foot toward the outlet.

The 3-A Accepted Practice for HTST Systems also includes some requirements about raw product constant level tanks. These requirements are all consistent with those in 3-A Sanitary Standards for Uninsulated Tanks, however, several points merit further mention:

1. The Accepted Practice requires "an automatic device of sanitary construction to control the raw product level." This may be a probe type controller, a float controlled valve, a diaphragm type sensor, etc. Some constant level tanks are equipped to provide two different levels, one for raw product and one for cleaning solutions.

2. The accepted practice requires that "The tank shall be fitted with a removable cover . . ." This should not be construed to mean that only open top type tanks are permitted because 3-A Sanitary Standards for Uninsulated Tanks clearly provides for both open top and closed type tanks. The closed type tanks, with a side manhole, are frequently used on pasteurizer systems for evaporators and are sometimes put inside the support pedestal for a tube chest or vapor separator.

3. When regeneration is employed the maximum overflow level of the constant level tank shall be lower than the bottom of the regenerator.

4. Connections for the divert line, the leak detect line, and the recycle line (if used) must be fabricated to prevent the back flow of raw milk into the pasteurized pipelines. This is usually accomplished with an air gap of at least two times the diameter of the largest pipe between these inlets and the maximum flood level of the tank

Follow the guidelines for Item A3—Pumps, Pipelines, & Valves when inspecting the piping, holding tube, timing pump, and valves associated with the pasteurizer. Dismantle the timing pump to check sanitation and condition of the seals and impeller. Open and inspect the heat exchange surfaces, try to arrange for inspection of the final heater during each survey because the temperature differential between product and heating medium is usually greater and can cause more burn-on and cleaning problems (refer to Item A27—Product Cooler for guidelines on inspection of heat exchangers). When unsatisfactory sanitation is found and the plant is using a clean-in-place procedure, recommend that the unit be opened daily for inspection and further hand cleaning until they have established an adequate CIP cleaning procedure. Inspect the interior of the constant level tank, float or level sensor, and underside of the lids (if used).

The old style single-stem Taylor flow diversion valve shall be completely dismantled daily for hand cleaning. Most new flow diversion valves are designed for effective cleaning in-place by a special cleaning cycle programmer that is an integral part of the flow diversion valve system. A sanitation check should, however, be made occasionally to establish a satisfactory history of cleaning performance.

The holding tube shall have an upward slop of not less than ¼-inch per foot. Reducers or expanders on the hold tube must be installed to maintain the flow of all product in an upward direction. If the hold tube has removable fittings, remove at least one and inspect the tube. If it is welded in place, remove a fitting at the inlet or outlet and inspect that portion of the tube. If the hold tube is to be cleaned in place, it shall have welded joints or properly designed CIP

fittings and gaskets (threaded fittings with bevel seats require daily dismantling and hand cleaning and should be inspected each survey to check sanitation).

When a vacuumizer is used in the system directly following pasteurization, a vacuum breaker and automatic shut-off valve are required in the line to the vacuumizer to prevent negative pressure on the flow diversion valve during diverted flow. When the flow diversion valve is the double-valve type, the vacuum breaker is not required if the leak detector port is open to atmosphere. However, when this port is piped back to the constant level tank, the separate vacuum breaker is required between the flow diversion valve and the automatic shut-off valve. Most installations have the leak detector port piped back to the tank to avoid losing product to the floor during startup.

If the product flow from the vacuumizer goes to an HTST regenerative section, another automatic shut-off valve and vacuum breaker are necessary, in that order, in the product line downstream from the vacuumizer. The purpose is to prevent interference with the required pressure relationships in the regenerative section of the HTST unit. If product from the vacuumizer is cooled by means other than a regenerator, the shut-off and vacuum breaker valves are not required after the vacuumizer.

These requirements for automatic shut-off valves and vacuum breakers are outlined in §58.128p and in the 3-A Accepted Practices for HTST Systems. Deficiencies noted concerning the vacuumizer should be listed under Item B7—Vacuumizer.

If the HTST equipment is in operation during the survey, check that the recorder pen arm is adjusted to correspond with the indicating thermometer. Also, check to see that proper charts are being used. Review the company file of recording charts. Also review the charts made during the cleanup of the unit to assure that proper CIP cleaning procedures are followed daily.

The charts should be routinely marked to show:

1. date,

2. plant identification,

3. notation of the indicating thermometer at a particular referenced reading point on the recording chart early in the production cycle,

4. name and amount of product being pasteurized,

5. product temperature at cut-in and cut-out, noted at the beginning of the production cycle,

6. record of the period in which flow diversion valve is in forward flow position (a periphery pen arm record),

7. the signature or initials of the operator.

If the pasteurizer has a positive pump serving as the timing pump, inspect it per guidelines for Item A3—Pumps, Pipelines, & Valves. A positive displacement type pump, or an equally effective timing device, must control product flow through a conventional HTST pasteurizer (see the 3-A Accepted Practices for HTST Pasteurizers). Several alternate timing devices have been approved.

A. "Metro–Flo" unit manufactured by Mojonnier Bros. Company.

This device came on the market about 1965. The principal of operation is to provide a fixed "head" or fluid level over an adjustable orifice, which allows gravity flow to a subsequent centrifugal pump. The fixed head is accomplished with two Pyrex bowls mounted one atop the other and each equipped with sensitive level controls. The adjustable orifice is set and sealed by the official agency to yield the required pasteurizer hold time. The Metro–Flo unit must also have an integral "flow stop" override mechanism that assures adequate fluid hold time during all possible conditions, including erratic inflow at start-up and shutdown.

The Metro–Flo unit is mechanically cleaned. Dismantling them for inspection is not necessary as the interior product contact surfaces can be seen clearly through the Pyrex glass.

In the dairy industry, most Metro–Flo units are installed in pasteurizer installations at evaporators. They are not restricted to this application. However, the system has not been proven and accepted for use with products more viscous than milk.

B. Magnetic Flow Meter Controller (Mag Flow).

These systems use a magnetic flow meter in place of the timing pump. The flow meter controls either a flow control valve or a variable speed centrifugal pump. To ensure constant flow through the meter it is usually installed in a vertical position, with the direction of flow from the bottom to the top. In addition, at least ten pipe diameters of straight pipe both upstream and downstream of the meter are require (i.e., 25 inches for a 2½-inch pipeline).

Inspecting the product contact surfaces of the magnetic flow meter, flow control valve (if used), and the centrifugal pump per Item A3—Pumps, Pipelines, & Valves.

Higher–Heat Shorter–Time Pasteurization (HHST).

HHST pasteurizing systems are satisfactory if the system is properly installed and is approved by an official agency.

Briefly, HHST pasteurization requires much higher minimum temperatures for much shorter hold times to achieve pasteurization as follows:

191° F for 1.0 second
194° F for 0.5 second
201° F for 0.1 second
204° F for 0.05 second
212° F for 0.01 second

These combinations of time and temperature are applicable for all fluid dairy products, including milk, cream, whey and condensed skim milk. However, when the HHST method is used to pasteurize cream for butter making the temperature and holding time must be at least equivalent to the HTST method (185° F-15 seconds). For instance, at 191° F, the required hold time for cream for butter making would be 4 seconds rather than 1 second. Similar time-temperature relationships can be obtained from the National Field Director who will have the information plotted on a graph to show the required equivalent treatment.

The official agency does not verify the very short hold time involved with HHST pasteurization through salt injection and electronic timing methods as used in checking HTST systems. Instead, the hold time is determined by a “calculated method” which involves computations based on the product flow rate and the volume of product contained by the hold tube pipes and elbows, with the presumption that flow is laminar type.

Product heating for HHST pasteurization can be accomplished with conventional heat exchangers but where cooked flavor is a concern, rapid heating is important and is achieved by injection of culinary steam.

Ultra-pasteurization.

Ultra-pasteurization (e.g., the DASI System) refers to thermal processing at or above 280° F for at least 2 seconds either before or after packaging. In actual practice, ultra-pasteurization is usually a continuous heating process immediately followed by rapid cooling before packaging. Products so treated have extended shelf life under refrigerated conditions.

Most ultra-pasteurization equipment uses conventional regenerative heat exchangers for preheating. Final stage heating may be accomplished by direct steam injection while the product is under considerable pressure, by swept-surface heat exchangers, or other special heating equipment designed for such service. Rapid initial cooling is achieved by subjecting the product to vacuum conditions. Conventional regenerative and final stage cooling follows this.

To protect against recontamination during and after the heat treatment, vital fittings, valves, and shaft seals are usually fitted with sterilizing chambers subjected to flowing steam during operations.

To consistently make products with extended shelf life under refrigerated conditions, ultra-pasteurization systems are provided with a number of “fail-safe” controls that provide either proper operating conditions, or automatic shutdown of the process. These special system controls assure proper pasteurization of resulting products. The intent of the process is to far

exceed pasteurization requirements, and continuously monitoring bacteriological and keeping quality tests of finished products assures extended shelf life.

To our knowledge, ultra-pasteurization is not employed for cream for butter making purposes, but it is used for fluid milk and cream in consumer size retail packaging.

Vat Pasteurizer.

The applicable document for vat pasteurizers is *3-A Sanitary Standards for Non-Coil Type Batch Pasteurizers for Milk and Milk Products, Number 24- .* A coil vat pasteurizer is also acceptable.

Vat pasteurization for excess cream intended for shipping shall be at 150° F for 30 minutes, however, cream for butter making shall be pasteurized at a minimum of 165° F for 30 minutes or equivalent as specified in the General Specifications and the *U.S. Standards for Grades of Butter*. The additional heat treatment is intended to reduce the bacterial population further and enhance butter keeping quality.

For control of pasteurization by the vat method, the vat(s) shall be equipped with an indicating, a recording, and an air space thermometer. All three shall be in good working order.

The recorder charts should routinely be marked to show:

1. date,

2. plant identification,

3. notation of the indicating thermometer at a particular referenced reading point on the recording chart early in the production cycle,

4. name and amount of product being pasteurized,

5. the signature or initials of the operator.

Product shall not be added to the vat after the beginning of the hold period nor removed before the hold period is completed.

Each pasteurizing vat which is operated at the minimum pasteurizing temperature of 165° F shall be equipped with an air space heater and air space indicating thermometer. If pasteurization is at 5° F or more above the minimum temperature (170° F in the case of cream for butter making, 155° F in the case of cream not intended for butter making), the air space heater is not required, but the air space indicating thermometer is necessary to insure a temperature of at least 5° F above that required for pasteurization of the product. Culinary steam should be provided for the air space heater (see the guidelines for Item A36—Culinary Steam).

Vat covers shall be closed once the vat has been filled and remain closed during the holding period to assure proper pasteurization of the air space. Covers shall also be kept closed during the cooling period.

Check all interior surfaces for cleanup and condition. Dismantle the steam injector and remove the inlet and outlet to check sanitation. Also check that the outlet valve is a leak detect type as required by the 3-A Sanitary Standards. If the agitator has a collar that is in the product zone, have a plant employee remove the agitator and inspect the area around the collar and the bottom bushing. Make appropriate recommendations.

Coil Vat Pasteurizer.

For time-temperature requirements for coil vat pasteurizers, see the Vat Pasteurizer section above.

Inspect sanitary seals to determine if they are being removed and cleaned daily. When old style packing glands are used on coil vats make a recommendation for replacement with a sanitary type seal. This shall be considered a category B deficiency.

Also, inspect the vat liner, coil, centerboard, covers, outlet valve, fittings, and exterior surfaces of the vat for cleanliness and condition. Pitted or tin-bare coils are not acceptable. Make appropriate recommendations as necessary.

Item B7—Vacuumizer (58.128p).

A vacuumizer is often used with continuous pasteurization equipment to help remove undesirable volatile odors from milk or cream. Open the unit and check sanitation, especially of the inlet, baffles (if provided) and portions of the vapor outlet line that can drain back to the vacuumizer (beyond that point sanitary construction is not required). Also inspect the pump that removes the product from the vacuum chamber.

Some plants may utilize the vapors drawn off a vacuum chamber to preheat the raw milk in a plate heat exchanger. If a plate heat exchanger is located in the vacuum line (usually the large pipe that exits at the top of the vacuum chamber) between the vacuum chamber and the vacuum pump(s), it is usually a preheater for the incoming raw milk.

Because the pressure is higher on the raw product side than it is on the vapor side in this heat exchanger, any leakage will be from the raw side to the vapor side. In the event the vacuum pump(s) stops, flow in the system will be toward the pasteurized product in the vacuum chamber, drawing any raw product on the vapor side with it. This constitutes a potential cross connection between the raw product and the pasteurized product. A thick walled heat exchanger (i.e., shell and tube) can safely be used in this situation

If, during a plant survey, a plate heat exchanger is noted in this application recommend eliminating the potential cross connection and assign the deficiency to category D. Note that if the vacuum chamber is located on the raw side the use of a plate heat exchanger is

acceptable. A plate heat exchanger is also acceptable if the plant is only producing properly labeled raw milk or heat treated milk cheese.

Some pasteurizing systems, particularly HHST types, inject culinary steam to heat the product and this causes product dilution with water from condensed steam. The 3-A Accepted Practices for HTST Systems addresses prevention of product dilution by requiring a ratio controller on the vacuumizer unit, which must be sealed. This controller will assure that the vacuumizer removes sufficient water (as boiled-off vapors) to equal the amount previously added during the heating process. §58.128p has a similar requirement for a ratio controller when applicable to the finished product. In summary, the ratio controller requirement primarily concerns Grade A milk where addition of water during processing is considered adulteration. These controls are not necessary for the processing of milk or cream intended for manufactured dairy products that have specific composition requirements.

These ratio controllers will probably be encountered only in Grade A operations that also want USDA inspection. Checking for their proper engineering and operation will not be necessary as this is the responsibility of the applicable Grade A regulatory agency.

Item B8—Cream Cooler (58.128i, j, k).

See the guidelines for Item A27—Product Cooler.

When the cream is pasteurized, cooled, and stored in the same vat, mark this item NA and show, “Same as B6” on the line following the words Cream Cooler.

Also show “Same as B6” when cream is pasteurized in an HTST system and cooling of the cream is accomplished in a separate section of the pasteurizer heat exchanger unit. Any deficiencies in the regenerative cooling or final cooling section of a combined HTST unit should be reported under Item B6—HTST or Vat Pasteurizer. If a separate cooler unit is used, deficiencies should be reported under this item.

Item B9—Butter Remelt Equipment (58.128a,).

This item covers the containers, tanks, and equipment used to handle and melt butter for addition back to the cream for butter making prior to pasteurization. There is no objection to this practice if the butter is clean and it is properly collected, handled, and melted in a sanitary way. Use Item B47—Handling of Rework & Scrap to record deficiencies in the collection, handling, and storing of rework butter and for the handling, storage, and disposition of waste butter.

Inspect the equipment used for melting. Depending on the volume of butter involved, the melting might be done in a small jacketed vat or perhaps a perforated stainless steel tray suspended in recirculated warm cream in an HTST constant level tank. In any case, look for rough welds, open seams, woven wire screens, etc., all of which are unacceptable. Recommend repairs or replacement. If steam is used to melt the butter, it shall be culinary steam (see the guidelines for Item A36—Culinary Steam).

If wrapping material is present in the butter, check that the wrappers are clean, free of contaminates, and are removed promptly when melting is completed. Make recommendations about any condition or sanitation deficiencies with the equipment or if poor practices are noted with the butter handling and melting operations.

If packaging materials are wax coated, the melting shall be conducted at a temperature below the melting point of the wax. Such coatings are normally made up from various wax polymer ingredients that have melting points over a wide spread, however, the wax conglomerate will usually change from a solid to a liquid state in the 160-170° F temperature range. Therefore, the butter melting temperature shall be kept below 160° F unless the plant provides documentation verifying a higher wax melting temperature. Also, a thermometer should be present to check the temperature.

Item B10—Storage Tanks (58.128d, 58.321).

See the guidelines for Items A28—Storage Tanks - Silo & A29—Storage Tanks - Horizontal.

There is no specific temperature requirement for storage of cream for butter making as this may vary depending on the churning temperatures used during different seasons of the year for best control of butter making procedures.

When continuous churns are used, management should be encouraged to provide cream storage tanks equipped with effective temperature controls (cooling capability) and recording devices. When the tanks do not have product cooling surfaces and recording thermometers, discuss their desirability with management. Showing a recommendation on the report will not be necessary because these are not mandatory requirements and will not affect plant status (a “should” item of §58.321 and the 3-A Sanitary Standards).

Item B11—Housekeeping (58.126e, 58.127f, 58.146d).

See the guidelines for Item A7—Housekeeping.

Item B12—Operations for Cream, Frozen Cream, Plastic Cream, Anhydrous Milkfat, Butteroil, and similar high fat products.

If you are inspecting a manufacturing operation for one of these products, cross out the word **Butter** in the upper right corner of Page B and write in the appropriate name of the product(s) (note that whey cream requires Page W rather than Page B). If the plant also has a butter operation or produces more than one of these products, you can use a separate Page B for each product or, when common processing facilities are used, combine the inspections on one Page B.

Cream

Check Items B1 through B11 as applicable. Use blank Item B12 for load-out facilities. Load-out facilities shall comply with the applicable requirements outlined in Item B31—Load-out Facilities.

There may be plants that ship or receive small amounts of cream in bag-in-box type containers consisting of a plastic liner with an attached spout inside a corrugated fiberboard container. When this type of container is noted, follow the guidelines of the applicable Items in B33 through B48 for the packaging operations and Items in B50 through B56 for storage and tempering operations.

Frozen Cream (58.305d, 58.327, 58.334b).

Check Items B1 through B11 as may be applicable. Also, inspect the pasteurized cream filling operation into the final containers (usually poly or lined fiberboard boxes).

Frozen cream shall be pasteurized at not less than 170° F for not less than 30 minutes by the vat method or not less than 190° F for not less than 15 seconds by the HTST method. If the plant also makes butter and uses the same HTST cream pasteurizer, check that recorder charts show the required higher temperature when processing cream for frozen cream. As another alternative, the unit can be reset and sealed to divert at 190° F for both cream for butter making and for frozen cream.

Plastic Cream (58.305e, 58.326, 58.334b).

The inspection will be similar to that for frozen cream except that an extra separator may be involved to achieve the higher milkfat content of plastic cream. (Usually 80%, as compared with 40 to 50% for frozen cream.) Also, special equipment may be used to cool the cream, such as swept surface heat exchangers or direct expansion type chilled roll units.

Pasteurization requirements are the same as outlined for frozen cream.

Plastic cream is made by a process (usually centrifugal separation) which results in a fat-in-water type emulsion. If the manufacturing process (such as churning) reverses the phase to water-in-fat type emulsion (similar to butter) the product shall be categorized as “Unsalted Butter” or “Concentrated Milkfat.”

Anhydrous Milkfat (58.503c, 58.325, 58.347).

Anhydrous milkfat is made by a separation process (usually multiple separation) from milk, cream, or melted butter. Following final separation to approximately 99% milkfat, the product is usually subjected to a heat treatment and to subsequent vacuumization to reduce remaining moisture to only a trace (less than .15%). The milk, cream, or oil shall be pasteurized following the procedure for cream for butter making (vat method at minimum 165° F for 30 minutes or HTST at 185° F for 15 seconds, using “3-A” pasteurization equipment).

Butteroil (58.305b, 58.318, 58.324, 58.347).

Butteroil is made by melting butter and removing practically all the moisture and solids-not-fat (composition requirements are outlined in §58.305b). When the plant makes butteroil with the same equipment used to make butter by the cream-to-oil-to-butter method, both inspections can be combined using one survey Page B, with modifications as necessary. In most other instances, using survey Page L with appropriate headings and items to cover the inspection would be best. The following major headings may be helpful:

A. Raw Material Requirements (58.305b).

To produce butteroil eligible for official certification, the butter used shall conform to the flavor requirements of U.S. Grade AA, A, or B and shall have been manufactured by a USDA approved plant. The butter used shall be suitable for human food and be stored and handled in a sanitary manner.

When inspecting a plant for P code approval, the raw material (butter) does not have to originate from a USDA approved plant and meet the U.S. Grade B or better requirements. Also, do not criticize the use of "return butter" such as outdated store returns. Store returns shall not be used in plants that request listing in Section I of the *Approved Plant Book*. However, do not criticize the use of "off-grade" butter with progressive flavor defects, butter that has been allowed to oil off, butter recovered after mold is scraped off, etc. if the plant has not requested official certification for the butteroil. In addition, it is unsatisfactory if any of the butter used is not fit for human consumption because of contamination from filth, insects, rodents, chemicals, etc., or if the butter has not been handled in a sanitary manner (for example, floor scraps, scrapings from exterior surfaces of packaging equipment, butter handled in rusty containers, etc.). If unfit butter is being processed, assign the INELIGIBLE status (category A deficiency). Also, recommend that such materials be excluded from butteroil operations and be satisfactorily disposed of for other than human food use.

Antioxidants are permitted to be used in the production of Butteroil (see §58.305b).

B. Storage of Butter for Melting (58.126, 58.311, 58.343).

See the guidelines for Items B50 through B56.

Check for storage under refrigerated conditions in a suitably constructed and maintained room or area prior to tempering. Butter stored in bulk containers shall be covered to protect the butter. If the butter is in boxes, cartons, or wrappers, look for exposed butter from broken or torn containers. Such butter should be protected by additional wrapping, covering, or placing in a larger protective container. All unsanitary butter shall be disposed of as scrap.

C. Melting Operations (58.318, 58.127d).

Inspect room construction, lighting and ventilation. Check that boxes and liners are removed in a sanitary manner. If the butter is in retail size packages, melting may be conducted first

provided the wrapping material was clean and free of contamination. If packaging materials are wax coated, check that butter melting is conducted below the melting point of the wax (see the guidelines for Item B9—Butter Remelt Equipment). Culinary steam shall be used if melting is achieved with direct steam injection or if hot water is added which was heated by direct steam injection (see the guidelines for Item A36—Culinary Steam). The wrapping material can be removed afterward with various screen or sieve devices. Melting is usually conducted in jacketed processing vats. These vats shall be constructed of stainless steel. Also, check sanitation.

D. Separating Operations (58.128e, 58.127d).

Inspect the room construction, lighting and ventilation. Inspect the separator(s), following guidelines for Item B4—Separator. The separators will be of a special type to achieve very high butterfat content; however, the inspection requirements and procedures are basically the same.

Hot water is often added at the separator to aid in washing out the curd and salt. If direct steam injection is used to heat this water, it shall be of culinary quality (see the guidelines for Item A36—Culinary Steam).

E. Heating & Vacuum Treatment (58.128a, j, k, p).

Inspect the room construction, lighting, and ventilation. For inspection of vacuumizing equipment, follow the guidelines for Item B7—Vacuumizer.

It is usual practice to heat or pasteurize the separated oil either before or after a vacuumizing treatment for removal of remaining moisture. Check the condition and sanitation of heaters per the guidelines of Item A27—Product Cooler. Pasteurization of the oil is optional. However, if pasteurization is intended or required, (as for instance to comply with a purchase specification or buyer's requirement) check for "3-A" engineering (follow the guidelines for Item B5—HTST Sealed . . . and Item B6—HTST or Vat Pasteurizer).

F. Butteroil Cooling & Filling Operations (58.128a, j, k).

Butteroil is often cooled to a semi-solid viscous state before filling. Inspect the cooling equipment per the guideline for Item A27—Product Cooler.

Check that filling is conducted in a sanitary manner. Containers are usually filled directly from a pipeline.

G. Butteroil Storage.

Follow guidelines for Items B50 through B56.

Churning Operation

Item B14—Room Construction (58.126, 58.312).

See the guidelines for Item A1—Room Construction.

Item B15—Lighting & Ventilation (58.126d, e, 58.312, 58.313).

See the guidelines for Item A2—Lighting & Ventilation.

When bulk packaging or printing operations are conducted in the churning room, the atmosphere should be relatively free of mold or other airborne contamination. When tested by management, the mold count should be not more than 15 colonies per plate during a 15 minute exposure.

Item B16—Pumps, Pipelines, & Valves (58.128, 58.146a).

See the guidelines for Items A3—Pumps, Pipelines, & Valves.

Use this item to cover the condition and sanitation of pumps, pipelines, and fittings used to convey pasteurized cream to the churn.

Also check that the pump and pipelines are properly sanitized before use. Chemical sanitizer solutions may be used. Flooding the system for five minutes with hot water maintained at 170° F or higher at the discharge end is another very effective sanitizing method.

The use of a cream filter before the cream enters the churn is optional when the pasteurization is done in a closed system such as the HTST method used in many plants. When vat pasteurization is used or when cream is transported from plant to plant, a filter should be used to collect any foreign material that may be present. The filter may be perforated stainless steel constructed for easy cleaning, or it may be of a single service disposable type. If no filter is used in an open system make an appropriate recommendation.

A cream surge tank is usually used to feed a continuous type churn. The fabrication criteria are the *3-A Sanitary Standards for Uninsulated Tanks for Milk and Milk Products, Number 32-* (surge tanks are included in the scope of 3-A Sanitary Standards for Uninsulated Tanks). See the guidelines for Item B6—HTST or Vat Pasteurizer.

Inspect such tanks and the feed pump (usually a positive type pump) carefully, including float or other control for maintaining a uniform level of cream. Also check that a cover is provided and used. On very long churning runs, bacteriological problems may develop from the foam in the surge tank. On such long runs, the churning operation should be stopped at intervals to empty and clean the tank, or two tanks should be provided for alternating use and cleaning. This should be done every four hours to preclude bacteria problems.

Item B17—Churn(s) (58.128a, 58.315, 58.316).

Conventional Churns (58.316).

Conventional churns shall be constructed of stainless steel or aluminum, free from cracks, and in good repair. Do not criticize slightly rough (sand blasted) interior surfaces in butter equipment as this is normal (the slightly rough condition is necessary to prevent butter stickage). However, when deep pitting or corrosion is evident, recommend replacement of the churn or repair of deteriorated areas.

On aluminum churns, check the sight glass and buttermilk outlet areas carefully as they are often unsatisfactory on older churns due to electrolytic corrosion. If noted, recommend repairs (the deteriorated areas can be cut out and replaced or built up and refinished). Check for cracked or broken areas, particularly around vane supports and door shells.

The door gaskets shall either be removed for hand cleaning or be firmly bonded to the metal door and cleaned in-place. Check for proper cleaning of the gaskets and appurtenances such as the buttermilk valve, the vent, etc. If a cream inlet fitting is provided, inspect it for condition and sanitation even if the fitting is not routinely used for filling the churn.

Cream-to-oil-to-Butter.

Show on the report when this type of butter making process is employed. Cross out the word “churn” for this item and replace it with “chiller.” Prior steps in the cream-to-oil process can be covered by Item B4—Separator, B7—Vacuumizer, and by using appropriate headings for equipment such as prechurners (if used), oil standardizing vats, etc.

Inspect the chiller and “texturator” equipment for condition and sanitation. Some texturator equipment is mounted on wheels and some plants do not clean the units daily, but move them into the butter cooler to refrigerate the butter inside the unit. This practice should not be criticized if protection is afforded to butter at the inlet and outlet areas. A weekly schedule for emptying and cleaning such units is satisfactory under these circumstances.

Continuous Churns (58.315).

All product contact surfaces of continuous churns and related equipment shall be readily accessible for cleaning and inspection. Construction shall follow the applicable principles of the *USDA Equipment Guidelines*

Inspect continuous churns for compliance with these requirements. Check for freedom from dead ends, open seams, exposed threads in the product zone, hard-to-clean areas, access for inspection, etc. Make recommendations for correction as necessary. For sanitation inspection purposes, continuous churns can be divided into two main classes, depending primarily on their size and ease of disassembly for cleaning and inspection. These considerations require somewhat different inspection approaches.

A. “Small” churns that can be easily dismantled.

Inspection of small churns is very similar to other dairy equipment. Request that the churn be dismantled for inspection of product contact surfaces (this can usually be done by regular butter department personnel). Make recommendations concerning deficiencies in condition or sanitation.

In the cream churning section, check for sanitary constructed cream inlet fittings. Have the beater removed to inspect the hollow interior. (Product residues here suggest faulty seals.) Report as unsatisfactory any exposed threads or bolted joints on the beaters for churning or buttermilk removal. Inspect screens used for buttermilk removal for both condition and sanitation. Inspect, if possible, the buttermilk collection areas on the other side of the screens. If any areas are not accessible for inspection, recommend correction. Similarly criticize buttermilk outlet pipes with “double bends” (⊓) which cannot be inspected.

Look for butter or butterfat residues between working plates and header plates. (These parts often have metal to metal fit and permit product seepage into the interface areas.) Inspect couplings of working augers for butterfat residues, also the dosing ports for injection of salt slurry.

When CIP procedures are ineffective, recommend modifications to achieve satisfactory in-place cleaning or daily dismantling for cleaning by conventional methods. (If management feels that daily dismantling is not feasible, they should concentrate efforts on providing effective cleaning in-place.)

B. “Large” churns.

These machines have product contact components of such size, weight and complexity that disassembly is a major undertaking. Such dismantling is not feasible on a daily basis, so much reliance is necessarily placed on the CIP procedures that the churn manufacturer recommends.

Inspect these churns by dismantling and checking the same areas outlined above for “small” churns. If the machine has a vacuumizing chamber at the working section, check that butter does not leak into the chamber during churning operations and become trapped in the dead end. Also, check for satisfactory cleaning of the vacuumizing chamber and its fittings.

When sanitation deficiencies are noted, recommend modification of the equipment or the cleaning regimen as necessary to achieve satisfactory in-place cleaning. The usual option of daily dismantling for hand cleaning should not be mentioned, as this approach would be impractical and contrary to recommendations of the equipment manufacturer. Do <u>not</u> try to specify how to correct deficiencies related to the equipment design or engineering. Plant management or the equipment manufacturer should initiate any modifications for sanitary reasons.

C. Salting Equipment.

Both large and small continuous butter makers have auxiliary equipment for injecting salt slurry with a small positive type “dosing pump.” The salt slurry is usually made up at about 50% concentration using very fine-textured microcrystalline salt. At this concentration, only part of the salt is in solution and the rest is kept in suspension by vigorous agitation in the slurry tank. Sometimes color, lactic acid, or starter, is injected into the butter. It is not necessary to dismantle the salt pump or to empty the slurry tank for inspection. The high salt concentration should preclude bacterial growth. However, if the tank is not clean or has an excessive salt buildup on interior or exterior, recommend cleaning.

The slurry tank(s) should be constructed of stainless steel of a type resistant to salt corrosion, or of a suitable nontoxic plastic material. A cover should be provided for use during shutdown periods to protect leftover slurry during cleanup operations. There is no objection to leaving the cover up or off during butter making operations if the tank is in a suitable area where contamination is unlikely. However, when the tank is in an area requiring protection against contamination of the salt slurry, a cover shall be provided and used continuously. Use this item for the slurry tank and Item B19—Salt Storage & Handling for other deficiencies noted in salt storage or handling.

Item B18—Water (Wash & Composition) (58.127a, 58.338).

When the butter is not washed show NA in the satisfactory column for this item.

When the butter is washed with buttermilk, which may or may not be further cooled, be sure to inspect related equipment for recirculating or cooling the buttermilk. Management should be alerted to the potential for serious bacterial problems if buttermilk is recirculated for long periods.

When the butter is washed with water, the system shall be approved by the regulatory authority. Only safe potable water of acceptable microbiological quality shall be used for washing the butter granules. When chlorinating treatment of the wash water is necessary, the required level of chlorination will depend greatly on the quality of the water, the amount of organic material present in the water supply, and the pH, temperature and treatment time. Much lower levels of chlorination will suffice when the batch treatment method is employed. When the water is treated by the in-line injection method which results in short exposure time to the chlorine before the use of the water, considerably higher levels of chlorination might be required.

Overall, chlorination should be kept as low as necessary to maintain the desired bacteriological safety, for overuse of chlorine will affect the fine delicate flavor of butter and may also cause a chemical flavor.

Makeup water for composition control should also be treated when chlorination of the wash water is necessary. When wash water is handled by the batch method in a separate tank for chilling or chlorination prior to use, inspect the tank and pipe lines for cleanliness. The tank should be stainless steel or equally corrosion-resistant material.

It is required that water be filtered before entering the churn. This may be accomplished by either an in-line filter or other suitable filter that will remove sediment or foreign material. When no filter is used make an appropriate recommendation. The portion of wash water piping from the final filter to the churn shall be stainless steel or approved tubing that can be easily cleaned and maintained in a sanitary manner.

Item B19—Salt Storage & Handling (58.126e).

When batch type churns are used, a limited supply of salt is usually stored in a bulk container in or near the churn room. Check that the container is constructed of stainless steel, plastic, or other suitable material and is provided with a tight fitting cover. Check that suitable scoop, pail, scales, etc. are used to measure and transfer salt to the churn. At very small churning operations, the butter maker may prefer to scoop the salt directly from the bag without use of an intermediate bulk storage container. There is no objection to this practice if the top of the bag is folded over after each use and the bag is kept in a clean dry area.

For continuous churn operations, the microcrystalline salt slurry is made up directly in the injection tank or in a pre-slurry tank which feeds into the injection tank. Check that the immediate supply of bagged salt is stored satisfactorily and is emptied into the tank in a sanitary manner by first vacuuming or removing the outer paper ply from the bags.

If super saks are used see the guidelines for Item D45. If a blower type salt conveyor is used, check that the conveying air is filtered. There are no standards for minimum efficiency for such filters. Show as satisfactory if the air is filtered.

Item B20—Miscellaneous Utensils, Carts, Etc. (58.128a, 58.317).

Check for cleanliness and condition of miscellaneous items such as box forms, conveyors, pails, butter striker, paddles, and other related items in this department. Hand tools used for butter packing, such as strikers and paddles shall be constructed of stainless steel, aluminum, or suitable plastic (no wood or wooden handles).

Check that product contact surfaces of trucks or carts for bulk butter are constructed of aluminum, stainless steel, or other corrosion resistant metals, free from cracks or seams and with a surface that is relatively smooth and easily cleanable.

Item B21—Hand Washing Facilities (58.127c).

A hand washing sink shall be provided. It shall be conveniently placed and used by the employees. The use of a COP tank as a hand washing sink is not acceptable. Hot and cold running water, soap, and single service towels or an air drier shall be provided. The use of a hand dip sanitizer station should be encouraged but is not a suitable alternative to a hand washing sink. Containers shall be provided for used towels and other wastes. The containers may be metal or plastic, disposable or reusable, and should have self-closing covers. Cloth towels for common use or mechanically dispensed roll type cloth towels are unsatisfactory, recommend provision of single service towels or air driers.

Hand washing sinks should be equipped with trapped drains and be connected to a sanitary sewer. Nevertheless, a straight pipe draining to the floor in a wet processing area is a minor deficiency and need not be recorded on the report. However, when a recommendation is made for floor replacement or major floor repairs, include a recommendation that enclosed sink piping be provided also.

Item B22—Quality Tests (58.335 through 58.337).

A. Keeping Quality (KQ) Tests (58.336f).

When the creamery is experiencing butter stability problems (cheesy, putrid, rancid, etc.) recommend that the plant perform 72° F-7 day KQ tests on each churning. After the problem is corrected and a satisfactory history is established, the testing frequency might be reduced at the option of the plant manager. Optionally, the manager may choose to use the faster 98° F-48 hour test in place of, or in addition to, the 72° F-7 day test. (When official USDA tests are made, the 72° F-7 day method is required.)

On a routine survey, show this item as satisfactory if the plant is regularly making KQ tests on at least some churnings, by either test method, to maintain a satisfactory KQ history. If no KQ tests are performed, make an appropriate recommendation.

At plants that have resident grading service, the USDA inspector may routinely make an official KQ test on each churning and this would satisfy the company KQ testing requirement.

B. Acid Degree Value (ADV) or Free Fatty Acid (FFA) Tests (58.336c).

These tests–ADV for cream and FFA for butter–should be run as often as is necessary to aid in the control of lipase activity. The necessity for running these tests vary widely depending on the type of cream handled by the plant. For instance, if only sweet cream is received from whole milk plants which belong to the same company and the cream and butter history is free of lipase problems, routine FFA tests would not be required. On the other hand, if the plant receives surplus cream at irregular intervals from a variety of sources, it would be prudent to monitor lipase activity in the cream by frequent FFA testing.

During a routine plant survey, it is not necessary to check or report on plant practice regarding these tests. However, when the plant is experiencing problems with lipase activity or rancid flavors, recommend that these tests be made to assist in correcting the problem. Assign this deficiency to category C if the plant has lipase-rancid problems and is not running ADV or FFA tests.

Item B23—Composition Control Facilities (58.336, 58.338).

Check that a satisfactory area is provided for running composition control tests. The area should be clean and the scales should be protected against air drafts. Scale weights should be accurate and cups should be in good condition.

Complete analyses for composition should be made as often as necessary to assure adequate control. Check this item satisfactory if the plant is running composition control tests.

It is not the responsibility of the inspector to check for proper performance of the composition tests, computation of water to be added, or operation of the churn with respect to control of composition.

When tests are not being performed during the survey, show a dash in the satisfactory column to show that this item was not checked.

Requirements for salt, color, starter cultures, and starter distillate are outlined in §58.328 through §58.331. If deficiencies are noted regarding these optional components, show the applicable recommendation under this item.

Item B24—Housekeeping (58.126e, 58.127f, 58.146d).

See the guidelines for Item A7—Housekeeping.

Buttermilk Handling

Determine and report how buttermilk is used. When used at the plant as an ingredient for a human food product, show the product made, such as dry buttermilk, dry dairy blends, ice cream mix, etc. For plant approval of the final manufactured product, inspection of fluid buttermilk handling is required, as outlined in this guideline, but separate listing of the "Buttermilk" ingredient is not necessary.

If a neutralizer is added to the buttermilk, make a recommendation the practice be discontinued. If neutralization continues assign the INELIGIBLE status (category A).

If shipped from the plant, show the name and address of the company receiving the buttermilk. Ask the plant manager whether or not USDA approval for buttermilk is requested, if so continue with inspection as outlined below. If the manager does not want inspection and approval, show NA for this section.

The product shall be designated as "Buttermilk or Buttermilk Product" when assigning USDA status for the fluid product. Buttermilk product is obtained from whey cream butter. If the buttermilk is shipped in condensed form, the survey shall additionally cover the pasteurizer and evaporator using the appropriate items on Page D, or when reverse osmosis (RO) membranes are used to condense the buttermilk, inspect the unit and the pasteurizer using the appropriate items on Page M.

When an evaporator is utilized, status for "Condensed Buttermilk or Buttermilk Product" can be assigned. If RO membranes are utilized, status for either "Condensed Buttermilk or Buttermilk Product" or "RO Concentrated Buttermilk or Buttermilk Product" may be assigned. Follow the plants request in this regard.

Note:

> Ultra-filtration (UF membranes) cannot be used to produce "Condensed Buttermilk or Buttermilk Product." UF membranes remove other product constituents in addition to the water.

Item B27—Buttermilk Tanks (58.128d).

See the guidelines for Items A28—Storage Tanks - Silo & A29—Storage Tanks - Horizontal.

Item B28—Buttermilk Cooler (58.128, i, j, k, 58.234).

See the guidelines for Item A27—Product Cooler.

Unless the buttermilk is promptly processed within two hours, it shall be cooled to 45° F or lower prior to storage. Normally, the plant should have a cooler for this purpose, although under certain conditions, satisfactory cooling may be achieved with cold-wall type storage tanks.

Item B29—Pumps, Pipelines, & Valves (58.128, 58.146a).

See the guidelines for Items A3—Pumps, Pipelines, & Valves.

When buttermilk is used for animal feed, the pumps, lines and tanks need not be of sanitary construction but this equipment should be maintained clean and not contribute to unsatisfactory sanitation, odors, insect control, or contamination in the processing area. (With animal feed disposition, no USDA status is necessary or appropriate.)

When the buttermilk is used for human food, dismantle the buttermilk handling equipment and inspect for condition and sanitation.

If buttermilk pipelines are to be cleaned by CIP procedures, proper fittings and “3-A” engineering shall be provided, including a return circuit, a recording thermometer, etc. Alternatively, the pipelines may be cleaned by the daily take-down procedure.

Item B30—Miscellaneous Equipment (58.128a).

A few creameries separate buttermilk to recover some remaining butterfat. There are no restrictions on the use of such cream. Follow the guidelines for Item B4—Separator

If a rotary fine saver is used see the guidelines for Item C30—Fines Return & Fine Saver.

Item B31—Load-out Facilities (58.131d).

Load-out facilities shall comply with the same requirements as outlined in Items A10 through A15 if the trucks are washed in the load-out facilities.

When buttermilk is loaded into bulk trucks under out-of-doors conditions with a direct connection between the load-out hose and the tank valve, a concrete slab, drain, and water hose constitute the minimum facilities. Also, a vent filter shall be used. If the tank is sampled or loaded (without a direct connection) through the top, a roof shall also be provided.

Also inspect the load-out pump, lines, and valves, in accordance with requirements outlined in the guidelines for Item A12—Pumps, Pipelines, & Valves.

Butter Packaging

Item B33—Room Construction (58.126, 58.313).

See the guidelines for Item A1—Room Construction.

Item B34—Lighting & Ventilation (58.126d, e, 58.313).

See the guidelines for Item A2—Lighting & Ventilation.

Light intensity shall be at least 50 F/C at the working surfaces in the areas where butter is stripped and inspected. Other areas of the packaging room shall have at least 30 F/C. All lights shall be protected against breakage.

The room(s) shall have adequate ventilation and be free of objectionable odors. Air in the room should be relatively free from mold (not more than 15 colonies per plate, during a 15 minute exposure) or other airborne contamination.

Item B35—Pumps, Pipelines, & Valves (58.128, 58.146a).

See the guidelines for Items A3—Pumps, Pipelines, & Valves.

Use this item to record any deficiencies in the lines between the butter boat or silo and the packaging machines.

Do not criticize slightly rough (sand blasted) interior surfaces.

Item B36—Butter Boat/Silo (58.126, 58.317).

This equipment shall be made of aluminum, stainless steel, or corrosion resistant metal. It shall and be free from pits, cracks, etc. Do not criticize slightly rough (sand blasted) surfaces as these are normal to reduce butter stickage. Plastic or rubber product contact surfaces for limited use in such equipment shall comply with the *3-A Sanitary Standards for Multiple-Use Plastic Materials Used as Product Contact Surfaces for Dairy Equipment, Number 20-* and FDA requirements in *21 CFR 170-199* or the *3-A Sanitary Standards for Multiple-Use Rubber and Rubber-Like Materials Used as Product Contact Surfaces in Dairy Equipment, Number 18-* and FDA requirements in *21 CFR 177.2600*.

Augers and butter pumps used in butter boats or packers shall be dismantled for inspection. Pull augers forward to inspect rear seals and couplings as well as those in front. When fiber bushings are noted in product contact areas, recommend replacement with materials that comply with the 3-A Sanitary Standards for plastic or rubber. In addition to checking sanitation of product contact areas, inspect the exterior surfaces of the equipment, such as frames and underside areas. Describe any deficiencies and make appropriate recommendations for correction.

Item B37—Miscellaneous Utensils, Carts, Etc. (58.128).

See the guidelines for Item B20—Miscellaneous Utensils, Carts, etc.

Item B38—Bulk Butter Packaging Machine (58.128, 58.319).

Use this item to cover automatic or semiautomatic equipment for packing bulk butter into bulk boxes. The most common units are the semiautomatic types that have one or two large augers to push the butter through a large cutting head directly into a lined box. The filled box is then tipped upright onto a platform scale where the operator adjusts the butter weight with a stainless steel or aluminum striker or spatula and then folds the liners and closes the box.

Inspect bulk packaging machinery in the same way as outlined for Item B17—Churn(s) and Item B36—Butter Boat/Silo. Arrange with butter room personnel for dismantling as necessary to inspect butter contact surfaces. These surfaces may be slightly rough (sand blasted) to avoid butter stickage, but shall be free of deep pitting or cracks and be satisfactorily cleaned by the methods employed. Make recommendations as may be applicable.

Hot water hosing of equipment parts as the sole method of “cleaning” is not a satisfactory practice. Supplementary use of proper cleaning materials is necessary to remove fatty films and protein from all surfaces. This may be accomplished by several procedures, including hand brushing, foam cleaner applications, or use of high pressure cleaning jets employing a cleaning solution.

Item B39—Boxes & Liners (58.320, 58.339, 58.342).

If butter is packed on flat carts (such as slab butter), in lined plastic or metal baskets, or other bulk packages, describe packaging on the report. Also consider if the packaging is adequate to provide protection to the butter.

A. Boxes (58.339).

Show on report if butter is packed in <u>used</u> boxes. Review DA Instruction No. 918-I, regarding circumstances under which boxes may be reused <u>within the plant</u> without USDA criticism, provided that only <u>good condition</u> boxes are refilled. If poor condition used boxes are being filled, or the reuse of boxes from another plant is noted, recommend correction.

B. Parchment liners (58.320, 58.339).

Prelined boxes shall be protected from possible contamination prior to filling. Protection may be accomplished by alternately inverting one container over the other or by stacking the lined boxes on their sides in a rack, until ready for use. When lined boxes are not used the same day, check that the liners are removed and either discarded or retreated before reuse. Assign this deficiency to category D if an excessive number of boxes are prelined. Assign this deficiency to category B if the prelined boxes are not protected from all sources of

contamination or are left on the floor where they are subject to splashing water, traffic, and other sources of contamination.

Proper treatment of parchment liners is very important for protection of the butter against mold development. The liners shall be treated by complete immersion in a 15% salt solution (a brine that consists of 15 pounds of salt for every 85 pounds of water) and boiled for not less than 30 minutes. The brine solution shall be in a suitable, covered, corrosion-resistant container (preferably stainless steel). Liners should be held in this solution until used. To assure uniform exposure to the brine solution, the liners should be sufficiently separated prior to treatment. The brine solution shall be strengthened or changed as frequently as necessary to keep the solution full strength and in good condition.

Check the solution strength with the salimeter and report the percentage of salt in the solution. When salimeter test shows less than 15% but more than 10%, assign this deficiency to category D. When less than 10%, assign this deficiency to category C. If the plant does not use any salt treatment or no evidence of salt can be detected on the liners, assign this deficiency to category B.

Heating of the brine solution is usually accomplished with steam through jacketed tank surfaces or through a stainless steel coil in the tank. Direct steam injection heating is also satisfactory under the following circumstances:

1. The portion of the steam injection piping which extends into the tank is constructed of stainless steel.

2. Culinary steam is used <u>or</u> the steam piping is equipped with a bypass line and valve to allow “blow-down” of the iron piping prior to beginning the heating process. (Culinary steam is not required: it is optional.)

3. The above-mentioned piping is set up at the treatment tank. Use of a plant hose for direct injection steam heating is not satisfactory.

When salt strength is satisfactory, but the required 30 minute boiling treatment is not properly carried out (whether the heating is insufficient or the treatment period too short), assign this deficiency to category C. If no method is provided for boiling or heat treatment, assign this deficiency to category B.

C. Polyethylene Liners (58.339).

When polyethylene liners are used, boxes should be lined just before packing of the butter.

Liners shall be protected from contamination prior to actual use. Usually the dispensing device provides such protection.

Normally, sanitizing of the polyethylene liner surface should not be necessary if liners are inserted just before use and the butter is packed in a clean environment. However, it is

managements' option to employ additional safeguards if desired. Use of sanitizer sprays or fogging procedures on polyethylene liners should not be criticized unless excessive amounts are used causing surface off-flavor, bleaching of surface color, free liquid within the bag, etc. In such instances, recommend that lesser strength or amount of sanitizer solution be used.

D. Package finish (58.339c).

Check a few filled butter boxes to determine if the butter surface is smooth and even, with all the corners filled. Rough surfaces showing holes or hand prints, corners not filled, and exposed butter not covered by liners are unsatisfactory conditions; recommend that packaging technique be improved.

E. Markings (58.342).

Check enough butter containers to decide whether applicable and legible markings are present. Commercial bulk butter boxes shall be legibly marked with the name of the product, name and address of manufacturer or other assigned plant identification, churn number, and net weight.

If butter is manufactured with a continuous type churn, review plant practice regarding assignment of churn numbers. For official grading service, each churning shall contain no more than 20,000 lbs. of butter and each container of butter in the churning shall have been consecutively produced. It is necessary to have uniform butter quality throughout the churning so that an assigned grade will accurately apply to all the butter in the churning. Therefore, the churning number shall be changed when the tank of cream is emptied, whatever the number of boxes (or amount of butter) accumulated in the churning at that point. If the same churn number is used for butter from different tanks of cream, noncontinuous production runs, or any other situation where the butter is not uniform throughout the churning show the information on the report and make a recommendation for proper designation of churn numbers. There is no objection if the plant assigns the same churn number to multiple packaging machines being feed from the same churn or butter silo.

Although it is not a recommended practice, the continuous churn at some plants is supplied with cream from a common header connected to several tanks. It is not intended to restrict such blending of cream from more than one tank for feeding the churn provided that the same cream blend proportions are maintained throughout each churning.

Similarly, there is no restriction against assignment of a common churning number to the well-mixed production of two continuous churns, for example, two churns feeding one bulk butter boat. In such cases both churns shall be supplied from the same tank of cream and the churn operator should be alert for identical machine operation, same salting rates, composition control, etc., so that the mixed butter will be uniform in quality characteristics.

If either of these procedures is not properly controlled to yield uniform quality butter within a churning (with respect to flavor, color, salt, body and composition), recommend that such control be established or that the procedures to assign churn numbers be changed as necessary.

When a conventional churn is used, there is no objection to blending of cream from more than one tank into the same churning. The approximately 45 minutes churning time provides ample mixing to assure quality uniformity in the finished butter.

When the cream-oil-butter continuous churn process is used, the assigned churn number shall reflect butter production from a separate tank of standardized butterfat. The churn number should be changed when the continuous chiller and texturator equipment is switched to a different tank of butterfat. If this is not being done, recommend correction.

Item B40—Butter Handling Procedures (58.340).

If the plant has not requested status for consumer sized packages show NA for Item B40—Butter Handling Procedures through Item B45—Whipped Butter Packaging.

Use this item to assess the methods and practices used to handle the bulk butter prior to packaging in consumer sized packages and make appropriate recommendations for correction when needed.

A. Area Where Boxes are Removed (58.l26, 58.340).

The butter boxes shall be removed in a room separate from the printing room. Also, air movement should be from the print machine(s) toward the stripping area.

Use this item to check that box removal is conducted in a satisfactory room or area. Check the construction, lighting, air movement, etc.

B. Stripping Procedures (58.340).

Fiber boxes shall be removed in a way that precludes contamination of the butter. The boxes shall be removed <u>prior</u> to handling of the butter at the precutter platform.

Care should be exercised by plant employees to keep hands off the butter if they are stripping or otherwise handling the fiber boxes. The same employee shall not alternately handle the outer cardboard containers and then handle the butter directly unless the hands are washed or sanitized prior to handling the butter. Use of a properly maintained sanitizing solution at the cutting station prior to handling butter is satisfactory. In lieu of this, a separate employee shall remove the outer shipping containers (there is no objection to an employee alternately handling only liners and butter).

Item B41—Precutters, Chutes, & Conveyors (58.128).

This item refers to methods used for transfer of bulk butter into the micro fix or the packaging machinery. Special attention should be given to the procedures for feeding the precutter and transferring of quarter slabs to the machines. For small operations, the unboxed cubes might be piled on carts or, with proper precautions, on pallets for movement to the precutters. For

large packaging operations, endless conveyors may be employed (see Item K18—Tables & Conveyors).

Inspect the precutter for any deficiencies with respect to construction, maintenance or sanitation. Check carefully for serious pitting or for broken seams. Any wooden parts in the product zone, such as wooden rollers, guide rails, etc., should be criticized. Recommend replacement with plastic materials that meet the *3-A Sanitary Standards for Multiple-Use Plastic Materials Used as Product Contact Surfaces for Dairy Equipment, Number 20-* (and *21 CFR 170-199*) or stainless steel.

Steel precutter wires are often used because of breakage problems with stainless steel wires. Such nonstainless wires should not be criticized if maintained in a rust-free condition (coating lightly with mineral oil after cleaning will prevent rusting). Dirty or rusty wires should be criticized and recommendation made for replacement.

Chutes that feed packaging machines shall be made of stainless steel and be free of hard to clean areas such as open seams, rough welds, and skip welds. Report details of any deficiencies regarding construction or sanitation.

Check the method used for conveying butter from the stripping area. Use of forklifts in the print room powered with either gasoline or propane combustion type engines should be criticized. In such case, recommend replacement with either hand or electrically driven units.

Item B42—Micro Fix (58.128, 58.317).

The micro fix shall be dismantled for hand cleaning. This includes removing the augers and the grinding blade (sometimes called the reel or squirrel cage) and associated bushings. Inspect these parts for condition and sanitation. Also check the underside of the inverted V cover (if one is used), the butter chute, and the outlet.

Item B43—Packaging Machine(s) (58.128, 58.319).

New butter print machines shall comply with the *3-A Sanitary Standards for Equipment for Packaging Viscous Products, Number 23- .*

A. Print Machines.

Inspect the print machines for condition and sanitation. Arrange for dismantling to the extent necessary to make these determinations. Pay particular attention to the following areas.

1. Product contact parts made of plastic (bushings, plungers, impellers, etc.) shall have a surface finish at least as smooth as a number 4 finish, with proper radii on interior angles and in O-ring grooves.

2. Hoppers and augers may be stainless steel or aluminum. They may also have a shot peened surface, but should not have deep pits or grooves. Carefully check the area at

the outlet (or throat) of the hopper for condition and sanitation. Augers with brass bushings should be criticized. Recommend replacement with stainless steel or other suitable material.

3. Removing the hopper at each survey is not necessary if the previous survey shows satisfactory cleanup. When a hopper is removed, check the gasket or O-ring for sanitation and condition. If the plant has multiple print machines, record which one the hopper was removed from so that a different machine can be checked during the next periodic survey.

4. Examine any grease fittings on the wrapper plunger and wrapper folding arms. These shall be wiped clean of grease prior to start-up. Recommend removal of any grease fittings on product contact surfaces. Also, the wrapper folding arms on older units are sometimes painted or brass. Recommend that paint be removed. Peeling paint on these parts is a serious deficiency (category B). Do not criticize brass folding arms unless they are contributing to discoloration of product (brass may interact with cleaning compounds and cause black streaks). However, recommend that any new or replacement parts be made of stainless steel.

5. Plastic shields or sight glasses in product contact areas shall be as smooth as a number 4 finish and therefore, should be criticized if they are cracked or chipped.

Augers and other parts of older Morpac and Doering machines are often constructed of “dairy metal” alloy. These materials are unsatisfactory (see the guidelines for Item A3—Pump, Pipelines, & Valves), recommend replacement with stainless steel and assign the deficiency to category C.

These augers are susceptible to leaks because cracks or pits in the auger will allow leakage of the tempering water into the butter. This is a potentially serious condition as the water can then contaminate the butter (category A deficiency). The company should periodically make tests of the augers to make sure they are sound and free of leaks. This can be done by capping off the water outlet pipe and allowing full water system pressure to be built up within the augers. Then all exterior surfaces of the augers should be examined for moisture. Frequency of such testing would depend on condition of the machine.

On Morpac machines, inspect the revolving drum feeding device. These drums and their vanes should be dismantled daily for cleaning.

Some Morpac machines have been equipped with “butter savers” of various designs. The purpose of these units is to collect excess butter extruded at the forming head. Instead of falling to the frame of the machine, it is conveyed by means of stainless steel pipes or tygon plastic hoses back to the feed hopper. Such devices are satisfactory if they are properly constructed and if the cleaning regimen in daily use does an effective job of cleaning the unit. Construction or sanitation deficiencies should be covered by recommendations for correction. Request company assistance in dismantling such units for inspection. Special tools and skills are often necessary for dismantling and reassembling.

When inspecting a Benhil printer, lift a cell and inspect the area under the turntable.

Also inspect the exterior frame surfaces of the print machines and make any applicable recommendations concerning sanitation, painting, rust, etc.

Where machine control lever extensions are needed by the company, metal chains or rods may be used, but use of rope, twine, etc. is unsatisfactory.

Conveyor belt material used to convey wrapped butter should be made of USDA accepted belt materials to facilitate cleanup. When canvas belting is noted on such conveyors, recommend replacement, as it cannot be properly cleaned. Use of endless type belting should be recommended where this style of belting can be readily accommodated by the machine design. This may not be practical however, on some older machines designed for metal spliced belts. Metal spliced belts are not acceptable for exposed product conveyors.

B. Continental Machines.

These machines are very similar to the machines that package larger sizes. In all cases the machine must be dismantled for hand washing of the product contact surfaces. The hopper and augers may be replaced with a cylinder and a pneumatic piston designed to keep a constant pressure on the in-feed. Inspect the piston and housing carefully. Check for greasy product residue, proper radii in the O-ring grooves, etc. If brass is used for bushings, wrapper folding arms, etc. recommend replacement with stainless steel or approved plastic.

C. Patty or Reddi Machines.

Although some areas of patty machines are constructed quite differently, the same general guidelines for inspection of print machines apply.

On Reddi machines, the butter feed device should be dismantled for inspection. Check sanitation and for proper radii in O-ring grooves, number 4 finish, etc. The rotary butter forming section equipped with sliding pistons for ejecting the butter pats cannot be readily dismantled for cleaning. However, on the Redmond machine it can swing out, making it possible to inspect the product contact surfaces. Check for greasy product residue in the crevices between these moving parts. In addition, check the bottom of the take-away chain for sanitation.

D. Butter Cup Machines.

Like other butter packaging machines, these require dismantling and hand cleaning. The feeder plungers may have nonremovable plastic ends that are pressed on and the nozzles may not be removed from the head. Inspect these two areas for greasy product residue in the crevices between parts. Also inspect the feeder tubes, located above the inlet, and the portioning valves. All parts, whether Stainless steel, plastic, or rubber, shall be clean and fabricated to meet product contact surface requirements (proper radii in O-ring grooves, number 4 finish, etc.).

E. Canning Operations.

For butter, butteroil, or ghee canning operations use the applicable items on this page or Page L with appropriate headings. The following guidelines apply:

1. Inspect the extruder machine for condition and cleanliness.

2. Check the construction and housekeeping in the area where empty cans are stored. Cans are usually protected from contamination by storage inside fiber shipping boxes or inside large paper enclosures. When such packages are damaged, other means of protection should be provided (transfer into other containers, covering with sheets of plastic, etc.).

3. Check the area where cans are fed into the conveying system to be filled. If there is excessive lint or dust from the cardboard or paper cases, this operation should be separate from the filling area.

4. Check that cans are transferred to the conveying system ln a sanitary manner.

5. Clean compressed air shall be introduced into each open can to blow out any loose lint, dust, etc. Preferably this operation should be conducted outside the butter packaging room (an exception might be made when satisfactory provision is made for preventing the spread of the material blown from the cans). The flow of air may be either intermittent or continuous but should have sufficient pressure and be so directed as to accomplish proper cleaning of the cans. From this point to the point where the cans are filled there should be a cover over the conveyor. The cover shall be provided if there is a possibility of contamination.

6. Check that sanitary procedures are followed in filling of the cans.

7. Exterior surfaces of the sealing machine should be kept clean. Rollers that perform the crimping and sealing operations should not leave a grease residue on the can rim. This would be a sign of excessive greasing or other malfunction. If noted, recommend immediate correction.

8. Satisfactory coding equipment should be present.

9. Packaged cans of butter should be free of butter residues around the cover or butter smears elsewhere on the cans. Check the item satisfactory if cans are routinely inspected and wiped when necessary (when the plant is canning butter under a government contract, checking of actual plant performance is the responsibility of the inspector who does the condition of container examination).

10. Check if satisfactory facilities are present for packing, sealing and coding fiber boxes.

11. Check that satisfactory scales are provided. For minimum accuracy and graduation requirements, see the guidelines for Item B46—Scales.

Item B44—Butter Whipping Equipment (58.128).

If the plant makes Whipped Butter and wishes to have this code listed in the *Approved Plant Book*, inspect all the equipment involved in the whipping operation. A variety of equipment is used for this process. Dismantle it and check for condition and sanitation. If a scraped surface heat exchanger is used, see the guidelines for Item A27—Product Cooler.

Sometimes nitrogen is incorporated during the whipping process, but more often air is used. This is entirely a management option: USDA has no recommendation in this regard.

Item B45—Whipped Butter Packaging (58.128, 58.319).

Show NA in the satisfactory column for this item if the plant does not package whipped butter, if the whipped butter code is not requested, or if the packaging machine is used for other butter products and is included in Item B43—Packaging Machine(s).

Usually the whipped butter is immediately packaged into consumer size packages. Follow the guidelines for Item B43—Packaging Machine(s) for inspection of the packaging equipment for consumer sized containers.

Item B46—Scales (58.128m).

(There is a printing error in the first table of tolerances as published in the General Specifications. The last line should read 51 to <u>100</u> instead of 51 to 500.)

Scales shall comply with National Bureau of Standards requirements. Compliance shall be determined by the appropriate regulatory authority. Usually this will be a state or local department of weights and measures that checks scales routinely.

For weighing boxes of butter in the 31-50 pound net weight range, the scales should have accuracy within ½-ounce and smallest graduations should be no greater than one ounce. Deficiencies regarding scale graduations or accuracy tolerance will not be considered as a significant factor in the assignment of plant status. (If official test-weighing is requested, a suitable accurate scale shall be provided as outlined in separate instructions for inspection, sampling, and test weighing. The inspector involved would be responsible for checking that the scale is suitable and accurate.)

For weighing butter boxes in a creamery, a stainless steel platform is recommended (other surfaces usually become rusty or hard to clean from the corrosive effects of chlorine and salt solution from the box liners). Also, inspect the scale underside and supports for cleanliness and make recommendations as necessary.

Item B47—Handling of Rework & Scrap (58.142, 58.338).

See the guidelines for Item A34—Sanitary Practices.

A. Rework Butter.

For the purposes of this instruction the term “rework butter” applies only to good condition, clean butter that is suitable for human consumption.

The most common source of rework butter is malformed prints caused by temporary malfunction of the packaging machine. It may also refer to good condition butter removed from the sanitary product contact surfaces of the churn, packaging machines, butter silos, etc. If salvaged, rework butter shall be collected in a sanitary manner and saved in suitable, sanitary containers prior to its reintroduction into the packaging machinery or remelt equipment. Such butter shall be stored in good condition stainless steel containers, in lined butter boxes, or in other suitable containers and promptly reintroduced into production (within two hours). If the rework butter is not promptly reintroduced into production, it shall be properly covered and placed into cooler storage or discarded.

If the plant requests listing in Section I of the *Approved Plant Book*, the rework butter shall only emanate from the butter manufacturing or printing operation. Commingling of butter for rework from other USDA approved plants is not permitted. Returned products (store returns) shall not be considered rework butter and shall be included with the operations inedible or waste butter. If commingling of butter from other plants, or use of returned butter is observed, recommend the INELIGIBLE status for all “B” codes (status at a “P” code plant would not be affected, provided the collection and handling of the rework comply with the other parts of this item).

Separation of butter from packaging material can be accomplished either in a melt tank as described in Item B9—Butter Remelt Equipment or in equipment especially designed to perform this function.

When inspecting butter salvaging equipment check for sanitary construction, proper sanitation, and maintenance. Refer to the *Accepted Equipment List* to determine if the equipment design and fabrication have been reviewed and accepted by the Dairy Grading Branch. Whatever the procedures used to remove the packaging material, the rework butter shall be handled and stored in a sanitary manner. After the reworked butter has been melted or processed and all the extraneous material has been removed, it shall be repasteurized prior to churning.

If the plant is not handling their rework butter according to these guidelines, recommend appropriate modification in handling practices to insure compliance. If unsanitary handling practices such as collecting rework butter from unsanitary surfaces of the print machine or the floor, rework butter being stored in unsanitary containers, etc. are found, recommend the INELIGIBLE status (category A deficiency).

B. Disposition of Waste Butter.

Waste butter is not considered suitable for human use because of contaminants, dropping on the floor, etc. It shall be labeled as "INEDIBLE," or "WASTE BUTTER," or "NOT FOR HUMAN CONSUMPTION," or otherwise clearly marked, and be kept strictly segregated from rework butter. If handling, storage or disposition of waste butter is unsatisfactory, recommend appropriate corrective measures. Show sufficient details about the deficiency so that the National Field Director can assess the seriousness in the determination of plant status.

Item B48—Housekeeping (58.126e, 58.127f, 58.146d).

See the guidelines for Item A7—Housekeeping.

Check that the print room supply of packaging material (wrappers, cartons) is protected from contamination. At the end of the day's operations, partial rolls of packaging material from the machines shall be protected with plastic or be placed in enclosed cabinets during the clean up operations.

Used boxes should be accumulated in a neat manner and be removed from the stripping area on a regular basis. Also, check the secondary storage area for these used materials and on their ultimate disposition from the plant.

Use of clean cardboard on the floor at the machines for safety reasons is satisfactory. However, the cardboard should be changed daily, or more often if necessary.

Sometimes floor racks are provided for workers at the machines to provide proper working height and to avoid slippery floor conditions. Such racks should be constructed of metal or plastic in sections that can be easily moved for cleaning. If they are not, make applicable recommendations.

Unnecessary supplies and equipment should be kept out of the print room. Grease, kerosene or other chemicals that might impart a flavor or odor to the butter should be stored elsewhere.

Product Storage

Item B50—Room Construction - Tempering (58.126, 58.311).

Use this item to cover inspection of any room(s) used to temper cold butter to proper uniform temperature prior to packaging. Storage facilities for bulk butter prior to printing should be covered by Item B51—Room Construction - Cooler(s) or Item B52—Room Construction - Freezer(s).

The floor, walls and ceiling shall be so constructed as to permit thorough cleaning (rough or porous construction materials, such as unsealed foam type insulation does not meet this requirement). In general, tempering rooms and coolers should have sloped floors and drains to simplify floor cleaning. However, floor drains need not be provided if the floor is sloped to drain to an exit or if floor cleaning is accomplished with scrubbing machines that vacuum up the cleaning water afterward. Inspect the floor for condition and cleanliness. Check any floor drains for proper trapping.

Inspect the room to determine if it is clean and reasonably dry. Check doors, jambs, and lower wall areas for damage from pallets or fork lifts. Describe any deficiencies with respect to condition or sanitation and make appropriate recommendations.

The butter should be tempered prior to printing under controlled temperature conditions for sufficient length of time to obtain a uniform temperature throughout the butter. Room capacity shall be sufficient to handle normal production and permit good housekeeping and storage practices. The temperature shall be under control to achieve satisfactory butter tempering. Tempering on a loading dock where the doors are occasionally opened is not a satisfactory practice.

Note:

> There is no objection to two-stage butter tempering by which frozen bulk butter is initially warmed for 2-4 days in a room at 65 to 80° F and is then moved to a room at approximately 50° F for second stage final tempering. Alternatively, two-stage tempering can be conducted in the same room by adjusting the temperature.

Of course, tempering facilities are not needed when butter is packaged soft from the churn, nor would they be necessary for small hard butter packaging operations where butter is satisfactorily tempered in the plant cooler room. In these cases show NA in the satisfactory column.

Item B51—Room Construction - Cooler(s) (58.126, 58.154, 58.311, 58.343).

See the guidelines for Item B50—Room Construction - Tempering.

Butter manufacturing plants should have butter cooler facilities on the premises, including those plants that have a usual practice of loading packaged butter from the churn directly into a refrigerated truck or rail car. The in-plant facilities are needed to afford proper butter storage in the event of transportation equipment delays due to weather, breakdowns, or availability. The lack of a butter cooler is unsatisfactory.

When butter is loaded directly onto a truck or rail car, check for proper refrigeration, that the doorway is adequately protected, and that boxes are not stacked too high causing them to bulge. If such deficiencies are noted, recommend correction.

Item B52—Room Construction - Freezer(s) (58.126, 58.311, 58.344).

See the guidelines for Item B50—Room Construction - Tempering.

Inspect the cooler or freezer as may be employed for temporary storage of packaged or canned butter before shipment. Butter intended to be held more than 30 days should be placed in a freezer room at 0° F or lower, with adequate air circulation, when possible after packaging.

Floor drains are not required in freezer space as they may pose serious problems with freezing and breakage. It is also relevant that frequent cleaning is not required under sub-freezing room conditions.

Use of pallets or floor racks is optional for storage of butter in freezer space.

Refrain from recommending frequency of defrosting, etc., as maintenance of refrigeration equipment and correct room temperature is management responsibility. However, check that provision is made for protection of the butter from drippage during any defrosting operations. In all other respects, inspect freezer space under the same general guidelines as for butter coolers.

Item B53—Room Construction - Warehouse (58.126, 58.153, 58.241d).

The floor of the warehouse should be of concrete or equally impervious material. A wood floor is satisfactory only when the flooring is sound, tightly laid, good condition, and maintained free of insect infestation. Inspect such floors carefully and make appropriate comments about condition.

Check that the walls and ceiling are tight and well maintained. Windows and doors shall fit tightly to exclude pests, and if left open, shall be screened. Ventilation openings into building shall be screened. Presence of birds or bird nests is unsatisfactory (use Item B64—Pest Control to describe deficiencies in the pest control program).

Item B54—Lighting & Ventilation (58.126e1, 58.343, 58.344).

Lighting shall be at least 5 F/C intensity in tempering rooms, coolers, freezers, and warehouses. Lighting fixtures shall be protected types or unbreakable bulbs shall be used where contamination of product by broken glass is possible.

Check that adequate air circulation, temperature control, and humidity control is maintained in the tempering room or cooler to prevent mold or condensation problems. If mold is noted, this item is unsatisfactory. Recommend removal of the mold, together with correction of the sanitation or humidity conditions that caused the problem.

Moldy conditions usually result in the INELIGIBLE plant status (category A). However, this deficiency can be assigned to category E if moldy areas are limited and management has the mold scrubbed off immediately during the survey. In such an instance, report the management corrective action following the applicable recommendation.

Example:

B54. – Clean the mold from the ceiling and walls in the North West corner of butter cooler #2. (The area was cleaned satisfactorily during the survey. Mr. Jones also advised that an additional fan will be installed within two weeks.) (E)

Item B55—Temperature Control (58.126d, 58.126e, 58.311, 58.343, 58.344).

The temperature of the coolers shall not be more than 40° F and the temperature of the freezers should be less than 0° F. If the coolers are more than 40° F, this item is unsatisfactory, show the temperature on the survey report. (Do not check the temperature during or just after load-in or load-out operations as such activities may allow a significant temperature rise that is not representative of normal storage conditions.) The 40° F maximum temperature requirement would not apply when the room is used for the tempering of butter prior to packaging at the same plant. When so employed, the room becomes a tempering room and the storage cooler temperature requirements are not applicable.

Forced air type refrigeration units have cold surfaces that will condense moisture vapors from the air. Catch trays or pans are necessary to prevent the condensate from dripping on stored products. Such collection pans also require piping to send the condensate to a floor drain located either inside or outside the cooler room (piping the condensate into a floor drain, above the trap, prevents it from running across the floor where moisture can be picked up by room air and contribute to undesirable high humidity conditions).

If the condensate is optionally piped directly into a sanitary sewer line or vent pipe, a trap is required in the condensate line to prevent sewer odors or air from gaining admittance to the cooler room. The trap can be a U-type bend in the line, or a P-type or S-type trap. Location of the traps is not a critical matter; the preferred location is directly under the collection pan.

However, when a common header pipe collects condensate from several refrigeration trays, one trap in the common header pipe downstream from the last tray is satisfactory.

When the condensate line is directly connected into a storm sewer pipe or vent, check for above-mentioned U-type traps in the same manner as outlined for hookups to sanitary sewers. This is to prevent backup of air from such pipe systems into the cooler room. Such reverse air flow might occur, for instance, when heavy rainfall or other surface drainage displaces air volume in the storm sewer piping.

Some older coolers may still have cooling systems employing refrigerant pipes along the walls or on ceiling areas. Although rapidly becoming obsolete, such systems are satisfactory if 1) adequate temperature and humidity control is maintained, 2) stored product is safeguarded during defrosting, and 3) adjacent wall or ceiling areas are kept clean and in good condition. If deficiencies are noted in these regards, recommend correction of the deficiencies or provision of a better refrigeration system.

Item B56—Housekeeping (58.126e, 58.146d, 58.154, 58.343, 58.344).

See the guidelines for Item A7—Housekeeping.

All products in tempering rooms, coolers, and warehouses should be stored on pallets, floor racks, etc. The pallets and racks should be maintained in good condition to prevent damage to product and containers. Products that may contribute to off-odors or in any manner contaminate the butter shall not be stored in the same room, and this should be noted on the report.

Clear space for access around the perimeter of the coolers and tempering rooms is not required since butter is kept in these rooms only for limited periods. This affords opportunity for access for cleaning, maintenance, and pest control activities. After a cooler area or bay is cleared, it shall be inspected and cleaned if necessary before reuse.

Inspect the condition of filled bulk butter cartons in storage. If boxes are generally misshapen, damaged or excessively bulged, describe the conditions on the report. Often the cause of this condition is due to stacking the butter before it firms up or stacking containers too high. When this is found, make appropriate recommendation for correction.

General Items

See the guidelines for Page A — General Items