

**Affinage Discovery Session
Crave Brothers Farmstead Cheese
Waterloo, Wisconsin**

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&
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Executive Summary

A Discovery Session designed to investigate *affinage* (or cheese aging) principals for Crave Brothers Farmstead Cheese (CBFC) was held March 9, 2005 in Waterloo, Wisconsin. Sponsored by the Agricultural Development and Diversification (ADD) grant program, the one-day session brought together 12 resource people from the cheese community to discuss critical topic areas involved with *affinage*.

The full report provides an extensive summary of the presentations and discussion on topics including construction of aging cells, food safety concerns, design and use of a tasting/conference room, and marketing specialty cheeses. The report appendix also includes slides shown during the session.

Among the key points discussed during the session were as follows: (1) *affinage* is very different than cheesemaking, requiring different facilities and technical/management skill sets to be successful; (2) the internal environments of aging cells are complex relative to humidity, temperature, air exchange, and sanitary conditions, and *affineurs* (the people who guide the *affinage* process) must carefully manage and manipulate conditions for quality and consistency; (3) with *affinage* becoming more popular in the state as a way to add value to specialty cheeses, the State of Wisconsin is working closely with cheese companies to ensure food safety issues are paramount; (4) the construction of aging cells is very different than typical dairy plant construction due to constant high humidity, positive pressure, and ammonia generation, and there appears to be considerable work and research needed on materials and methods; (5) a tasting/conference room could serve as another “salesperson” if designed to be chef and visitor friendly; and (6) the markets for specialty cheese such as CBFC’s Les Frères are developing rapidly, but these cheeses are more suited to specialty retailers and outlets that have both the customer base and the knowledge to handle such cheeses.

CBFC intends to begin expansion of their cheese factory in Summer 2005, and is using the information garnered during the Discovery Session to assist them in the process.

Introduction

Crave Brothers Farmstead Cheese, LLC (CBFC – see <http://www.cravecheese.com/home/index.php>) was founded in 2002 as a complimentary business to Crave Brothers Dairy, LLC. The objective for establishing this new business was to add value to raw milk by producing farmstead fresh, specialty cheeses. Crave Brothers are known as innovators in the Wisconsin dairy industry; their progressive, modern dairy farm is now complemented by the first farmstead cheese factory in the state. Current cheeses produced include Fresh Mozzarella, Mascarpone, Farmer’s Rope® String cheese, Oaxaca, and Les Frères®, an American original, semi-soft washed rind cheese.

Les Frères represents CBFC’s attempt to manufacture a signature farmstead cheese. After researching different alternatives, it was decided that a washed rind would reflect their heritage and offer a unique cheese to the marketplace. CBFC began making Les Frères in small batches in 2002 with the UW-Madison, Center for Dairy Research. George and Debbie Crave traveled to the Auvergne region in France in October 2002 to research similar washed rind cheeses. The cheese was ultimately named “Les Frères” (which means “the brothers” in French) to reflect the Crave Brothers Irish-French heritage.

Les Frères is a rich washed rind cheese with an earthy, fruity flavor. It is usually served on its own, paired with fruit and nuts, or as part of a cheese course. It is currently made as a 2.5 pound random weight wheel. To date, there have been 40+ different makes of Les Frères, and in order to make a consistent product of high quality, CBFC knew that they needed to investigate a range of topics involved with *affinage*, or cheese aging.

ADD and Babcock Institute Grants

CBFC applied for and was awarded an Agriculture Diversification and Development grant from the Wisconsin Department of Agriculture, Trade and Consumer Protection in July 2004 (see <http://datcp.state.wi.us/mktg/business/marketing/val-add/add/>). A parallel grant from the Babcock Institute, University of Wisconsin-Madison provided travel funds to Switzerland for a two-person study tour on *affinage* in October 2004 (see <http://babcock.cals.wisc.edu/artisan/index.en.html>).

The objectives of the ADD grant were:

1. Design and facilitate a two-day Discovery Session which considers all aspects of construction for an *affinage* facility on a farmstead operation.
2. Design an *affinage* facility based on the results of the Discovery Session.
3. Build a cadre of expertise in Wisconsin to promote aged/cured cheese.

4. Provide documentation to the industry on *affinage* facilities.

The study tour of Switzerland and Austria was extremely valuable in coalescing initial ideas for a new *affinage* facility; the results of the study tour are documented in a paper found at <http://babcock.cals.wisc.edu/artisan/crave-report.pdf>. Among the implications for CBFC were the following:

1. The aging “caves” need to be spaces that are technologically sound, controlling temperature and humidity;
2. The most efficient operations were those that had the make room as part of the *affinage* facility;
3. The use of different racking for aging cheeses varied considerably among *affineurs*; and
4. Virtually all small aging rooms were modern facilities with hard metal or plastic walls and floors and technology that closely (within a degree temperature and a percentage relative humidity) controlled the internal environment.

The study tour experience also helped plan the Discovery Session and create initial design ideas for the *affinage* facility. CBFC determined the topic areas that were most important (see below), and subsequently recruited state, national, and international experts to be part of the session in order to explore together various options. The session was changed from two days to one day to accommodate schedules. The original concept of a resource notebook was abandoned in favor of multiple discussions (email and phone) with each invitee in order to assign short presentations as part of individual’s areas of expertise. Finally, CBFC drafted guiding questions (see below) that helped define their interest in each topic area and shared this with the invitees prior to the session.

Discovery Session

The one-day Discovery Session was held March 9, 2005 at the Crave Brothers Farmstead Cheese conference room in Waterloo, Wisconsin. Twelve invitees attended the day-long session and three selected resource people involved with building construction came for lunch and the subsequent session on construction. A complete list of attendees and their organizational affiliation is listed in the appendix.

The Discovery Session followed the eight topic areas determined by George and Debbie Crave; these areas were assumed to be necessary for the successful start-up and operation of their *affinage* facility, and were as follows:

- Topic 1: *Affinage*
- Topic 2: Aging Facilities
- Topic 3: Supporting Infrastructure
- Topic 4: Food Safety
- Topic 5: Construction
- Topic 6: Design and Aesthetics
- Topic 7: Workflow and Personnel
- Topic 8: Product and Marketing

The eight topics focused on the needs of CBFC to produce a quality product and to construct and operate a successful *affinage* facility. The first topic, for instance, was designed to form a general consensus around the *affinage* needs of CBFC to create a unique French style, semi-soft, washed rind cheese. Topics 2-3 focused on the characteristics of the aging cell itself, and the prerequisite building and equipment infrastructure. With *affinage* as a still fairly new topic for Wisconsin cheesemakers, food safety concerns and concepts were assumed to be paramount at the beginning (topic 4). Given the variety of construction techniques noted in Switzerland and in other operations in the United States, construction professionals that assisted in the building of the original CBFC factory were invited to present their ideas (topic 5). Topic six focused specifically on the need for a tasting room as an integral part of the *affinage* facility, and topic seven considered workflow requirements. The final topic considered product and market specifications specifically for Les Frères.

Each topic was organized as a 20-60 minute session, which typically began with slides from the Switzerland study tour and/or a pre-arranged short (3-5 minute) presentation by one of the invitees (see Appendix I). Comments were then solicited from the group, and were guided by both the session questions (see below) and the session facilitator. In general, George and Debbie Crave were asked to summarize each of the sessions prior to beginning the next session. Notable also was a walk around the site immediately after lunch so that invitees could clearly understand the implications of adding this new facility onto the existing cheese plant.

Post-Discovery Session and Public Use of this Report

As encouraged by the ADD grant program, the results of these grants are designed to strengthen Wisconsin agriculture. As such, the following report is designed to offer summary information from the Discovery Session that may be of use for other cheese makers as they consider production of cave aged cheeses.

A word of caution for those looking at cave aged cheese and using CBFC as a model for their start-up enterprise: the following is a case study focusing on a very unique dairy and farmstead cheese operation in Wisconsin. It is important that each cheese manufacturer or dairy farm reviewing this report consider their own situation and characteristics before making plans for construction. Also, different cheeses require different cheese production facilities and aging conditions. It is important to consult with

professionals at the UW-Madison Center for Dairy Research, representatives from the Dairy Business Innovation Center (DBIC), and similar organizations before committing financial and human resources.

Public comments are welcome on this report – they can be addressed to Mike Bandli, ADD Program, Wisconsin Department of Agriculture, Trade & Consumer Protection (WDATCP) or Debra Crave, Crave Brothers Farmstead Cheese.

Finally, the authors acknowledge the many individuals for their contributions to the Discovery Session and this report. At WDATCP, Mike Bandli, Will Hughes, Secretary Rod Nilsestuen and their staffs provided support throughout the project period. Karen Nielsen at the UW-Madison, Babcock Institute was helpful in facilitating the travel grant. The cheese makers in Austria and Switzerland very candidly provided an incredible amount of information. And finally, a thank you to the extended Crave family for their continued interest support of the next generation of dairy innovation.

Session 1: Affinage

The short overview introductory session underlined the operational definition of *affinage* and included general thoughts emanating from the experience of the invitees. Of note was that the Discovery Session would focus on aging washed rind, French-style cheeses (WRFS) similar to Les Frères.

Highlights:

1. The general characteristics of Les Frères were shared with the Discovery Session invitees. This washed rind, French-style, semi-soft cheese is washed and aged for 3-8 weeks, and to date there have been 30-40 different makes of the cheese starting in 2003. One of the biggest challenges with Les Frères is to deliver the cheese at an age that the seller/buyer wants.
2. A general discussion of the operation at Artisanal Cheese Center in New York City (Artisanal NY – see <http://www.artisanalcheese.com>) provided some comparison to the current and future Crave operation. At Artisanal NY, four individual aging rooms are reserved for four different kinds of categories of cheeses and treatments/conditions. Versus making the cheese that will be aged on site, Artisanal NY purchases cheeses from around the world (including Canada, Italy, France, and the United States) and then designs a treatment to “finish” the cheeses. The distinct challenge to this approach is that their time in refrigeration prior to the beginning of the *affinage* process can sometime spoil the young unfinished cheeses before they reach the center.
3. One option for developing aged cheeses is to take the cheeses directly from the vat and subdivide them into 3-4 groups. One group can be aged immediately, and others can be refrigerated for 2-3 weeks or more before starting the aging process. This results in different textures, rinds, and tastes, and may give the cheese maker a number of different products from one small vat.
4. Cheesemakers must understand the size of the market, and must pick retailers that can handle the cheese. A product like Les Frères is destined for 1000 consumer and food service markets, not 15,000. Ultimately, it is the responsibility of the cheesemaker and their marketer to instruct and educate a retailer about the cheese; for specialty cheeses such as Les Frères, the optimal retailer is more likely to be someone like Larry’s Market (Brown Deer, WI) than a supermarket chain. With a product like Les Frères that continues to age in the retail cooler, there may ultimately be different customers for each stage of the cheese; a 3-4 week cheese may appeal more generally to current tastes in the

Guiding Questions:

- Who else in Wisconsin/US is doing washed rind, French style semi-soft (WRFS) cheeses (essentially, what is the market)?
- Are these cheeses cows milk or mixed (combination of cow and goat or sheep) milk?
- What imported cheeses are washed rind, French style?

United States, whereas a 6-8 week cheese may appeal to those that are accustomed to stronger European-style cheeses.

5. There must be an appreciation that the *affinage* process, at least in the European tradition, is designed to “finish” the cheese, or to make it better. The *affineur* is an artist that takes a raw product, refines it, and then presents it to the consumers. To be a successful *affineur*, one needs care, passion, a lot of control, manual labor, patience, intelligence, and financing. *Affinage* is a very different reality versus cheesemaking – there are new technical requirements that one needs to learn, and it will take a special person and/or company (especially on a small scale/farmstead level) to be successful.

Session 2: Aging Facilities

The facilities discussion stressed information on the optimal conditions for CBFC cheeses. The overall assumption is that the “caves” need to be modern facilities with sophisticated temperature and humidity control.

The term “cave” was of concern to virtually the entire group. Although there is a romantic marketing notion to “cave-aged cheese”, these specially designed, state-of-the-art rooms are better described as “aging rooms” or “aging cells” (especially if they are smaller sized units).

Appendix 2 shows the slides from the Switzerland trip that were presented at the start of the session. The pictures showed a variety of “cells” that featured different construction and different conditions, and provided a basis for discussion during the session.

Guiding Questions:

- What are optimum temperature and humidity ranges?
- What equipment is needed to control temperature and humidity?
- How important is air flow?
- What wall and floor material optimize WRFS cheese production?
- What size cave is optimal?
- Does the shelving configuration make a difference for aging consistency?
- What automatic systems/sensors are needed to ensure quality control?
- Does lighting affect the process?
- Assume a useful life of 20 years for the cave – does this make a difference in the materials and systems discussed?

Highlights:

1. Of chief concern were the basic principles that should be included in the design and construction of aging rooms or cells. The three principals that dominated discussion and were generally agreed as important were the following: (a) impermeable walls that

will withstand the constant high humidity that is exacerbated by the positive air pressure; (b) an evaporating unit that has a low delta T and is “CIP-able” (cleaned in place); and (c) a commitment by the *affineur* to understand, monitor, and control air movement within the cell to better create the appropriate cheeses.

2. Expanding on the issue of air movement, there are systems that use washable “socks” off of the condenser that help distribute the air and prevent undirected high air velocity. The sock further serves as secondary sanitary tool as it may catch white dust off of cooling coils. Ideally, a system should have no “dead” air spots or high humidity near the floor so that the aging of the cheese is consistent; the alternative here is for the *affineur* to understand the air flow and humidity of their room and then arrange specific cheeses in specific places (done as needed at Artisinal NY). Some systems that feature passive air movement (like silo-shaped caves) have been effective, but would probably be impractical for the Crave *affinage* facility.

3. Regarding room/cell size, an optimal situation would be to have one cell per each day’s production; this would aide in the aging of cheese and would make scheduling the cleaning of the cell much easier. Production of Les Frères and similar washed rind cheeses probably do benefit from smaller cells (e.g., 8’ x 8” and a 7-8’ ceiling) as the environment is easier to control. Cells full of product are also more easily calibrated. Tinkering with temporary room dividers such as shower curtains, plastic sheeting, etc to produce different kinds or ages of cheese are impractical and not acceptable due to food safety issues.

4. Ammonia is a potential problem with aged cheese production. It reacts caustically with certain metals and may damage evaporators, shelving systems, etc after a few years. Some *affineurs* splash the cell floor with water to bring the ammonia level down, but that was not considered to be an optimal method for aging a cheese like Les Frères.

5. With the potential for producing both a large wheel of Les Frères and then individual serving “petit frère”, the issue was raised as to whether the size of the cell would be critical for the size of the final product. Managing the production – humidity, temperature, frequency of washing, etc – was felt to be critical here versus the size of the actual cell.

6. Aging cells, in general, should be seen as very sensitive and complex systems that the *affineur* must understand and control. Artisinal NY has computerized controls for precise temperature and humidity settings, but internal management of the cell is still needed because of the micro-climates. Frequent opening of the cell door or constant lighting will affect the internal climate of the cell. Steel doors with a climate controlled viewing window will allow some perspective on the cell and still maintain the integrity of the internal climate.

7. Finally, there was general agreement that clean systems were critical to success. Cold, moist cells are ideal conditions for bacteria, and the *affineur* needs to have all of

his/her systems washable. One option is to have equipment outside of the cell itself so that it can be easily and frequently cleaned in place. Food safety inspectors generally want to see (a) a well designed cell with no cracks and crevices that are difficult to clean; and (b) systems and processes that insure that health standards are maintained.

Session 3: Supporting Infrastructure

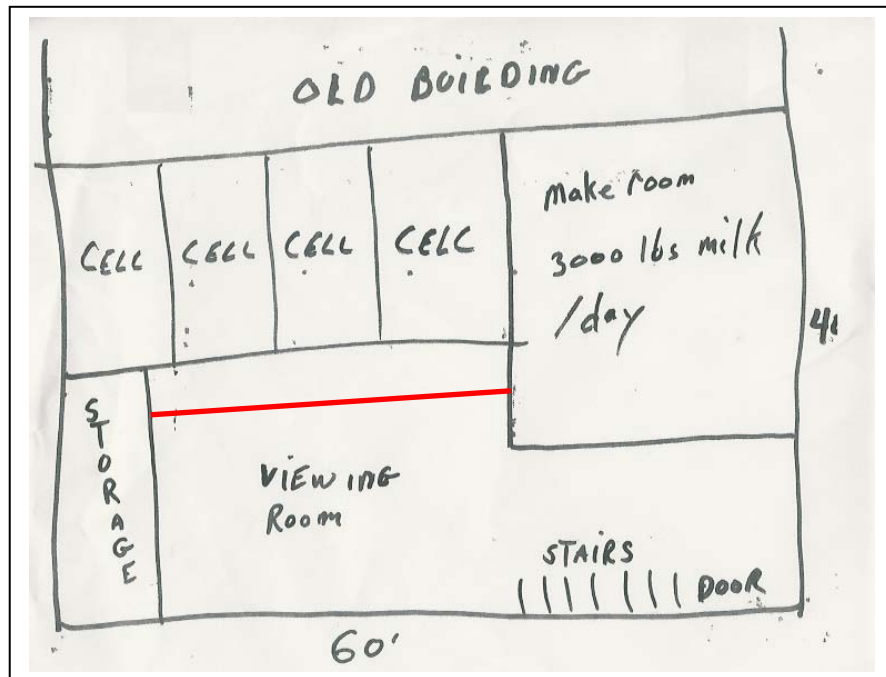
The supporting infrastructure can be defined as both (a) the other facilities around the aging caves that will facilitate the creation of successful products; and (b) the actual equipment used in cheesemaking and aging. The discussion in this section centered on methods and techniques seen in Europe by the Craves and/or were known to invited speakers, and slides from the Switzerland trip (Appendix 2) were again shown as examples.

Guiding Questions:

- Why construct a separate make room for WRFS cheese?
- What are options (& requirements re: OSHA) as to the size and configuration of this facility?
- How can workflow be maximized with judicious equipment and facilities placement?
- What advantage does an initial yeasting room serve versus using the caves only?
- What are the specifications of a cooler for the proposed size of the facility and its use for FSWR aged cheese?
- What is the general configuration of the packing area?
- Is there any storage in the cave complex, or is it all in the dry storage area above?
- What forms are best suited for WRFS cheeses? Are some final product shapes/sizes more marketable than others?
- What mini vat design is best?
- What equipment is suggested for use in the make room? What are other options that will increase productivity and/or ensure quality products?
- What are the optimal shelving systems?
- What is the optimal brining configuration for WRFS cheese?
- What special equipment is needed for the yeast room?
- What packaging equipment is available?

Highlights:

1. George Crave presented the diagram below and introduced it as a starting point for discussion. The *affinage* facility would include a small make room for Les Frères and other WRFS, the cells themselves, a packaging area, and a tasting room. This facility would be partially underground, and a second story would be expanded dry storage for the main factory. The ideal production would be to use 3000 lbs of milk/day, five days per week.
2. The general configuration of the facility was discussed both in terms of logistics and construction. For the latter, constructing a facility partially underground would not necessarily save any energy costs, and may end up to cause problems in the future. In regards to logistics, the movement of containers and other materials down to the *affinage* complex and then the movement of product up to storage and shipping were seen as cumbersome. There was a general consensus that a site west of the current factory – where production and storage would be on one floor -- might be better in the long run even though the “cave” effect of the original design would be lost.
3. From both production and safety standpoints, it was suggested that all visitors be restricted from the make room and the aging cell areas. A glass partition could be constructed (see the red line below on the diagram), and/or video cameras could be strategically stationed to show various parts of the complex on closed circuit televisions placed in the tasting room area.



4. Considerable discussion centered on the need for an appropriate vat for this operation. The vat should be (a) small enough for one person to operate; (b) small enough and designed such that each make was consistent; and (c) an elevated, tip-up vat (no pumping) that would then use movable drain tables.

5. Defining appropriate equipment quickly turned to defining the appropriate cheese to make and then match equipment to that production. Invitees strongly advised that CBFC pick one type of cheese, perfect it, and build a solid reputation.

Session 4: Food Safety

Given the scarcity of aging caves in Wisconsin and the United States in general, inspection and food safety issues need to be addressed as part of the construction of this complex. Glenn Goldschmidt of the Wisconsin Department of Agriculture, Trade, and Consumer Protection, Division of Food Safety, led the food safety discussion.

WDATCP is the regulatory agency that governs virtually all of the food safety processes involved with the proposed *affinage* facility. Internationally, the country receiving the cheese may provide additional or different standards concerning cheese making or product storage.

As a current Wisconsin cheese plant, CBFC does not require another license for its proposed *affinage* facility.

Highlights:

1. Food safety concerns are an integral part of the design and operation of the proposed *affinage* facility. Production efficiency, exemplified by a one-floor complex, makes sense from a food safety point of view. Positive pressure should be highest in the make room, and then second highest in the aging cells to discourage harmful molds and bacteria. Equipment and systems should be designed to be taken apart and cleaned. As noted under Topic 3, if there is a public section to the *affinage* facility (the tasting room), there should be distinct rules on access to production, aging, and storage facilities.

Guiding Questions

- What regulations govern WRFS cheese aging in the Wisconsin? In the US? Internationally?
- Who is the regulatory agency for each?
- What is involved in a cave inspection/audit?
- What food safety (or quality) information must be on a label for aged cheese?
- What aging information is needed in case of recall?
- What facilities safety procedures should be in place to prevent “bad” molds?

2. Producing washed rind cheeses is a battle between “good” and “bad” molds, and there are an estimated 10-12 trillion micro-organisms per gram on the surface of the cheese. It was further noted that there was less mold culture on the surface of the cheese than what is going into the vat. Constant disinfection of all surfaces is discouraged as micro-organisms are needed to make the cheese. There is a higher level of confidence that commercial cultures can now make the process repeatable versus even 10 years ago when cheesemakers would scrape the rind off of an existing piece of cheese for its culture.
3. DATCP conducts a audit or inspection of an aging facility much like it would a factory examination (ATCP 80 and 71), and expects the following: (a) good sanitary practices by employees; (b) good ventilation; (c) appropriate storage rack construction and sanitation; and (d) appropriate wall, floor, and ceiling construction and adequate lighting.
4. There are standards for plastic cheese molds – 3A sanitary standard (20). Certain mold manufacturers have gone through this, and USDA has a list on its website of the approved plastics. Cheesemakers should ask the plastic manufacturer whether they have gone through the USDA approval process.
5. One of the biggest threats to food safety is the retail point of sale. All kinds of foods come together, and there is often little training of retail staff handling cheeses. Cheese makers need to understand that a recall at the plant will happen if contamination is found at retail outlets.
6. It was clearly understood that the proliferation of cheese aging facilities and new techniques were going to challenge current WDATCP rules and standards. An open dialogue between the cheesemaker/*affineur* and state regulators was encouraged, and WDATCP was encourage to publish any/all new regulations as soon as possible to assist innovative cheesemaking in Wisconsin.

Session 5: Construction

The construction discussion emphasized options related to the construction of the aging cells as well as overall construction. The discussion of aging cells in Topic 2 related to the need for impermeable walls made this session increasingly important.

Guiding Questions:

- Where will the cave be built? Is this the optimum location?
- What materials/design will be used to optimize energy efficiency?
- What is the general design of the “second floor” dry storage?
- What are the general specifications re: water, electricity, heat, etc?
- What are the general specifications for waste water and why?
- How are systems in the main cheese factory linked to the cave complex? What systems will be designed to be “stand apart”?
- What firms are suggested as contractors?

Highlights:

1. Interlocking, wood core panels were suggested for the aging cells, with the thickness of the panels to determine the level of insulation. Four layers of sealing caulk and mastic are used between the panels to make sure that no water gets in. The panels have been used for over 40 years in cheese plants, meat packing facilities, etc, and have never exhibited wicking of moisture into the interior wood.
2. CBFC had their current cheese factory built with these dairy board panels. They are washable, and have to date performed well in factory conditions. CBFC did construct the walls on elevated concrete so that the panels did not go to the floor in order to minimize any water seepage into the walls.
3. There was considerable concern over the use of these panels in an aging cell situation. A typical cheese factory using interlocking panels dries out each night; in aging cells, there would be 90-95% constant humidity exacerbated by positive pressure. There was further concern about tightness of seal around doorways and wall/ceiling intersections. There were also questions of how sealants and mastic would perform under heavy concentrations of ammonia. In general, the system seemed to rely more on workmanship (all of the sealants and mastics) than engineering to produce an impermeable surface, and this was clearly unsatisfactory to the majority of the session attendees.

4. The refrigeration system was discussed with the construction professionals, and again it was emphasized that this is a critical hygiene point because it is virtually always moist. It was emphasized that if a sock system of air distribution is used, socks should be removed and cleaned on a weekly basis. Another option is to install a UV light system on the side of the evaporator to kill bacteria. It was thought that the current air handling system was adequate for the *affinage* complex expansion, but it was noted that warm humid air should not be re-circulated as it may be a critical checkpoint for bacteria growth.

5. Each cell should have its determinable drain and should go right out the door. Ideally, a dry floor is desired.

6. It was suggested that (versus vinyl systems that could shrink or expand) fiberglass or concrete cells may be most appropriate. The issue with these systems is often the price, but it was argued that what CBFC needs is the right system and not necessarily the cheapest system. Failure of a cell would result in thousands of dollars worth of spoiled product, so it is worth doing it right the first time. Regarding food safety, it was agreed that the issue of seams inside of an aging cell was valid and important, and it was noted that pre-cast concrete was acceptable if then sealed (not painted). The resultant structure should have no entrance points for moisture but yet still be easily washable.

Session 6: Aesthetics and Design

The *affinage* facility will be equipped with a conference/tasting area capable of hosting professional groups. Obviously, there are many options related to both the interior of this room, and then how it is designed around the production facilities and the entranceway to the complex.

Appendix 2 shows a number of pictures from Switzerland showing how Bregenzerwalder Kasekeller designed their facility in Austria. The external entrance to a cave in France was also shown to provide an Old World perspective. At the conclusion of Session 6, Daphne Zepos showed a number of slides from Artisinal NY and discussed how they have integrated their tasting/ dining space with their production facility.

Guiding Questions:

- What parts of the cave complex will be accessible to all traffic? What are the viewing angles from all windows?
- What signage will assist guests in understanding processes in the cave complex?
- What are the design and cost considerations for a stone cave motif ?
- What is the range of activities that will be held in the conference/tasting area, and what furniture and decor best accommodates these activities?
- What additional appliances or facilities will be needed in the conference/tasting area to serve food and drink?
- Are any special licenses required for this purpose?

Highlights:

1. The design and use of the current CBFC conference room has formulated some of the ideas for the conference/tasting room. It cannot be used simultaneously as an employee break room, and its design must help tell the story of CBFC (which is why there are windows showing activity in the factory and windows with views of the farm and fields.) Similarly, the new tasting room should be where invitees can see where the cheese is made and aged, and then sit down and taste the cheeses CBFC has to offer.
2. The tasting room will cater mainly to cheese buyers, food editors, chefs, and other professionals versus school groups and the general public. It was noted that similar programs at other Wisconsin cheese companies have contributed significantly for establishing those companies in the marketplace; these programs function like an extra sales person. Think of the tasting room as a silent salesman that you pay for once – and one that needs no benefits.
3. There is a sense that it must have an Old World flavor, from the entrance and then to the tasting room itself. It must include viewing windows, but it might also include works of local artists. CBFC was encouraged to make sure that they tell their story in the design of the room. Signage is important so that visitors can be self-directed around the room.
4. The tour will start when visitors drive up to the cheese factory and therefore some consideration needs to be given to re-design of the eastern part of the complex. One suggestion was to make it “more Wisconsin”. The idea is to have the functionality and efficiency of a cheese plant, with additional design and aesthetics (possibly using some of current gardens on the east side).
5. Arrangement of the room is critical, and there is no time better to show your image equity than when people are there. Face the oven toward the center of the room on an island, and invite chefs to “come and play”. The island should allow the chef to stand, work and talk to a group (think infomercial here, and remember that the height of the island as a work surface is important). Equipment in the kitchen must be industrial grade (Sub-Zero, Wolf, quality countertops, etc) so that the chefs can do quality work.
6. The room needs to be bigger than designed in the original sketch (see session 3). Artisanal NY, for instance, seats 78 people, and a bus tour hosted by WMMB would approach 60 people. The minimum capacity should be 30 and/or accommodate 12 chefs working hands-on. For tables, think of “stations” of four or six people, and design an area where tables and chairs can be stored easily.
7. Cheeses need to be displayed; they need to be available for smelling and tasting at every event.
8. Don't underestimate an outdoor venue. Summer on the farm could be an excellent venue – think like a restaurateur here.

9. Wisconsin Milk Marketing Board (WMMB) has been very supportive of including Crave Brothers Farmstead Cheese in their tours with food editors, retailers, foodservice, and distributors. A tour of the farm often is included in the stop at CBFC. The Crave Brothers feel it is important to tell the story of modern dairying that emphasizes cow comfort, quality milk, and working in harmony with the land to produce quality milk and award winning cheeses.

10. The issue is whether the expense of a tasting room will be worth it. There is no question that there will be significant upfront costs, but the project could be done in stages.

11. The presentation concerning Artisinal Cheese Center in New York City (see slides in Appendix 3) featured the following: (a) Artisinal NY has a classroom/banquet facility that seats 78 people for dinner; (b) the operation features *affinage* but no make facilities. Cheese is made for them, and then is washed and aged at Artisanal NY through a variety of different methods; (c) the washed rind aging room has a number of challenges, including tile floors that are often slick and a lower shelf that is permanently wet; (d) sections featuring either dampness, quiet pockets, or too much air velocity in the washed rind room have necessitated the placement of certain cheeses in specific parts of the room; (e) the seasonality of cheeses is becoming something that their savvy customers are starting to talk about and look for; (f) the aging rooms have a control panel for temperature and humidity control, doors that close and seal very well, and a heated viewing window (which then has no condensation); and (g) the investment for the aging rooms was maybe \$300K for the production end only, and it was designed by Hughes Refrigeration.

Session 7: Personnel and Workflow Considerations

Workflow considerations in the *affinage* facility will be part of CBFC's total operation, but at issue is how adding such a facility will affect division of labor and/or additional labor, workflow between the main and aging facility, etc. Labor considerations are also important when choosing appropriate equipment and when designing to accommodate food safety regulations.

Guiding Questions:

- What percentage of cheese maker time will be needed daily when the aging facility is in full production?
- What percentage of staff support time will be needed daily when the aging facility is in full production?
- What staffing needs are anticipated under "as needed" (e.g., tasting events)?

Highlights:

1. One person should be in charge of the make process in the new *affinage* facility. This licensed cheesemaker would make Les Frères half time, and then assist CBFC with other tasks for the remainder of the time. The individual would (admittedly) need special skills, and might be asked to do administrative work. With a target 2-3,000 lbs milk/day and the appropriate equipment, this can be a one person job.
2. Part-time workers would be pulled from the factory to assist with washing the cheese and packaging. The design of the shelving system will help determine labor considerations as it was suggested that the vat size should match the shelves, which could then be the size of a pallet unit to be easily packed when ready for cold storage and shipping. Another alternative was to have shelving systems on casters to be easily transported by hand, especially in the beginning. Yet another alternative was to design the shelving system around a small pallet jack; arguments against this approach were that this may be an expensive initial investment, and that the pallet jack may be a source of contamination if not kept exclusively in the *affinage* facility.
3. The single cheesemaker approach may be adequate, but CBFC was encouraged to consider some positive redundancy around this position; if the cheesemaker leaves, there would be considerable hole in the operation. It was noted that this person will also need to keep an eye on monitoring of the aging cells and R&D. Artisinal NY has an internship program designed to have the intern work with the cheesemaker for three months, and they have recently hired a “Cave Manager” to assist with day-to-day operation of the aging facility.

Session 8: Product and Market

As a washed rind, French-style cheese, Les Frères needs to be produced and retailed to niche markets across the United States. Discussing and understanding some of the current market dynamics for cave aged specialty cheeses, and then brainstorming ideas related to marketing this cheese was the general objective of this last session.

As with previous sessions, slides from the Switzerland trip were shown (see Appendix 2).

Guiding Questions:

- What is the current market for WRFS cheese in the US? What percentage is US made? What percentage is imported?
- How much cheese could /should be made if the planned facility is in full production?
- What are the most important packaging and labeling issues for Les Frères and similar cheeses (note that it may be useful to show make date and then a succession of tastes based on the age of the cheese)?
- Are there issues with aging versus curing versus store shelf storage?
- What issues are associated with shelf life and WRFS cheeses?
- In what quantities/lots should Petit Frère be sold (12/box)?
- What are the state, regional, and national marketing opportunities for WRFS cheeses?
- How can WRFS cheeses be developed as year-round cheeses?

Highlights:

1. The market for a specialty cheese such as Les Frères is very different in the United States than in Europe. For the Swiss market, for example, a number of different sizes of the same product are acceptable; in the United States, it is important to create and target one product and be successful with that first.
2. The specialty cheese industry in the United States is healthy; the issue for many cheeses such as washed rind varieties is that it is currently impossible to determine the whole market in the United States. Choice of food is often generational, and mothers need to put cheeses like Les Frères in front of their families to try. Specialty cheeses have survived well in the recent carb craze, and are being considered more and more for their food service and casual restaurant functionality. As consumers travel abroad and try new cheeses, they come home looking for that same taste and experience. Wisconsin cheeses are well respected nationally, and the work of organizations such as WMMB has helped enhance recognition of Wisconsin cheeses to consumers nationally. One challenge is to target more specialty retailers like Larry's Market (Brown Deer) versus mainstream retail establishments.
3. Although the specialty cheese industry is healthy, there are still substantial issues related to the marketing and use of these cheeses. As noted, there is little data on who is buying these cheeses and why. Even expert chefs often ruin a piece of Gruyère by wrapping it in plastic. Wisconsin is probably still better recognized for Colby and Cheddar versus unique French style cheeses. It may be adventurous males shopping on the weekend, looking for something different that may be the target market of a cheese

like Les Frères. Finally, if consumers try a sample first, they may be more likely to purchase a new cheese like Les Frères, and it is important to find retailers willing to help sample sales.

4. Technomics (including supermarket scanning) is not adequate for tracking trends in specialty cheeses. Using chefs and/or tracing cheese import numbers may provide a better assessment of the market. The difficulty of the assessment is compounded by how the cheeses are classified by many of the professional organizations.
5. The packaging is critical for the success of Les Frères. This is a cheese that continues to age while in the cooler, and so the paper and box packaging must allow/enhance this process while maintaining the integrity of the product; essentially, the cheese needs to breathe. It was agreed that (a) Les Frères should not be inventoried – get it to the retailer as soon as possible; (b) keep it in paper versus plastic; and (c) avoid storage in a cooler for long periods as it dries the cheese out. CBFC was encouraged to “think outside the box” with the packaging, and there may be some newer plastic carton packages that allow the product to keep breathing. Although there is little university research on appropriate packaging, this may be an area that may greatly assist the industry.
6. CBFC was encouraged to continue producing both Les Frères in larger wheels and also a Petit Frère for individual consumption; these two products could be marketed to the bulk cheese counter and the retail shelves, respectively. Most retail shops do not handle bulk cheeses very well.

Session Summary and End Notes

Time restrictions did not allow a formal “next steps” session and so invitees were encouraged to send in comments by email to be included in this document. Selected comments included the following:

1. The discussion of air control systems and the construction of cells could be considered proprietary, and could be a source of income for consultants at the Discovery Session and elsewhere.
2. The process of the workshop was good as a Discovery Session. No one had all of the answers, and there was a fair amount of conversation flow. Having Daphne Zepos of Artisinal NY – an opinion from outside of Wisconsin – was extremely useful and provided a wealth of information.
3. All information from the session should be provided to the public except for the most private details -- such as the construction plans. The final report should be available on the web like the Switzerland trip.

4. Construction issues were the most contentious. There is currently a gap given that there are no “one-stop shop” general contractors that do this. The system presented at the session was criticized primarily because of the unknowns related to construction materials versus humidity/ammonia and the durability of such over the long-term. In the short-term, it may be helpful to collect more options available for construction from all over the world.
5. Increased emphasis is needed on marketing and packaging of the product. Cheesemakers need help on the marketing side as specialty and artisan cheesemakers are much like creative chefs -- they tend to overlook the marketing side of the business. Estimating size of market of Les Frères is very vague as the majority of this type cheese is not sold in conventional stores -- hence the volume and trends information is not readily available.
6. Although the story to the consumer may be old world romance in regard to the production of cheeses like Les Frères, the reality for cheesemakers is that they initially need to worry as much or more about their needs of the labor force, state inspectors, and other business tasks to be successful.
7. The session points to potential controversy around terminology. “Ripening” versus “aging” versus “finishing” were interchanged. Also, “caves” versus “cellars” versus “rooms” versus “cells” may be the same but have different connotations, especially for the consumer.
8. There was very little discussion on manufacturing protocols during this session. The Center for Dairy Research is well equipped to work with cheesemakers to design specific make schedules.
9. There are a number of different formats that the follow-on for this project can take, including creation of an extensive resource notebook and/or follow-on sessions for other cheesemakers. The Crave Brothers Farmstead Cheese example is a very nice prototype case study for any subsequent work.
10. Missing was the financing of the operation, and information on pricing, economics, investment capital needed, cash flow required for long hold cheeses.
11. The right combination of people is needed to make a session like this successful. It is important to note that this was a discovery session, but not a solution session, and more work needs to be done on *affinage* to support Wisconsin cheesemakers.
12. There will be others interested in *affinage* that do not have extensive general cheesemaking experience, and it will be important for them to attend general manufacturing short courses offered by UW-Madison or UW-River Falls and/or use good reference books outlining manufacture principles (examples include Kosikowski's Dairy Manufacturing and Cheese Manufacture from a Northern

European Perspective by Kristensen). Information dealing with sanitation/food safety from milk handling in the plant, regulations on raw versus heat treatment versus pasteurized, plant GMP's, proper brine and ripening room maintenance should also be presented, along with contact information for DATCP, CDR, maybe other organizations who could help in this area. An on-line library of digital pictures from around the world will also be useful for prospective *affineurs*.

13. There should be a "reality checklist" for small companies considering *affinage* so that both the company and supporting agencies do not invest too much time and effort. The checklist may include: what can go wrong; information available and selected short courses; meeting with DBIC to discuss marketing; and an analysis of cash flow if they are considering long hold cheeses. Many have seen the romance of cheesemaking, but they are often blinded from the technical and business realities behind it.

A few final notes from the authors: the invitees to the Discovery Session indeed verified a number of ideas that were brought back from Switzerland, and challenged many more. CBFC realizes that until a facility is created that can be controlled by the cheesemaker/*affineur*, the prospect of making Les Frères as a consistent, quality product is problematic.

As of the writing of this report, CBFC is finalizing the architectural plans for Summer 2005 construction of a two-story addition to their factory. The second story will be fully finished as dry storage, and the first floor will be equipped with sufficient utilities and infrastructure to create an *affinage* complex in the near future. The Discovery Session clearly indicated to CBFC that additional due diligence is needed and that process has begun with cheese industry and construction advisors.

Appendix I: Discovery Session Attendees

Neville McNaughton – President of CheezSorce, and consultant to the Dairy Business Innovation Center (DBIC – see <http://www.dbicusa.org/>).

John Jaeggi – Associate Researcher, UW Center for Dairy Research (see http://www.cdr.wisc.edu/about/staff_pages/John-Jaeggi.shtml).

Dave Leonhardi – Wisconsin Milk Marketing Board (see <http://producer.wisdairy.com/>)

Steve Ehlers – Owner, Larry’s Market, Brown Deer, WI (see <http://www.larrysmarket.com/>)

Steve McKeon – President, Roth Kase (see <http://www.rothkase.com/news.html>).

Regi Hise – Chef and President of Foodtrends.

Felix Roth – Technical Director, Roth Kase (see <http://www.rothkase.com/cheesemanage.html>)

Willi Lerner – Cheesemaker and owner of Bleu Mont Dairy (see http://www.wisconsinartisan.com/bleu_mont.html).

Glenn Goldschmidt – Food Safety Scientist, Division of Food Safety, WDATCP (see <http://www.datcp.state.wi.us>).

Scott Rankin – Assistant Professor, Dept of Food Science, University of Wisconsin-Madison (see <http://www.wisc.edu/foodsci/faculty/rankin/>)

Sid Cook – Master Cheesemaker and President, Carr Valley Cheese (see <http://carrvalleycheese.com/>)

Daphne Zepos – Director of Affinage, Artisanal Cheese Center (see <http://www.artisanalcheese.com/artisanal/index.cfm>)

Lad Dilly - Energy Panel Structures

Scott Foley - Foley Construction

Brad Madigan - Madigan Refrigeration