the LODE STAR

Charting the course of fisheries development.

Alaska Fisheries Development Foundation Volume II, Issue 2 Summer 1984

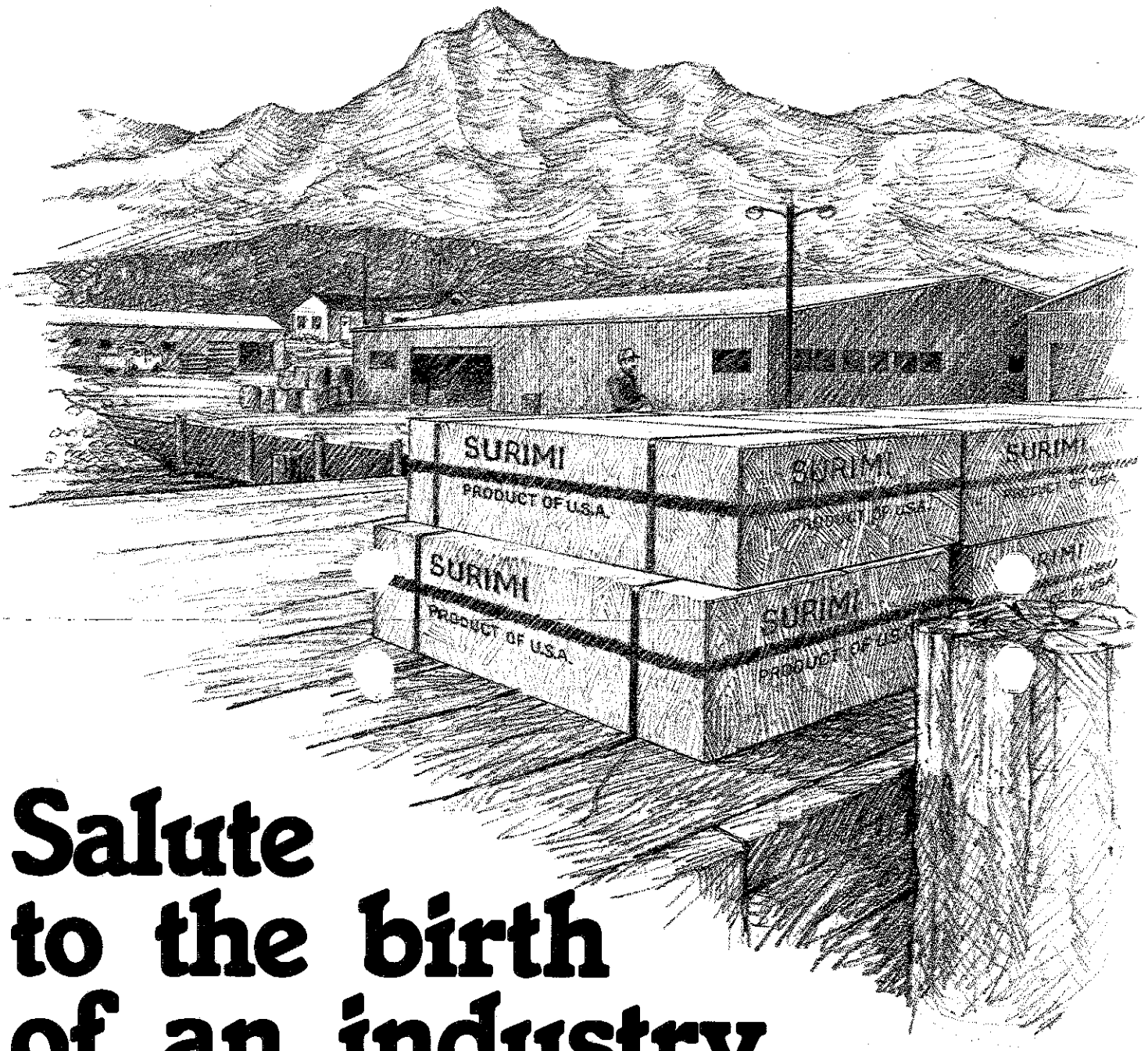
PHOENIX FROM THE FLAMES

...nt Seafoods rebuilt its model whitefish plant in Akutan on the Aleutian chain nearly one year after it burned to the ground. New designs were added to the rebuilding project to improve product flow and allow for multi-species production.

By early June, the Trident plant was accepting delivery of fish and was processing about 200,000 pounds of salmon a day.

While the plant was being constructed, Trident president Chuck Bundrant was not idle. He and his associates are given credit for opening Portuguese salt cod markets and establishing U.S. export leads for fillets — moves that will pave the way toward markets now other U.S. whitefish processors.

The emphasis of the Trident plant will be on diversity of products, including frozen fillets, Bundrant said. He indicated that Trident's commitment to rebuild a whitefish plant reflects its dedication to the future of that industry in Alaska.



Salute to the birth of an industry

It was an inauspicious beginning, toasted by no one and applauded by few. But it may change the face of the seafood business for years to come.

On May 3, the Royal Alaskan Seafoods processing plant at Dutch Harbor produced the first commercial pollock surimi in the United States, marking the birth of a new industry in this country.

The small-scale effort proved that American shore-based processors can make high-grade surimi in large enough volumes and with dependable consistency to support a domestic industry.

Pacific pollock was harvested for the Royal Alaskan batch line by the 85-foot trawler *Lone Star,* and a seiner, *Miss Julie.* Fish was caught two hours' running time from the plant, ensuring freshness.

After unloading on the dock, the pollock were stored in ice in totes until processing. The fish were flumed into a rotary scaler, then sent through a Ryan header and a Ryan salmon gutter which had been modified to handle pollock.

The fish then were deboned in a Bibun SDX-16 deboner, and transferred into a ratio tank. From there, the mince and water were pumped into the first wash tank and agitated, then pumped through a Sweco screen, and then into the second bank of wash tanks.

The mixture was agitated again, and pumped through an FCK rotary screen for dewatering. From there, the mince fell into a Bibun SR1000 screw dehydrator. The dehydrated mince fell from the screw dehydrator into a Bibun SUM420 refiner, where remaining particles of bone and skin were removed.

After the refiner, the mince was loaded into a large ribbon blender, where it was mixed with sugar, sorbitol, and polyphosphates. The surimi then was pumped through a Bibun twin screw filler and into 10 kg. pans for plate freezing.

Initial production was disappointing in quality, due to several factors. Billy Thrash, manager of surimi production for Deep Sea Foods, who is hailed as the most

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THE VIEW FROM HERE

by Chris Mitchell

Last issue's "View From Here" ended with the words, "Thank you, Japan." Well, it looks like that was a little premature, and I'll tell you why I now must retract that.

Many of us have seen surimi transform from an Asiatic oddity into a base for new products which are proliferating in the U.S. market at an explosive rate. We also have seen the birth of Alaska's first commercial surimi plant. Some have said that surimi is the hottest thing to happen to the food business in ten years.

While many in the seafood business and its existing distribution network don't seem to see beyond shellfish analogues, other industries have greater depth of focus beyond this limited market. They see the real potential of surimi as a protein in competition with soy, milk, and other meat proteins, an application that has limitless possibilities.

So what do we have now?

We've got an annual harvest capability of Alaskan pollock approaching 1.5 million metric tons (at less than $100/ton ex-vessel) within the U.S. Exclusive Economic Zone.

We've got America's first large-scale surimi processing facility, which is now demonstrating that the myth and mystique that once shrouded surimi and kamaboko production was mostly a heavy smoke screen.

We've got a rapidly expanding domestic market for imported shellfish analogues. We've got an excited and powerful food industry spending vast sums to evaluate surimi's use beyond imitation shellfish. They are studying important characteristics like freeze drying ability, protein solubility, water binding properties, emulsion capacity, foaming properties, etc.

We've got an industry composed of fishermen and processors who demand their fair share of America's resources and markets.

So what's the problem?

Unfortunately, all is not peaches and cream. Until now, the entire surimi industry—estimated to be an annual $2 billion undertaking from ocean to oven—was the exclusive territory of Japan. Are we naive enough to think they're not going to play hard ball now? Japan has too much at stake in access to the U.S. resources and in the existing Japanese kamaboko market not to do so. They also covet control of the rapidly expanding U.S. and world market. And in that battle, they are masters.

In recent travels, I came across the following scenario depicting how Japan might be planning to play this game. You might find it both interesting and frightening. But if this is the game, we had better know the rules or too soon we'll be left on the bench.

Japan's 1983 exports of surimi-based products to the U.S. were in the range of 30 million pounds. Their target for 1984 is reported to be 180 million pounds! (We're told there are, at last count, nearly 40 importers of Japanese products; last year there were less than 10.)

If 1984 figures come anywhere close to this target, there might not be too much extra for domestic producers to share. With ownership of the analogue market firmly secured, the stall would begin.

Japan presently gets approximately 1 million metric tons of pollock annually from Alaska's EEZ, through directed fishing and over-the-side joint ventures. Pressure from the U.S. to increase our share (or at least our revenue from what should be our share) of this resource is mounting. And Japan is grudgingly and reluctantly cooperating (how I hate that word!)

Such cooperation might cease when foreign interests have hold of the U.S. surimi markets. Alaskan fishermen and processors, who saw king crab take a nose dive and invested in the pollock industry to rescue themselves, might find markets closed to them. Then they would be in deep trouble—prime, sweet pickin's for Japan's surimi giants.

Some folks in the food business say we in the fish business should not be overly concerned if foreign interests capture the majority of our market, because the future beyond crab legs is so large as to make analogues insignificant by comparison. While I'll agree that nobody surpasses the U.S. food industry in innovation and ability, I wonder if the seafood industry need go through all the blood, sweat and tears

Clam Clamor

Not much happens in Cook Inlet in May, usually. A few early steelhead fishermen post sentry at the mouths of streams. There's always a handful of pre-season king salmon hunters who make a lot of futile casts into Russian River, mumble philosophically for a while, and then go home.

But this year, all was not quiet in Cook Inlet between breakup and drift-net season. In the shallow waters off Polly Creek near Tuxedni Bay, clam history was being made.

Alaska Razor Clam Harvesters (ARCH), a pair of Anchorage engineers, celebrated the successful operation of their hydraulic razor clam dredge, the last in a long line of attempts to liberate the modern commercial clam digger from the ubiquitous shovel.

At press time, ARCH was preparing for ADF&G certification, which was expected to come within days.

The ARCH dredge is the first of its kind to successfully harvest razor clams in commercial volumes without exceeding breakage limit regulations. Certification by the Alaska Department of Fish & Game (ADF&G) requires that commercial harvesters break or damage fewer than 10 percent of their catch, and leave a minimal trench behind their dredge.

The ARCH dredge is positioned behind an 80- by 30-foot barge named ARCH-1. The dredge moves slowly through the shoreline waters, and during Spring testing delivered clams on deck the ARCH-1 at a full capacity rate of 1800 pounds per hour, at a breakage rate of less than 8 percent.

ARCH engineers Carl DeBoard and Ed Stultz began building their first clam dredge in 1978. The prototype was a dredge pushed by a large four-wheel drive amphibious vehicle. That outfit was certified in 1981, but was inefficient because it was too small and limited to operating onshore during low tides, DeBoard said.

"That operation just wasn't economically viable," he said, "but it helped us work out a lot of the bugs." In February 1983, they started building the barge.

The ARCH-1 was partially funded by an AFDF project grant designed to assist development of the Cook Inlet razor clam industry.

The steel-hulled ARCH-1 drags the dredge through the water at depths ranging from 5 feet deep to approximately the area of a -10 tide.

The dredge shoots high-powered streams of water into the sand and silt shoreline of the inlet, scooping up razor clams and delivering them aboard via a nylon-reinforced plastic telescopic airlift tube. Once aboard, clams are sorted at the rear of the vessel, with damaged clams immediately moved to the foredeck, dyed, and packaged for sale as bait.

Live clams for human consumption are packed in wet lock boxes, weighed, and stacked on the side of the deck. The product is then unloaded over the bow landing ramp onto the beach, where boxes are transported across the inlet for processing.

Current prices run 45–50 cents a pound for raw clams, and 75¢ to a dollar a pound for cleaned clam meat. Markets for razor clams are expected

to build this new industry only to end up where we started.

So what are we, the fish/food industry and concerned government officials, going to do?

A couple of points come to mind that should be seriously considered:

1) Don't believe the task is too large or impossible—or that each of us can't affect the outcome. It's not true. That's part of the smoke screen;

2) Don't underestimate the threat of Japanese interests on our yearling industry. A billion dollars or more is worth pulling out all the stops;

3) We could immediately enact tariffs on imported surimi and surimi products. This might allow the fledgling U.S. surimi-based food industry to stand on its feet before being overtaken by the "Rising Sun." Tariffs are, however, a double-edged sword, especially for the Northeast Pacific fishing industry which is so dependent upon its export markets;

4) More industry, federal and state funds must be targeted (not shotgunned) to support the immediate development of the U.S. surimi industry, both the production and marketing ends;

5) Both the seafood industry and the government must let the industry develop its own personality and shape. It's too young to engineer its future. Attempting to guide the industry can only slow down its dynamics, and would result in shortsightedly limiting surimi's potential.

With th[illegible] mind, maybe I'd better withdraw [illegible] "thanks" I offered to Japan a few months back. I'll hold off a while longer before it's extended again.

Here's looking at you, kid

"You have to get your start somewhere," Mae West said once, "Why not start at the top?"

And so the first Alaskan surimi was introduced to the food technology world at the Institute of Food Technology annual meeting and food show in Anaheim, Calif. June 10-13.

The food fair, usually attended by 12-13,000 industrial food engineers, is one of the largest food technology shows in the world.

Griffith Laboratories and Norda Corp., two of the companies AFDF has been working with extensively, both presented surimi-based products at the show.

Griffith laboratories, a multi-national manufacturer of breadings, batters, and seasonings, showed an array of products that were developed in their Chicago laboratories. Those dishes were made with seafood analogues manufactured by Polytech Seafoods in Bayou LaBatre, Alabama.

Several of the finished products were made from the first Alaskan surimi produced in Dutch Harbor in May.

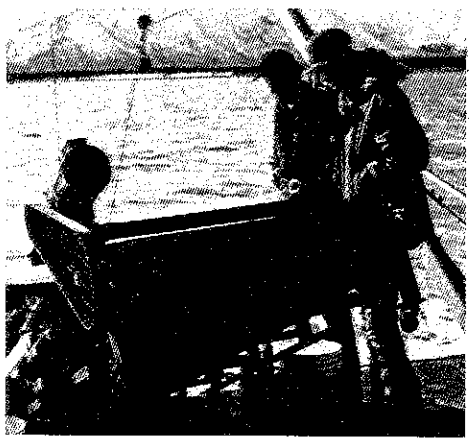
Norda Corp., a large U.S. flavor house based in East Hanover, New Jersey, also presented several surimi-based crab, scallop and shrimp dishes which were flavored with Norda flavors. The surimi products were developed at Norda, manufactured by JAC Creative Foods of Los Angeles, and prepared at the show by a gold medal chef engaged for the occasion.

Vito Russo, vice president of sales for Norda, said he hoped to demonstrate to participants that seafood analogues are "just a kickoff point" for developing a variety of surimi products.

"Seafood analogues are the state-of-the-art right now," Russo said. "But we are hoping they will serve as a launching pad to the food industry in conceiving other fabricated food products."

Most of the hundreds of food companies at the IFT show are not involved in seafood in any way, nor will they ever be, Russo said.

"We're trying to show that this material, surimi, is so flexible that it should be considered for other food product analogues, whether they be added to [illegible], sausages, patés, or just about anything else. This is only the beginning of the uses for this protein resource."



The ARCH-1 dredge brings aboard 1800 pounds of razor clams per hour in Cook Inlet.

to be wide open, after the 1983 Washington and Oregon fishery virtually collapsed due to El Niño.

With a five-foot draft, the barge can operate in Cook Inlet year-round, except during extreme weather or ice conditions. When not dredging for clams, the barge can be used for coastal freight hauling.

The commercial-sized clam dredge suffers from an oft-frustrated history of failed attempts at certification. Each has suffered from the same plague—heavy rocks in the dredges contribute to heavy breakage, preventing ADF&G certification.

Several different companies have made numerous attempts to design a machine capable of harvesting volumes of live clams, and several dredges were designed and tested. One was a floating dredge much like the ARCH-1, which also suffered from rock problems. Another was an escalating dredge which was hung alongside the gunwales of a boat. A third, a blade dredge pulled by a tractor, still sits on the Polly Creek beach as a grim reminder to Alaska Razor Clam Harvesters that failure is not far behind them.

Stultz and DeBoard need no reminding. But they are optimistic about the future of their razor clam dredge.

"I guess we got into it because we knew it would work, and we're still hoping it's going to be successful," DeBoard said in an interview in Anchorage. "If it isn't, it won't be from lack of trying."

Allocations Approved

A five-man advisory team of the Alaska Pacific Seafood Coalition recommended that the July allocations to the Japanese for directed fishing and joint venture harvests be approved.

The team met with three members of the Japanese coalition May 23 to discuss progress made since the November industry-to-industry meeting in Anchorage, in which five agreements were outlined between Japanese and American seafood concerns.

Bob Morgan, co-convener to the coalition and a member of the advisory team, said that the Japanese industry had "made progress" toward fulfilling their side of the agreement, and therefore should be allowed the full proposed fishing allocation.

"While we weren't completely satisfied with the Japanese performance regarding the agreement, we agreed that there was progress being made, and the American team would recommend to the coalition that they support the Japan allocation for July, for directed fishing," Morgan said.

The November agreement between fishermen and processors of Japan and the U.S. stated that Japanese companies would buy certain tonnages of pollock in over-the-side joint ventures, that they would also increase their purchases of marketable bottomfish products, and agree to help develop mutually beneficial trade avenues between the two nations.

The advisory team, which included Morgan, Ron Jensen, Lee Alverson, Dave Harville, and Jeff Hendricks, brought their recommendation to the Alaska Pacific Seafood Industry Coalition in early June.

The coalition was to submit its recommendation to the U.S. State Department before allocations are made.

Representing the Japanese were Mr. Imanaga, Mr. Usui, and Mr. Takagi.

SURIMI QUALITY SPE

Specifications for American use

As anyone who has shrugged his shoulders, closed his eyes and eaten raw sea urchin roe can verify, Japanese and American tastes in food are not exactly similar.

Surimi and kamaboko products made in Japan are not likely to be successful in the West. Japanese products, which come in a rainbow of bright colors, are sweet and soft in texture. Americans prefer lightly browned, breaded and battered products, or dishes in a sauce, with more salt than sugar in the formulation.

The two markets are as different as sushi and rib-eye steak. And no food analyst worth his rheometer would apply the same quality specifications to steak as to squid.

Professor [illegible] Lanier of North Carolina State University has contracted with AFDF to outline a specifications system based solely on the functior haracteristics of different lots surimi. This system would allow processors to accurately describe their product to customers by outlining its qualities and characteristics according to the end-user's needs.

The specifications system, which will first be designed for the AFDF surimi produced by Royal Alaskan Seafoods, will be further developed and adjusted for use throughout the U.S. surimi industry.

The project first calls for analyzing the current Japanese specifications system and its application in the Japanese market. Then Lanier will assess the potential needs of the U.S. marketplace, and design a series of specifications appropriate to the way food companies will use surimi in different formulations, for different purposes.

By using this system, Lanier said, customers could order shipments of surimi based on gelling ability, or water content, rather than simply where it was processed.

Lanier's project includes four phases: to evaluate methods for measuring gel-forming properties of surimi; to test effects of water content on texture; to evaluate color, appearance, and flavor of different grades of surimi; and to determine nutritional composition of surimi. Though the project emphasizes surimi that is made for the U.S. market, the specifications system will also be applicable, as much as possible, to U.S. surimi intended for sale in Japan.

Phase I of the project, which is scheduled to be completed by the end of June, involves analyzing surimi from three separate lots of different grades, using three different processing temperatures to prepare test gels.

"The first step was to find out how much variance (in quality) there is among the different lots," Lanier said. "Then we will begin administering gel strength tests."

Lanier will apply the machine punch test and fold test, as the Japanese industry does, followed by the torsion and compression tests, which are being evaluated for use by the U.S. industry.

"You can use the punch test the way Japanese do, and determine firmness, but elasticity is not well measured that way. We use the folding test for that," Lanier said.

The results from the torsion test may apply to American products better than the more subjective Japanese tests, he added.

"The problem with the compression test is that it's not good in separating a good sample from an excellent sample," he said.

This portion of the project will outline the best methods of testing those various characteristics of surimi that are expected to be important to the U.S. food industry in developing new products.

"It's as though we were learning to make flour for the international market," Lanier said. "There are different grades, depending on the milling process. And there are all different species of wheats. There's no best process to make flour—it depends on what you're going to use it for."

"And maybe the Japanese want to make cookies from flour, but here, we want to make bread and cake. We need to make sure everyone in the industry knows how to make the kind of flour that is applicable to bread and cake."

Lanier said it would be "nearly impossible" to compete with the Japanese surimi industry using their methods of grading or their criteria for specifications.

"We have more fish species that will work for surimi (than the Japanese do), and we also have a wider variety of uses for it," he said. "We need to establish our own procedures and systems of specifications to cater to the U.S. industry, and also to compete with the Japanese industry."

"We in the U.S. would rather put it on a scientific level than leave it to the 'artisan' who sits beside the chopper judging gel strength by how it feels between the fingers," Lanier said. "We don't have those artisans here, and we don't want to have to bring them over for big bucks, the way the sausage industry did with German artisans when that was new to the U.S."

A concrete specifications system would pave an easier path toward establishing a grading system for U.S. surimi. The Japanese grading system is based primarily on how the surimi is oduced, instead of according to its unctional properties, Lanier said.

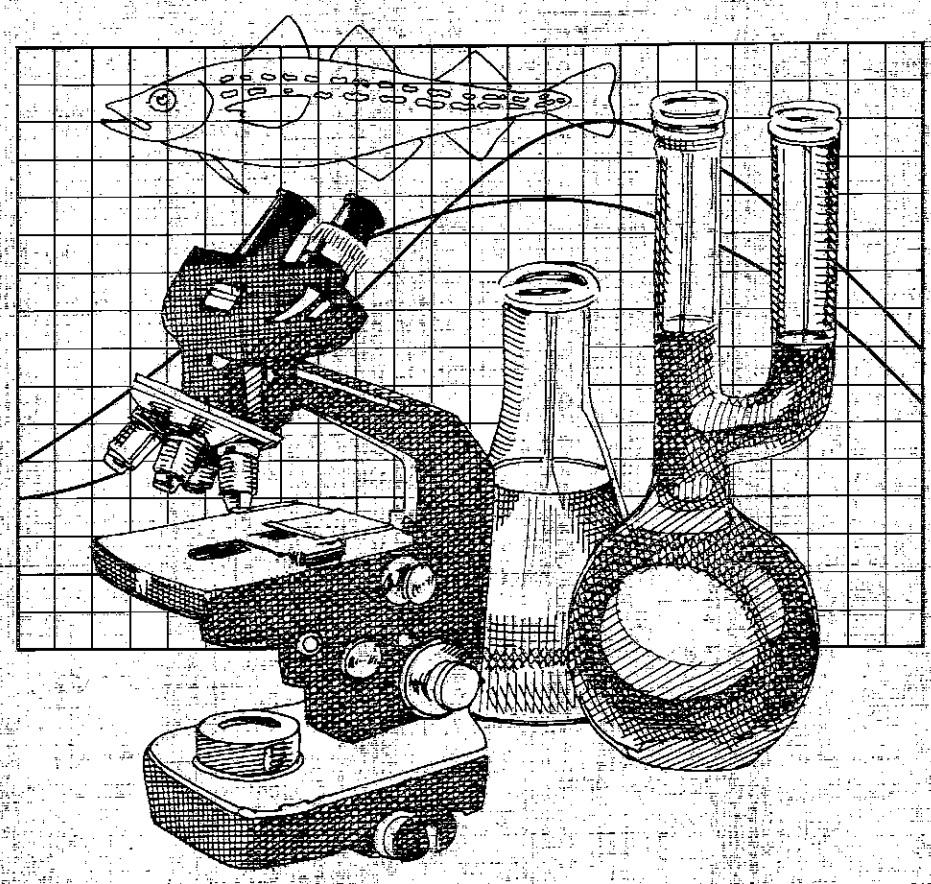
"There are two or three grades for trawler surimi, another two or three ades for mother ship surimi, and nother set for shore-based surimi—and there is a wide variety of materials coming out of the different plants," Lanier said.

But the most pertinent gradation depends upon the final product application, he said. Instead of being graded on how the surimi was produced, it should be graded on how well it fits the parameters required by the food producer.

"If it's most crucial that the surimi be white and fairly elastic, as for seafood analogues, then we need to outline those parameters for top grade surimi," he said. In cases where other properties like foaming ability, water binding, or protein efficiency are more important, then other criteria should be included in the specifications.

"It's totally related to the final product application," Lanier said.

Lanier will publish a final report at the end of the project, wh ill include the proposed specifications system, accompanied by the methodologies and results of his testing procedures. The pr ct is scheduled for completion December; the report will be available through AFDF in early 1985.



CIFICATIONS:

What are they for?
How are they established?
What do they mean?

Specifications for American production

Nine members of the U.S. food industry who form the AFDF quality specifications strategy committee met June 1 in Raleigh, N.C., to outline quality parameters for the surimi produced for AFDF by Royal Alaskan.

The meeting was called to infuse dialogue from the industry into the design of the AFDF quality grading system.

The committee includes: Jim Reynolds, Haarmann & Reimer Corp.; John Galluzzi, Norda, Inc.; Jack Hice, Research Associates; Roland Chambers, Kibun; John Browning, Mrs. Paul's; Frank Kawana, Yamasa Enterprises; Terry Le[illegible], Griffith Labs; Richard [illegible]p, Central Soya; William Reinke, Van Camp Seafoods.

The nine members, AFDF productio[illegible] manager Chris Riley, a[illegible] ofessor Tyre Lanier of North Carolina State University discussed a seven-point agenda that was designed to lead toward an accurate definition of high-quality surimi.

The group first assigned relative importance to physical characteristics of surimi, such as foldability, breaking stress, breaking strain, color, protein/moisture mix, odor, and contamination. They also outlined requirements for surimi's chemical content and other functional properties, including protein solubility, protein efficiency ratio, water binding, emulsifying stability, etc.

The group also answered a questionnaire on how many grades of surimi are needed for the U.S. industry, how to set quality parameters, and the relative importance of those parameters.

The specifications set up in this meeting were expected to be included in the contract negotiations with Royal Alaskan in setting up the full-scale, continuous surimi production line in August.

Most meeting participants hoped these specifications would serve as a standard for the growing surimi industry in the U.S., and would lead toward maximum consistency in surimi produced in the U.S.

Specifications for a host of other needs...

Until a year ago, the word "surimi" was as foreign to most Americans as fish head soup. Today, the surimi works like a flint in many circles: It ignites the imagination, fires ambitions, and fuels more programs, committees and discussions than a sex book in a school library.

Surimi is hot; it's getting hotter. And every month more agencies, organizations and entities are adding their fuel to the fire.

The New England Fisheries Development Foundation (NEFDF) in Boston is midway through a project to devise labeling and nomenclature strategies for surimi-based seafood analogues. Their goal is to gather background information and suggestions from the industry and present them to the Food & Drug Administration as a suggested set of labeling regulations for surimi-based products.

The project started with a survey of wording and labeling strategies now being used by surimi product manufacturers, said NEFDF executive director Ken Coons. A report on that portion is finished, and available from NEFDF.

"Our short-term goal is to devise a well-documented approach to how products should be described on labels," Coons said. FDA will postpone any action on labeling regulations until the industry can formulate its suggestions.

"The initial audit is done, but we want to go further," Coons said. "How do you describe the current surimi products? Do you call them crab-flavored surimi sticks? Simulated crab legs? Surimi is the intermediate material. What do you call the end product?"

Coons compares this approach with the mayonnaise industry, saying there are strict regulations governing the formulation of mayonnaise, and everything not fitting that recipe is called salad dressing.

"There are limits within which the product has to fit," he said. "We don't want to limit ourselves to surimi technology. We're trying to come up with designations that will apply for a whole generation of fabricated foods, including surimi, kamaboko-type foods, and mince-based foods."

The project is an attempt to develop U.S.-grown nomenclature for a product now labeled with a Japanese name.

NEFDF also plans to investigate possibilities of another name besides "surimi." "We're convinced that 'surimi' is not adequate as a marketing name for these products," he said.

Once this project was underway, it sparked attention from other seafood industry leaders, and subsequently National Fisheries Institute (NFI) formed a Surimi Committee at its national convention in Honolulu in late April.

The 21-member committee, chaired by Sea Alaska vice president William P. Woods, will act as an advisory group to the NEFDF project. The committee and its four subcommittees will also address ingredients listing regulations, tariffs, surimi label education and quality specifications.

One of the goals of the NFI committee meeting was finding a more American name for surimi—"seatein" (see-teen) was suggested as an example—which some feel would more quickly be accepted in the American vocabulary. Others oppose the idea, saying foreign words like tofu, sushi and yogurt have a positive marketing pull.

Though most Americans don't know literal translations of these words, some food experts feel there is an image of sophistication that accompanies foreign-sounding foods, as long as they are perceived to be nutritious.

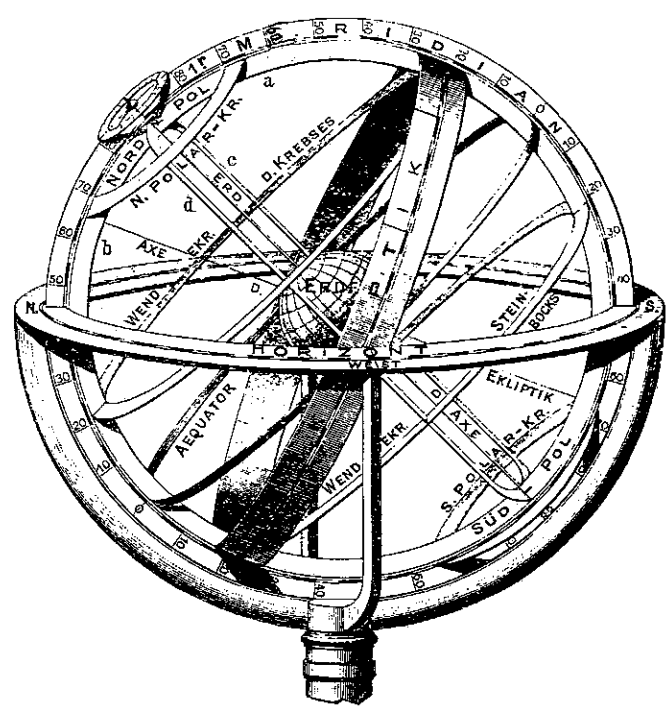
A second objective of the NFI committee is to develop product descriptions for existing and future surimi-based foods. As more surimi products enter the market, there is some alarm that low quality foods marketed with the same wording as premium products will corrupt the public view of surimi-based foods. Regulations defining surimi-based foods would require products to be of at least a certain standard to deserve the associated nomenclature.

Members of the committee also plan to develop a substitute for the word "imitation" in labels. Most seafood experts believe any "imitation" food will meet resistance from consumers, no matter the quality or nutritional value.

Through industry input, the committee also plans to develop effective terminology for ingredients listed on product labels. Seasia of Seattle, for example, labels their surim[illegible]sed kamaboko fish cakes with the words "fish meat." Others have used, simply, "pollock." Another subcommittee will address possible tariffs c[illegible]mported surimi products, and ano[illegible]r will discuss consumer and industry education, truth-in-menu laws, and local regulations.

For more information on the New England Fisheries Development Foundation project, contact Kenelm Coons at NEFDF, 253 Northern Avenue, Boston, MA 02108, (617) 542-8890.

For more information on the NFI Surimi Committee, contact Roy Martin, 1101 Connecticut Ave. N.W., Washington, D.C. 20036, (202) 857-1110.



Obstacles to the Japanese market: quality, quota and cost.

by Bill Atkinson
(reprinted by permission from National Fisherman, June 1984)

Royal Alaskan Seafoods recently began production of surimi at its plant in Dutch Harbor, with backing from Alaska Fisheries Development Foundation. The project is designed so that several groups will have the opportunity to market the surimi from that facility, and the most likely destination for the product will be Japan. The participating groups can expect to encounter numerous barriers in the process. However, they are not insurmountable, and with some patience the export of U.S. surimi can be realized.

The most obvious obstacles to the Japanese market are quotas and duties on surimi imports into Japan. The government established strict quotas and 7½% duty (of price at landing including insurance and freight charges) to protect the operations by domestic land-based surimi processors. While these barriers appear restrictive to potential importers, they should not entirely prevent the development of a U.S. surimi export trade. Last year, the Japanese verbally agreed to import up to 50,000 to[illegible] of U.S. surimi, with the inevitable caveat that quality and costs meet with Japanese standards. Indeed, according to one major Tokyo surimi producer, the government[illegible]uld find it difficult to refuse a request for permission to import U.S.-produced surimi. It is unlikely, however, to expect the Japanese to encourage or facilitate the immediate importation of surimi or surimi-based products.

Quality and cost—not economic protectionism—will be the major factors limiting U.S. surimi exports. The difficulty facing U.S. processors is the Japanese belief that the American fishing industry is not quality conscious. As a result, Japanese importers automatically associate U.S. product with lesser quality grades. Therefore the image that U.S. land-based surimi will be of "average" grade is strong. It will take time and effort to change this opinion.

The extreme care on the part of the AFDF Study Team to understand Japanese quality standards is an important step in achieving a reputation for top-quality land-processed surimi. It must be kept in mind, however, that land-processed surimi in Japan is handled as a second grade product. U.S. land-processed surimi cannot expect to compete with Japanese sea-processed surimi. Cost will probably be the largest limitation on the export of U.S. surimi to Japan. The average price for Japanese land-processed surimi over the past three years has been about 47¢/lb. at the Tokyo Wholesale market.

The economics of Japanese land-based operations has become marginal over the past few years, due to level prices and growing costs. One large processor involved in both land and sea processing has recently established a new grading system for land-processed surimi. The former single grade for land product was broken into three categories. It is hoped that this will provide higher prices for some land-processed surimi.

While coping with its own problems, the Japanese industry views the U.S. plans to export the land-processed product as inevitable. However, the Japanese generally believe that the economics of unsubsidized U.S. exports of land-processed surimi will prove discouraging to U.S. processors once the AFDF funding of the project ends. The Japanese also believe that production and shipping costs for the U.S. land-based product will eventually total almost twice the going market price for the land surimi in Japan.

While the long-term outlook for U.S. land-processed surimi exports does not look bright, the product does have the potential to become a competitive commodity inside the U.S., as well as to provide a basis for an eventual move into at-sea production.

There are two major Japanese-owned U.S.-located kamaboko (processed surimi) plants now operating. Both are importing the surimi they need for production from Japan. While most of the surimi used for the "imitation crab legs" is sea-processed grade, a portion of any future U.S. land-based production should eventually be suitable for the so-called "analogue" products such as shrimp, scallops and crab. Any experience gained from actual dealings on the Japanese market will better assist the U.S. product in domestic marketing. One Japanese processor in the U.S. has already indicated a definite interest in buying U.S. product so long as its grade meets his production needs and is priced competitively.

The Japanese view the e[illegible]ual growth into the sea-process[illegible]market as a much greater threat to their industry, and there is probably good reason for their fears. The development of a sea-processing operati[illegible]vill most certainly lead to the Ameri[illegible]ization of the pollock fishery. With the experience obtained from the land-processing facilities, the mechanics will present minimal difficulties. The Japanese market price for sea-processed surimi also would allow for exports from the U.S.

The Royal Alaskan project adds another aspect to the development of the U.S. surimi industry. The production problems experienced by the land-processing operation should ease the way for a move into sea-processing ventures, where market prices are about double because of the product's higher quality. High-seas production is appealing both because it could be used for producing imitation seafood products and it would be more attractive to Japanese importers. Furthermore, it could supply an opportunity for further expansion of the U.S. Bering Sea trawl fleet.

Editor's Note:

The following article reprinted in full from the June issue of National Fisherman, presents one point of view from one industry insider. We present this article because it reflects the opinions and projections of many who are looking at the nascent surimi industry.

Mr. Atkinson believes that the most likely destination for the product (AFDF's surimi) will be Japan. This is not because AFDF has been working closely with hundreds of U.S. food companies, many of whom are ready—or nearly ready—to begin purchasing large quantities of surimi. Other companies are still in that precarious and expensive process of product development and AFDF will continue to supply those companies with free or inexpensive surimi to help that process along.

Mr. Atkinson believes that "quality and cost—not economic protectionism—will be the major factors limiting U.S. surimi exports." In Japan, are those two matters not the same thing? The Japanese seafood industry has the power to limit imports to their country by establishing protectionist policies and disguising them as quality and cost parameters. In this way the several powerful companies who run the Japanese seafood industry can make sure their control of the surimi market is not threatened by U.S. innovations.

Most important if the U.S. can make surimi on land that meets or exceeds the quality of Japanese at-sea processed surimi, why should it be doomed to carry the label of a low-grade product? Quality of surimi—like that of meat or mustard—should be based on the specifications of the product, not on where it was processed.

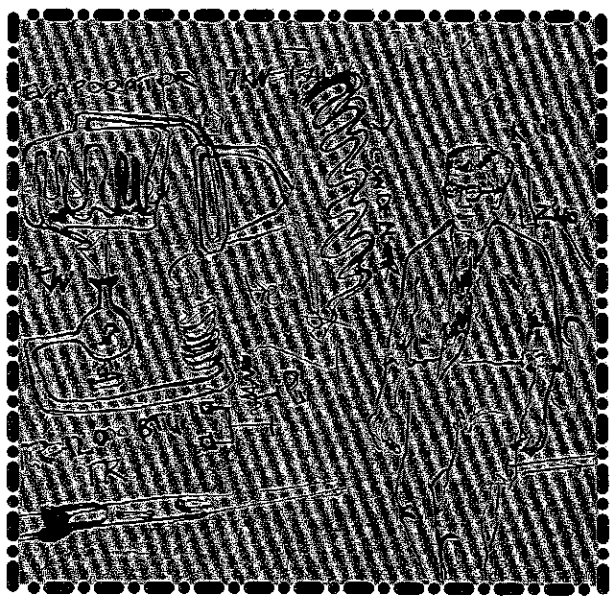
Joint venture caught pollock sold over the side to Japanese processors is labelled "import product" and subject to the same 7½% duty as imports shipped to Japan. Is this to discourage rapid expansion of the U.S. catch, and thus preserve the directed fishery longer?

We present this editorial comment and the following article not as comprehensive arguments, but as a frank piece. There are many different sides to the surimi issue in this country. These are only a few. The Lodestar welcomes responses from readers on this subject.

Man, unlike any other thing organic or inorganic in the universe, grows beyond his work, walks up the stairs of his concepts, emerges ahead of his accomplishments.
—John Steinbeck

RIGS & THINGAMAJIGS

Technical terms and their relations



by Ulf Hansson

As the fishing and processing industry grows, more and more technology must be used in designing and engineering systems. Engineering is usually unfamiliar territory to the average processor.

The following highlights of technical terms and their relationships to each other might be helpful in understanding the various processes that are involved in ~~—~~ems design, and could perhaps ~~l~~ prevent some problems in computing energy needs for a new system.

Listed below are some of the more common terms and an explanation of what they mean, and, in some cases, how they have been established.

AMPERE (AMP., A)
—unit for measuring electrical current

VOLT (V., U.)
—unit for measuring electrical force

KILOWATT (KW)
—unit of measurement for power (usually electric, but increasingly common for mechanical)

HORSEPOWER (HP)
—unit of measurement for power

BOILER HORSEPOWER
—unit for steamboiler power

BRITISH THERMAL UNITS (BTU)
—unit of heating power

TONS OF REFRIGERATION (TR)
—unit for heating power (most commonly used for refrigeration)

Between these units exist the following relationships:

KW (single phase)
—volts × amperes ÷ 1000

KW (three phase)
—volts × amperes × 1.73 ÷ 1000

AMP (three phase)
—(KW × 1000) ÷ (VOLTS × 1.73)

1KW = 1.341 HP

1KW = 1.341 HP

1HP = 0.7457 KW

1 boiler HP = 9.804 KW

1KW = 3.413 BTU/HR

1TR = 12,000 BTU

Knowing these relationships you can convert the units of the most common processes to the denomination of your preference.

Some useful rules of thumb:

To freeze 1 pound of fish from 50 °F to 0 °F takes approximately 140 BTU.

A reasonably well designed refrigeration system uses approximately 3 HP per TR (NH3 and R12, higher for other refrigerants).

To make a rough calculation on a freezer system, you would go about as follows:

Say you want to freeze 20,000 pounds of fish per 20 hours. This is 1000 pounds per hour. 1000 lb × 140 BTU/hr = 140,000 BTU.

140,000 BTU ÷ 12,000 BTU per TR = 11.66 TR.

Add approximately 15% for heat loss through enclosure. This is 1.75 TR.

If a blast freezer is being used, add fan heat. If a freezer has two 5 HP fans, for instance:

10 × = 10 × 0.7457 = 7.45 KW. 7.45 KW/hr = 7.45 × 3,413 = 25,427 BTU. 25,427 ÷ 12,000 = 2.12 TR. Total TR is 11.66 + 1.75 + 2.12 = 15.5 TR.

Your power requirement should then be approximately 15.5 × 3 = 46.5, say 50 HP.

This method is to be used to give a broad idea only and cannot be used for systems engineering.

For more information on the mechanics of energy relationships and their practical applications in refrigeration, processing, and systems design, you may find the following reference book helpful: *The Engineer's Manual*, by Professor Ralph G. Hudson, pub~~l~~~~s~~ed by John Wiley & Sons.

This article was contributed by systems engineer Ulf Hansson, 1020 108th N.E., Bellevue, WA 98004; 206/455-5331.

Editor's Turn

OFF the CUFF

I heard a story once about a young boy who took his mother on a hike to his favorite look-out spot. As they tramped up the hillside, the mother said to her son, "This isn't a trail at all. It's just a bunch of bumps and big rocks."

"Sure," said the boy. "Bumps and big rocks are what you climb on."

The American surimi industry is trekking the perilous trail of development, riddled by rock and lined by ridges. They are either rocks we will stumble over, or ridges we can climb on.

I took a small survey of seafood leaders recently, and discovered that most of them, (processors, fishermen, equipment makers, journalists and an engineer) believe the U.S. doesn't have the technology or the expertise with surimi to be successful before a decade goes by, and that the only market for U.S. surimi is in Japan.

Those convictions sound like a well-set trap, baited with doubts of an uncertain future.

The industry conquered one big stumbling block when we discovered that surimi is not made by Far Eastern magic, but by a mathematical process which we can learn. There are other snags in our path, and we would do well to recognize which are stepping stones and which are simply mirages.

Many say Japan is the only place to market surimi—at least for the next five or ten years. Japan may wish us to believe this, if we could. But look here:

Major Japanese seafood processors acknowledge that Japan eventually must import U.S. surimi to maintain access to Alaskan pollock.

In turn, Japanese companies may be setting up an "import cartel" through which imported surimi must pass. This would allow the cartel to set prices, establish their own quality standards, and maintain firm control of the market.

Right now the Japanese price their surimi according to where it was produced. Japanese mothership surimi is graded highest, followed by surimi produced on a trawler-processor. Third in line is joint venture-processor, fourth is Japanese land processed. Imported land-processed surimi probably would rank fifth in line—at the lowest price. Few U.S. processors could afford to make surimi at all.

Is the question here really quality? With our modern technology, reputation for innovation, and our proximity to the resource, it's hard to believe Americans can't produce surimi equal in quality to Japan's best.

American pollock fishermen care little where the product ends up; they sell to processors, foreign or domestic. But basing a new fishery on a strong domestic market is eminently more secure than basing it on a foreign market. Fishermen wouldn't need to play international politics with resource control; there would be no risk of the fishery being used as a trading chip for oil or automobiles. U.S. participants would have a real stake in the health of the industry.

Processors, however, have little money to develop new markets. They can't give away their product as the American Soybean Association did in the 1940's, to acquaint customers with its uses. This is a role processors can't afford to play, so they take the easiest road toward short-term success, relying on existing foreign customers.

But in the case of surimi, the easiest road leads to disaster. It points toward surrendering control of the industry, and possibly control of U.S. resources along with it.

For the past 18 months, AFDF has been trying to show that there is another market, there is another way. There are stepping stones ahead, and we should use them.

When I asked, in my random poll, "What would it take for you to get involved in the surimi business?" most answered: "Money."

If there isn't enough money in the industry right now to support the beginning of the surimi enterprise, it's going to come from somewhere else. Speculation says funds will come from either Japanese interests or the American food industry.

U.S. food companies, in both subtle and dramatic ways, have invested heavily in the future of surimi. They would rather depend on a group of domestic producers than build an industry around a highly political exchange of fish and chips with the Japanese.

The American market is moving quickly, and it can pack a wallop. The Japanese are vying for control, manipulating our perceptions, and heaving some powerful political weight around to keep the U.S. under their thumb. It has been the unique role of AFDF to climb over the bumps and rocks that individual processors can't conquer themselves.

There was a businessman once whose projects always failed no matter how he tried to succeed. Finally he decided to raise chicks in his basement, but lo and behold, his water pipes burst and flooded the basement with four feet of water, and all the chicks drowned.

"I bet you must feel like giving up," his banker told him.

"Heck no," he said, triumphantly. "Next time I'm going to raise ducks!"

He wasn't discouraged; we won't be, either.

Salute to the birth of an industry

continued from page 1

knowledgeable surimi expert in the U.S., arrived at Dutch Harbor on May 4 to assist Royal Alaskan in ironing out the problems in the batch line.Thrash recommended bypassing the ratio tank and Sweco screen, because the ratio tank was deemed useless, and the Sweco screen did not effectively separate mince from wash water. The Sweco also is rough on the mince, and quality surimi depends on gentle handling during that stage, Thrash said.

It was decided that the intermediate washing that had been done with the Sweco screen would be accomplished by decanting the water off the top of the wash tanks after allowing the mince to settle.

By May 7, product still was below the quality expectations of Royal Alaskan, for two reasons: there was excessive kidney material remaining in the fish after gutting, and the pH of the water supply was found to be too high.

In order to assure that these were the only two major problems remaining, a large quantity of fish were hand-butchered, then processed using water that had been adjusted to a pH of 6.7, a less alkaline level than the Dutch Harbor water system.

The result, according to Thrash, was production of surimi that was of a higher quality than any Japanese shore-plant product that has been tested to date.

Royal Alaskan subsequently decided to halt operations until a new Toyo gutting machine could be shipped and installed. The plant will also gain a pH control system for its water, to ensure a proper balance. Thrash and the Royal Alaskan technicians feel confident that these two improvements will boost the quality of the product to a more than adequate level.

Another important quality factor—and one over which Royal Alaskan has no control—is the intrinsic quality of the fish. The pollock in Dutch Harbor region are in post-spawn stage during May, and therefore in poor physiological condition. Japanese fleets hold off fishing in that area until June for that reason.

Though the overall quality of the initial product was not equivalent to high grade factory ship product, it was suitable for use in analegue products. Thrash, production manager Chris Riley, and other technicians who have visited the plant since believe that an increase in the intrinsic quality of the fish is all that is needed for the production of factory ship grade product at this shore plant.

Dan Schneringer, chief of quality assurance for Royal Alaskan, has installed a complete surimi laboratory at the plant, and has also developed a protocol for quality test procedures to be used during Phase I of this project.The lab is capable of testing characteristics like breaking stress, breaking strain, color on the Hunter system, moisture, salt content, contamination, etc. Thrash called the laboratory a "first-class setup."

Royal Alaskan and AFDF have agreed on a set of interim minimum quality specifications for the surimi produced during Phase I, which were developed using standard grade Japanese product.

Samples of the product were shipped to Dutch Harbor and tested using the established protocol for moisture, breaking stress, folding ability, contamination, and color, and from those tests minimum standards were set for the surimi to be purchased by AFDF. These are temporary standards, and will be revised as the project continues.

The full-scale, continuous line will operate much along the same procedures that have been worked out on the batch line. Billy Thrash has quantified ratios between the two lines, and believes that running a batch line before full start-up is "almost necessary" in learning how to make surimi.

Most of the full-scale line is now at the plant in Dutch Harbor, with the exception of the blender. Royal Alaskan will assemble the line in August, and plans to start production in the middle of that month.

Read Our Fine Print

AFDF is among other things, an information broker. We are devoted to the constant transfer of information throughout the fish-distribution network. One vehicle is through the publications listed below, all of which are available through AFDF for a small printing fee.

Surimi-based Foods and Seafood Analogues, the proceedings from the February 1984 IAMDE/NFPA surimi conference in Washington, D.C. ($30)

Handbook on Surimi, a surimi industry directory ($10)

Sea Change: The Alaska Seafood Industry ($10)

Pastes to Peanuts: The Japanese Kamaboko Industry: Processes and Formulations for Surimi-based Products ($5)

The Domestic Market Outlook for Surimi-based or Fish Minced Products, by Prof. Ed Leonard ($5)

Pacific Pollock Resource, Fisheries, Products and Markets ($8)

Proceedings from the Pollock Conference, a transcript of panel discussions and question/answer sessions of the conference ($15)

Fishing with the Friedrich Busse, a West German factory trawler in Alaskan waters ($5)

Commercial Fish Species of Pacific West Coast and Alaska ($5)

Fisheries of Alaska 1983, an AFDF state-of-the-industry report ($7)

Published quarterly by Alaska Fisheries Development Foundation, 805 West Third Avenue, Anchorage, Alaska 99501. Phone (907) 276-7315. Krys Holmes, editor.

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the LODESTAR

Charting the course of fisheries development.

Alaska Fisheries Development Foundation Volume II, Issue I Spring 1984

It is told that such are the aerodynamics and wing loading of the bumblebee that, in principle, it cannot fly. If all this be true, life among bumblebees must bear a remarkable resemblance to life in the United States.

—John Kenneth Galbraith
American Capitalism: The concept of countervailing power.

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