

TUNA LONGLINE FISHING TAKES A DIFFERENT TURN IN FRENCH POLYNESIA

Masterfisherman Steve Beverly recently spent two weeks, fishing aboard the 26 m longline vessel, F/V *Arevamanu* (Figure 1), as part of a follow-up to a regional course held in Nelson, New Zealand for Pacific Island skippers. Fa'arei Leboucher was one of the participants in the course.

He and his father, Gilles Leboucher, are owner-operators of *Armement Arevamanu*, which operates F/V *Arevamanu*. Fa'arei's mother, Hinano, helps with the management and marketing of the catch.

F/V *Arevamanu* is one of seven longliners operating out of Port de Pêche in Tahiti that is capable

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of targeting albacore tuna (*Thunnus alalunga*) for the frozen fish market in the USA.

All of the vessels are part of a co-operative, *Armement Coopératif Polynésien*. F/V *Arevamanu* was built in France about eight years ago, and is equipped with a Lindgren-Pitman (USA) mono-filament longline system that is capable of setting and retrieving up to 2 500 hooks per day. The vessel has a blast freezer, a freezer hold, and two refrigerat-

ed sea water (RSW) holds. F/V *Arevamanu* targets other tunas besides albacore, such as bigeye (*T. obesus*) and yellowfin (*T. albacares*), but is also capable of fishing for broadbill swordfish (*Xiphias gladius*).

Albacore tuna, however, is the main catch, and often accounts for over 50 per cent of the total catch by weight. Most bigeye and yellowfin tuna are sold fresh at the local auction at *Port de Pêche* in Papeete, and some of the albacore is sold to local retailers.

None of this is unusual. What is different about the way that F/V *Arevamanu* and the other vessels market their catch is that a good deal of albacore tuna is sold frozen in quarter loins to mainland USA markets. The fish is processed and frozen on board.

Another unusual thing is that many of the vessels are being built in Tahiti, at *Chantier Naval du Pacifique Sud*, which is located right behind the fish auction at *Port de Pêche*. Tahiti has borrowed technology and experience from other countries, and has expanded and improved upon it.

To be able to target two different markets, the vessels in Tahiti need to be equipped with two different fish preservation systems: a chilling system and a freezing system.

The chilling system used on F/V *Arevamanu* and most of the other vessels in Tahiti is RSW. F/V *Arevamanu* has a very simple but efficient RSW system. There are two holds, each containing the evaporator stage of a freon (R22) refrigeration system in the form of coils. The coils surround the hold on all four sides, top to bottom. Prior to leaving on a fishing trip, the RSW holds are filled with fresh water and the refrigeration sys-



Figure 1: F/V *Arevamanu*

tem is switched on and run continuously until a 'wall of ice' forms around the coils. It takes about one-to-two days for this 'wall of ice' to form—it is several centimetres thick.

The temperature of the water in the holds drops to 0°C and will remain at 0°C as long as there is a wall of ice surrounding the coils. To maintain the ice around the coils for the duration of the trip, the engineer has to run the refrigeration system for one to two hours per day only.

After fishing commences, enough sea water (about ten per cent by volume) is added to the water in the holds to bring the temperature down to about -0.5°C to -0.1°C. Properly bled and bagged fish are put directly into the holds, and temperature is closely monitored from this point on.

During a short trip in April (eight days, six sets) all albacore and bigeye and live yellowfin tuna were chilled in the RSW tanks. All other fish were processed and frozen in the blast freezer. All of the fish from this short trip were sold locally. Typically, a longline trip is much longer, however, lasting up to 50 or 60 days. On these longer trips, all albacore are quarter loined and frozen, and sold on the international market (mostly USA).

The eight-day trip was notable, however. The total catch for six sets was 264 saleable fish of all species weighing about 6 120 kg caught on 14 400 hooks. The CPUE was 1.8 fish per 100 hooks or 42.5 kg per 100 hooks. The CPUE of the main target species, albacore tuna, was 1.13 fish per 100 hooks or about 21 kg per 100 hooks.

All fish were gilled and gutted on deck after they were removed from the fish holds during

unloading at *Port de Pêche*. Mr Leboucher believes that leaving the gills and guts in during chilling in the RSW tanks keeps the fish in better shape. Several fish were probed with an electronic digital thermometer after unloading, and temperatures were found to be -0.2 to -0.4°C.

About one tonne of mostly big-eye tuna went to the local auction and sold for an average of 600 CFP per kg (112 CFP Francs \approx 1 USD). The balance went to F/V *Arevamanu*'s local market (Figure 2).

On average, fish prices in Tahiti have been about 200 CFP for

albacore and 550 CFP for all others at the auction block. Total average has been about 300 CFP – 350 CFP per kg. Average catch for F/V *Arevamanu* has been about 1.2 to 1.5 tons per fishing day.

Aside from the auction sales, however, the albacore from this trip sold for 350 CFP per kg and all other fish averaged 400 CFP per kg. The average for all fish was 400 CFP. Therefore, this trip had above average market results (see Table 1 for estimated Profit/Loss).

Crew shares on F/V *Arevamanu* are based on a 60/40 split. The vessel gets 60 per cent of the net



Figure 2: F/V *Arevamanu* off-loading at *Port de Pêche*

Table 1: Estimated income and expenditure for an eight-day trip on F/V *Arevamanu*

Items of income and expenditure (does not include crew share)	CFP Francs (1US\$ = CFP 112)
Income	
Income from auction sales of about one tonne of mostly bigeye tuna	600 000
Income from local market sales of albacore tuna	1 050 000
Income from local market sales of all other species	800 000
Total income	2 450 000
Expenditure	
Fuel cost: 30.34 CFP per litre. F/V <i>Arevamanu</i> uses 1 800 litres per 24-hour day of running and 800 litres per fishing day	252 000
Oil costs	38 000
Bait cost: 2 700 CFP per 22 kg box. Average use is seven boxes per set. The bait used was a sardine from California, USA—probably <i>Sardinopsis melanostica</i> (Japanese name: iwashi)	113 400
Food cost: 150 000 CFP per month. This is equivalent to about 625 CFP per man per day for a thirty day month for a crew of eight	40 000
Total expenditure	443 400
Net (before deducting crew share)	2 006 600

That means that they landed 90 tons of albacore, based on the average 50 per cent recovery. F/V *Vini Vini VI* is equipped with a Lindgren-Pitman 100 mile twin reel longline system (Figure 4).

The loins usually sell ex-vessel for 415 CFP per kg, so the value of the catch was 18 675 000 CFP, and that does not take into account the other species. There are presently seven 25–26 metre vessels in *Armement Coopératif Polynésien* that are involved in this fishery, most equipped with twin reel systems.

More vessels are presently being built at *Chantiers Naval du Pacifique Sud*, and at Ship Builders (Fiji) Ltd in Suva, Fiji.

and the crew of seven gets 40 per cent (crew complement is usually eight—the Masterfisherman did not participate in the share but was a crew member on this trip).

The 40 per cent going to the crew gets further divided as follows: captain 2 shares, engineer 1.5 shares, three crew at 1 share each, two crew at 0.75 shares each, and one reserve share of 0.75 for crew who do shore work. The total share allotment is 8.75.

The boat share (60 per cent of net) amounted to 1 203 960 CFP and the crew share (40 per cent of net) amounted to 802 640 CFP. One crew share equalled 91 730 CFP, so the share amounts for the crew were as follows: captain 183 460 CFP, engineer

137 595 CFP, and crew at either 91 730 CFP or 68 798 CFP.

All of this is interesting, but the real stories in Tahiti are the frozen albacore tuna fishery and local shipbuilding at *Chantiers Naval du Pacifique Sud*. Albacore tuna are quarter loined and frozen on board the 26 m longline vessels to HACCP standards (Hazard Analysis and Critical Control Point) and are exported to USA markets (F/V *Arevamanu* was one of the pioneers in this fishery).

One vessel, F/V *Vini Vini VI* (Figure 3), which was completed recently by *Chantiers Naval du Pacifique Sud*, off-loaded while the Masterfisherman was in Tahiti. F/V *Vini Vini VI* had 45 tons of frozen albacore quarter loins for a fifty-day trip.

The fish that are sold frozen are all processed on board. Each vessel has a processing room, a blast freezer, and a freezer hold (Figure 5).

Soon after, the fish are landed they are bled and headed and gutted (H&G). This is done on deck. The H&G fish are then passed through a window to a processing room where they are hung by the tail on a hook.

The fish cutter makes a series of cuts to remove all fins. Then a meat hook is inserted into the tail end of the half loin just in front of the caudal keel.

A large serrated knife cuts the half loin away from the frame as the meat hook pulls the loin to the side. This results in a very clean cut, leaving almost no



Figure 3: F/V Vini Vini VI off-loading catch at Port de Pêche



Figure 4: Twin reels on F/V Vini Vini VI

waste on the frame. The half loin is placed on the cutting table and further processed. A skinning knife is used to remove pin bones, bloodline, and skin simultaneously.

The result of this cut is two nice quarter loins that usually only need a small amount of trimming to remove remnants of the blood line and belly flap. The quarter loins are then washed,

wrapped in plastic, and placed on plates in the blast freezer.

After twenty-four hours they are removed to the freezer hold where they are stored at about

–35 to –40°C for the duration of the trip. The return on this type of loining is about 50 per cent of the whole weight on average, which is quite good.

Critics of this fishery point out that, although the price for quarter loins is more than that for frozen albacore in the round (whole) that are sold to the canneries, there is a 50 per cent weight loss through processing.

What is the point of doing all that work if the actual return is about the same? The Masterfisherman posed this question to Gilles Leboucher. Mr Leboucher answered that *Armement Coopératif Polynésien* is looking towards the future. The market for frozen quarter loins

in America is fairly new, so the price structure is still relatively weak.

In time, frozen quarter loins will gain a bigger share of the market. There is no real comparison between an albacore steak that was frozen at sea the same day that it was caught, and a tinned fish sandwich.

In time, the market for frozen quarter loined albacore tuna is expected to grow and get stronger. The fishermen of *Armement Coopératif Polynésien* will be ready for that day.

The domestic longline albacore fishery in Tahiti is expanding, which is evident from a visit to the shipbuilding works.

Chantier Naval du Pacifique Sud has just recently laid the keels for two new 26 m longline vessels similar to F/V *Vini Vini VI*, and work is progressing nicely.

Previously, they had completed two 20 m longline vessels for Navimon in New Caledonia. These vessels were delivered in early 1998, and are already fishing and doing very well for Navimon. Other Pacific Island countries could profit by looking at what is being done for domestic fisheries development by *Armement Coopératif Polynésien* and *Chantiers Naval du Pacifique Sud* in Tahiti.



Figure 5: F/V *Arevamanu* – Back deck with blast freezer and processing room

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