

REPORT ON BOATEBUILDING MISSION  
RAROTONGA, COOK ISLANDS  
1/5 - 29/889

by  
Michael Savins

# REPORT ON BOATBUILDING MISSION.

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By Michael Savins  
FAO Consultant/Boatbuilder

## INTRODUCTION:

This report covers a boatbuilding consultancy to Cook Islands under FAO South Pacific Regional Fisheries Programme.

Initially the consultancy was for a period of 10 weeks to train a national counterpart in the construction and operation of a 9m Trimaran SOI-2. However due to necessary modifications and structural repair required on TON 7, a craft recently received by Marine Resources from Tonga the period was extended to 14 weeks until 15th August to complete the necessary work.

The consultant remained until 29th of August to complete additional work requested by the Government and funded by FFA (Forum Fisheries Agency).

## TERMS OF REFERENCE:

1. Advise and lead skilled carpenter and builders in the operation of a simple, small boatbuilding establishment (boatshed) capable of building, repairing, launching and retrieving canoes and dinghies of up to 1 displacement ton.
2. Teach carpenters in canoe building with construction of 1 KIR TYPE canoe at premises, with tools, material already acquired.
3. Show fishermen and Fisheries Dept staff the elements of sailing and operating of their existing KIR 2 and the built one, towards introduction of improved canoe fishing.
4. Report on activities with recommendations for future canoe fleet.

## ITINERARY:

Sydney	Nadi	7/4/89
Nadi	Rarotonga	1/5/89
Rarotonga -	Nadi	29/8/89

## PERSONS MET:

Vaine Tairea	Minister, Marine Resources
Julian Dashwood	Secretary, Marine Resources
Colin Brown	Director of Fisheries Management
Ned Howard -	Fishery Research Officer
William Powell	Marine Resources carpenter
Ron Powell	Retired SPC Fisheries Officer
Tobia Metua the 2nd	(
	( Fishermen of Rarotonga
Tobia Metua the 3rd	(
Lars K Jacobssen	Programme Officer, FAO, apia
Colin McNeilly	Fishing Gear technologist, FAO
Walter Paulo	Master-fisherman, FAO

## WORK CARRIED OUT:

1. With Fisheries carpenter, constructed timber racks for timber and plywood imported from Fiji. Obtained materials available locally and imported remaining materials air freight from New Zealand.
2. Modified SOI 2 lines and construction drawings as requested by Secretary for Marine Resources and as per recommendations from the Naval Architect.
3. Trained the Fisheries carpenter in construction, rigging and operation of the modified SOI 2 design. Also trained other fisheries staff in the rigging and operation of the canoe.

4. Carried out modifications and structured repairs to TON 7 as follows

4. 1. fitted extra ribs to support the two top planks at Aft deck, original ribs spaced too far apart.

4. 2. fitted timber brackets to support the 3 fuel tanks, originals far too weak and attached very poorly, complete new brackets fitted.

4. 3. fitted backing blocks under hydraulic steering bracket at stern and under chain plates, originals just plywood.

4. 4. fitted boards to support electrical wires, remote control cables, fuel and water hoses.

4. 5. fitted a yoke to attach gas bottle on wheel house roof.

4. 6. fitted a PVC pipe, "in" ventilation to engine room.

4. 7. modified wheel house starboard side wall and roof and starboard side bullwarks and deck.

4. 8. sealed hatches on starboard side aft deck and ice box.

4. 9. modified hatch around hydraulic steering arm on aft deck, original too big.

5. Trained the Fisheries carpenter on the following.

5. 1. Construction of a one man paddling canoe the design we based on the local canoe's in Rarotonga.

5. 2. Manufacture of sheet polyurethane foam, which was cut to size, suitable for an ice box for the 9m canoe, the foam was pegged together with timber sticks, and timber backing blocks fitted for rope handles and drain plug fitted, the ice box will be fibreglassed with two layers of 300gm chopped strand matt and polyester resin when an order is shipped from New Zealand. (Polyester Resin was not available locally, and must be shipped sea freight, for the quantity required).

5. 3. Manufacture of improved FAO deep bottom fishing reels suitable for canoes.

6. Repaired the existing KIR 2 canoe on Rarotonga.

## RECOMMENDATIONS:

SOI 2 design 7.8 metre trimaran modified for Cook Islands

1. 1. Extended 1.1 metre, this was achieved by adding an additional frame No. 3 aft of the original, therefore the Frd beam remains on Frame No. 4 and the aft beam on the added Frame No. 3

1. 2. Freeboard raised by raising the sheer batten 150mm at stem, and fairing in to Frame No. 4 where the sheer is raised 50mm from frame No. 4 aft through to Transom.

1. 3. Mast moved aft and stepped on Frd beam, with shroud attachment on platform braces at 500mm aft of Frd beam and forestay attachment on samson post at Frame No. 6. Rudder increased in size and extra reef point added to mainsail.

1. 4. Outboard bracket fitted through the hull, extended to the port side, positioned half way between frame No. 2 and No. 1.

-The extra length and raised freeboard have improved the design considerably for use in rougher sea conditions, the sail balance is good and the 17 m<sup>2</sup> sail area is considered sufficient for the wind conditions in Cook Islands.

The outboard bracket has been modified from the original trials. Being a Trimaran the outriggers are fitted to create minimal drag, therefore at rest the outriggers just touch the water, under sail only one outrigger is slightly submerged. However when under outboard power and in rough conditions the canoe flops slightly from side to side, this at times combined with a swell trough caused the outboard to cavitate, to prevent this happening in very rough conditions, warranted lowering the outboard bracket, only further trials will determine if an extra long shaft outboard is necessary. This canoe will be demonstrated in Rarotonga until a suitable shipping schedule to Suvarrow, were the canoe will be used for the government's pearl farm. The materials for the canoe with sails cost NZ\$4,500, if built on a commercial basis labour would be approximately NZ\$5,000, with a total cost of \$9,500, this puts the canoe really only in the reach of the more advanced fishermen, the canoe does have excellent working space and economy, which may prove popular for small scale longlining.

2. The KIR 2 design 7.1 metre single outrigger canoe with 15 m<sup>2</sup> Gunter mainsail and jib which was purchased from Kiribati, has been in use around Rarotonga since 1985, this design has since been deleted by the KIR 8 design which has

more carrying capacity, the KIR 8 design should prove popular on the Northern Islands in Cook Islands, being a sail powered craft with outboard Auxiliary.

Most of the Northern Islands are lagoon islands which are ideal for this type of craft, and at time fuel shortages are experienced. The KIR 8 is estimated to cost NZ\$5,000 which is less to that being paid for imported 16ft aluminium skiffs.

The benefit of timber construction on outer islands is that a boat can be constructed and repaired on the island. The Marine Resources carpenter is now considered capable of building the KIR 8 design, which could then be shipped to the Northern group for a period of 2 - 3 months on each island for evaluation of the design for this area.

3. The Marine Resources, position is ideal for building craft up to one displacement TON , with a public boat ramp very accessible for launching and retrieving this size of craft.

4. Costings were obtained for 19ft Planning Skiffs constructed of the following:

FRP (Yamaha) imported from Fiji NZ\$4,900.00 without local agents commission. Aluminium imported from New Zealand and purchased from local agent NZ\$6,290.00. Plywood-timber frame constructed locally on commercial basis NZ\$5,000.00

The timber boat at present is only marginally cheaper if there is an agent's commission on the FRP boat. With support from Ullrich Aluminium New Zealand, a local company Taio Construction, are about to commence assembling (welding) aluminium boats in Rarotonga, the panels being produced in New Zealand, they are confident to market aluminium boats in Rarotonga for cheaper than present, importers. If this eventuates, aluminium would be promising for Rarotonga. Aluminium boats are popular on the Southern Reef islands, due to the light weight, making it easy to launch and retrieve, however maintenance has remained a problem, even with Taio Construction now being able to repair aluminium on Rarotonga, it would be an expensive repair by the time the boat was shipped to and from Rarotonga. The FRP and plywood boat would be of similar weight, the FRP boat requiring far less maintenance, and repairs can be done on outer islands with resin and matt being shipping from Rarotonga which has good supply of epoxies, being more expensive than polyester resins, but epoxy having a far longer shelf life.