

ORIGINAL : ENGLISH

SOUTH PACIFIC COMMISSION

SIXTEENTH REGIONAL TECHNICAL MEETING ON FISHERIES

(Noumea, New Caledonia, 13-17 August 1984)

THE BOAT BUILDING PROGRAMME - FIJI FISHERIES DIVISION

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Background

1. Recognising that the lack of relatively cheap, suitably-designed fishing vessels was one of the main constraints to rural fisheries development, the Fisheries Division (Ministry of Agriculture and Fisheries, now MPI) initiated a boat building programme in 1978. A concrete boat building shed (192m² working area) was constructed and outfitted, and four outboard catamarans (8.75m, 25 h.p.) and two diesel launches (8.75m, 20 h.p.) were constructed to FAO design specifications.
2. The diesel launch immediately proved the more popular of the two designs and construction of the catamaran was soon discontinued. Production of the diesel launch quickly accelerated as it became clear that local demand was strong.
3. At the end of 1980, the Programme benefited under Japanese aid-in-kind in the form of tools, equipment and engines, enabling annual production to be doubled. As a part of this assistance, the programme was partly incorporated into a Rural Fishermen's Training Scheme. Trainees, either from fishing groups or individuals, receive 4 months live-in training at the Fisheries Division, then on completion of the course take delivery of a vessel in which the engine and other equipment are supplied under the aid programme. Such vessels now account for nearly half of the Programme's production.

Design and Performance

4. The vessel as originally constructed was of standard FAO design, 28' (8.75m) in length and powered by a Yanmar 20M20 diesel. It is constructed entirely of local timbers - dakua, a superior local softwood, for the frames; the durable hardwood vesi for the keel and local marine-grade ply for the hull. Below-water line surfaces are glass sheathed.

5. As the programme progressed, it became apparent that the vessel as designed was "tender" in even a moderate sea, and after consultation with users, the beam was broadened from 2.13m to 2.62m. This modification occasioned negligible loss of speed and conferred greater stability. All vessels produced since 1981 (125) have been of this design, apart from minor details.

6. The vessel cruises at 7-8 knots, consuming approx. 3/4 gallon/hour at that speed and approx. 1/3 gallon/hour at trolling speed (4 knots). A wooden ice box with foam insulation (approx. capacity 200 kgs) and two wooden Samoan snapper reels are supplied as standard equipment. An echo-sounder, compass and fishing gear are also supplied with trainees' vessels.

7. The engine has proved reliable and the vessels have generally acquired a sound performance record even with minimal maintenance. Occasional problems with the stern bearing and shaft alignment have been noted, although the former problem has decreased since the standard coach screws were replaced with stainless steel pocket bolts. The electric starter appears to require careful maintenance and may in fact be unnecessary. Individual vessel owners have made numerous modifications to their vessels, a relatively simple task given the wooden mode of construction.

Production Details

8. Since 1978 to the present (July 1984), a total of 154 vessels has been completed under the Programme. The number turned out in each of these years is listed below.

Table I. 28 feet vessels built since 1978 to 1983

	Y		E		A		R	
	1978	1979	1980	1981	1982	1983	1984 (as of July)	Total
Nos.	2	8	19	32	32	42	19	154

9. An annual production target of 42 vessels per year is now set, although this will probably not be met this year due to delays in receiving aid materials. Vessels are constructed four at a time inside the boat building shed, with a fifth vessel outside under shelter on some runs. A lot is completed in less than six weeks on average i.e. 9 lots x 4, plus extras, to give the annual target of 42.

10. The vessels are constructed by a team of 6 carpenters and 15 labourers, of which all but the project leader are unestablished staff. The Programme maintains its own store, purchases much of its material from tariff-free government sources and generally operates as an independent unit within the Division.

Costs and Financial Structure

11. The initial cost of the vessel was \$4500 in 1978, rising to \$5200 at the end of 1979 and \$5500 in mid-1980. The prices at this time included no labour costs and were thus directly subsidised. Since October 1981, the Programme has operated on a revolving-fund basis, and has bettered break-even by a small amount each year. The current price to fishermen is now \$9700 (see more detailed production costs below).

12. Rural fishermen trainees however pay only F\$6300, the engine and other equipment being provided under aid as described earlier.

Table 2. Production costs of a 28' vessel, July 1984

Material	\$3,596.78	
Wages - labourers	\$1,704.99	(1059 hours at \$1.61)
- carpenters	\$ 676.57	(363.75 hours at \$1.86)
Yanmar 20 h.p. diesel	\$3,441.00	
Electricity and water	\$ 298.92	(Est. 5% of materials and labour)
	<u>\$9,718.26</u>	

13. Few vessels are purchased by cash payment. Loans are generally obtained from the Fiji Development Bank, which requires careful vetting of each application by the Fisheries Division. Loan repayments are generally over a 2-4 year period by individual arrangement with the bank.

Improvements

14. The vessel is seen as a general-purpose one, capable of being modified by individual fishermen as they become aware of modifications appropriate to their situation. Suggestions made by users from time to time, notably by SPC master fishermen, have been incorporated where they involve minimal cost. Others, such as installation of hydraulic steering, echo-sounders, radios etc. are left to the discretion of fishermen.

15. Sails (jib on a removable aluminium mast stepped in the wheelhouse) were fitted to ten vessels in 1982 and have proved useful, particularly as a safety device. Their inclusion however adds over \$800 to the purchase price.

16. Every effort is made with non-trainee vessels to accommodate design changes requested by buyers. A specialised snapper-fishing vessel now nearing completion is fitted with hydraulic reels, aluminium canopy frames and a customised aluminium ice box, all supplied by the owner and fitted at cost. Another one-off vessel was constructed with the wheelhouse aft to give a maximum of forward working space.

The Future

17. Whilst demand for the vessels continues at the present strong level, it is tempting not to interfere with this successful programme. However, the need for a smaller vessel, between the main existing options of the 28' vessel and the locally crafted punt, is being more frequently expressed. The Fisheries Division is therefore beginning to consider alternative designs, and looks forward to significant input from this workshop. An outrigger canoe (sail and outboard-powered) from Kiribati will hopefully be assembled and trialled in Fiji later this year for the ex-Ocean Island (Kiribati) Rabi community. Although this is a rather specialist need, it may provide some useful insights into future design requirements. Similarly, a Samoan alia is currently in use by the Division and may have application to some parts of Fiji.

18. Consideration of an alternative vessel type does however take into account the reality that no one boat can be all things for all fishermen.
