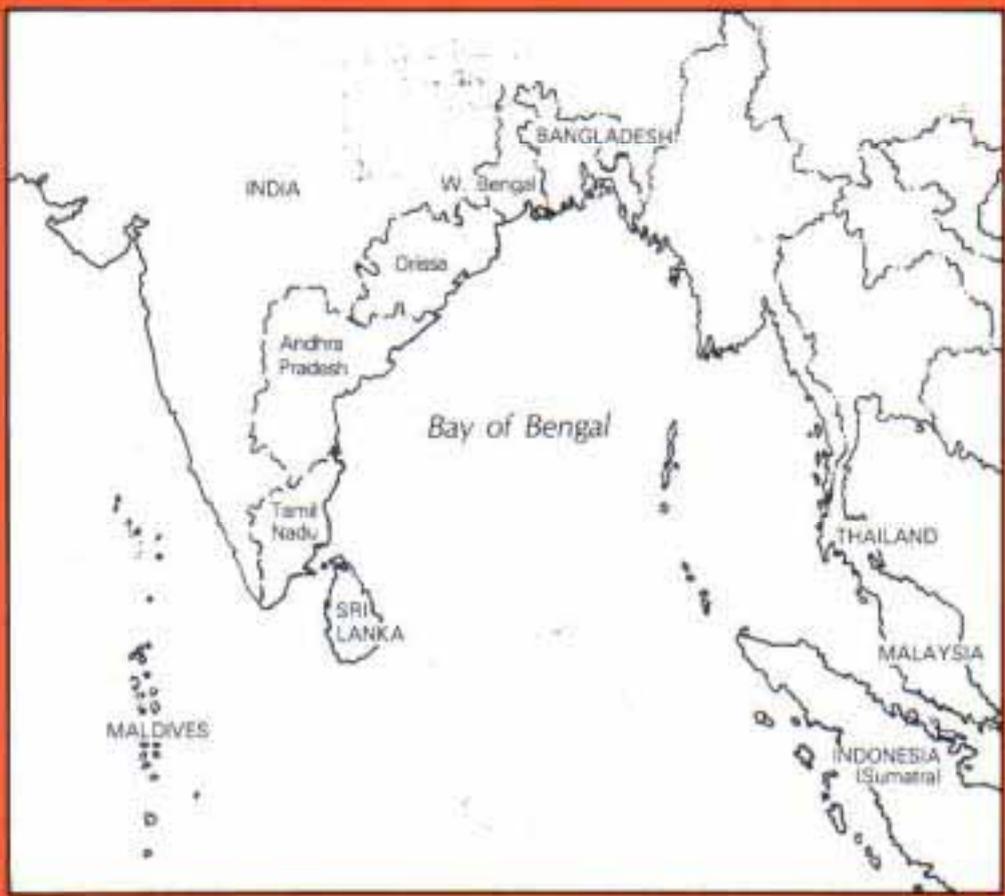


# Introduction of new small fishing craft in Kerala, India



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*BY*

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This report describes attempts to introduce modified and new types of small fishing craft in the State of Kerala India. Three new types were constructed and tested and one type, a beachlanding craft available on the east coast of India, was introduced. All the craft underwent commercial fishing trials. The work was carried out during 1989-90.

The project, on request from the Government of India, was funded to the tune of US \$ 139,000 by **FAO** under its Technical Cooperation Programme (TCP).

The Kerala State Cooperative Federation for Fisheries Development Limited (**MATSYAFED**) was designated as the government agency responsible for the project execution. The Bay of Bengal Programme (**BOBP**) provided technical support, equipment and monitoring services to implement the project. Besides the authors, other persons actively engaged in the project work were officials of **MATSYAFED**, officers and technicians of **BOBP**, managers and staff of two boatyards and, not least, the fisherfolk.

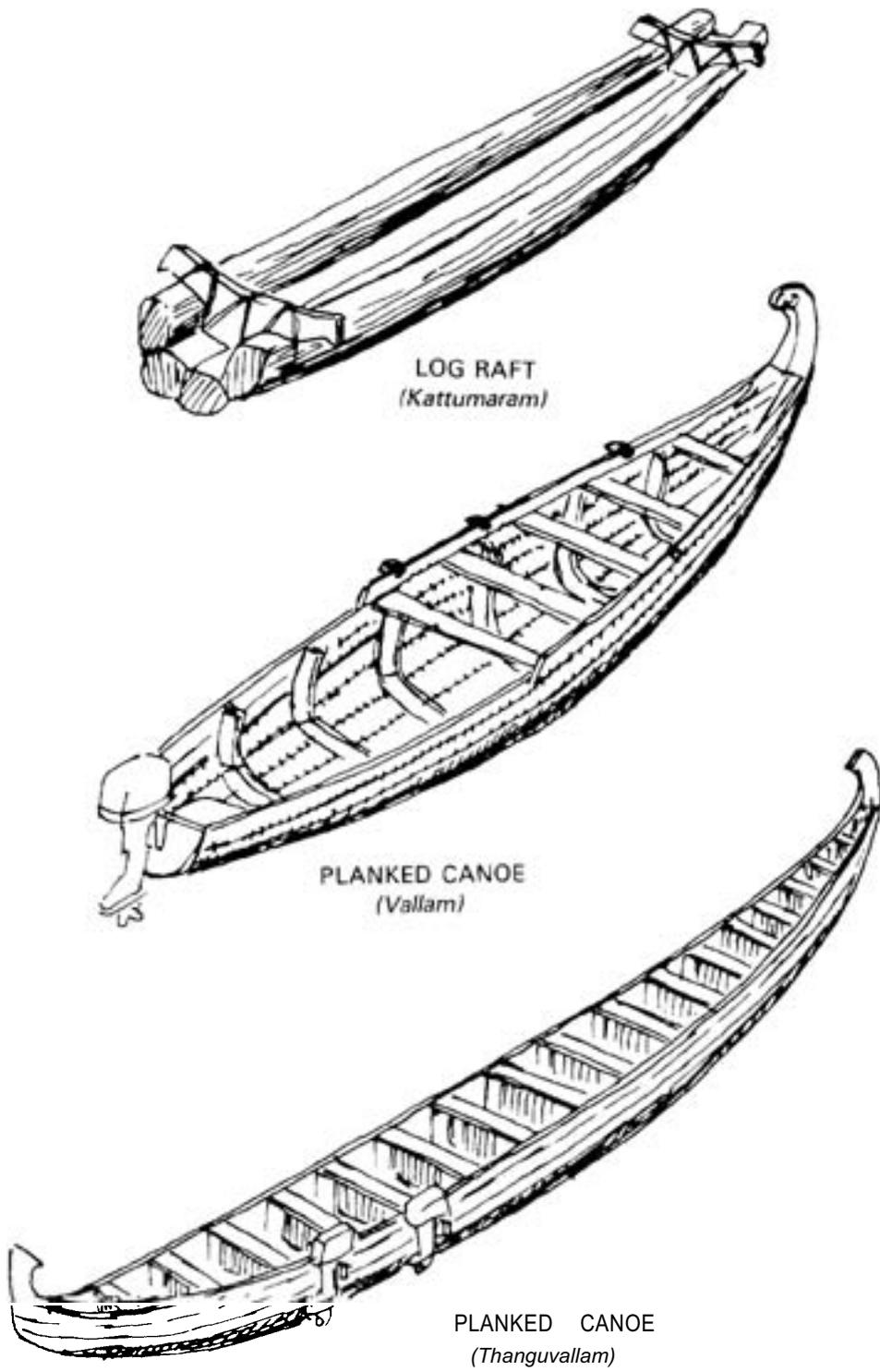
The Bay of Bengal Programme (**BOBP**) is a multi-agency regional fisheries programme which covers seven countries around the Bay of Bengal - Bangladesh, India, Indonesia, Malaysia, Maldives, Sri Lanka, Thailand. The Programme plays a catalytic and consultative role: it develops, demonstrates and promotes new techniques, technologies or ideas to help improve the conditions of small-scale fisherfolk communities in member-countries. The **BOBP** is sponsored by the governments of Denmark, Sweden and the United Kingdom, by member-governments, in the Bay of Bengal region, and also by **AGFUND** (Arab Gulf Fund for United Nations Development Organizations) and **UNDP** (United Nations Development Programme). The main executing agency is the **FAO** (Food and Agriculture Organization of the United Nations).

This paper is a technical report and has not been cleared by the **FAO** or the Governments of Kerala and India.

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Fig. 1. Traditional fishing craft in Kerala



## 1. BACKGROUND

The marine fish landings of the State of Kerala constitute nearly one third of India's total fish production and a corresponding number of India's seagoing fishermen live in the State. The density of the fisher population in relation to the rest of India is very high. There are about 148,000 active marine fishermen (1988) and the number is increasing. Landings, during the period 1980-88, has averaged 330,000 tonnes per year of which about two-thirds are landed by the small-scale sector. The production has not shown a long term increase, although there can be large variations from year to year, depending on the abundance of the main pelagic species: oil sardine, mackerel and small tuna.

The traditional fishing fleet comprises **about** 35,000 craft of which 25,000 are planked canoes (*vallam*, *thanguvallam*) and 10,000 log rafts (*kattumaram*). Sketches of them are shown in Figure 1 (see facing page). There are also about 3500 larger **boats fitted** with inboard diesel engines, of which about 2500 are doing trawling and the others driftnetting, hook and line fishing and purse seining.

The first attempt to motorize traditional craft was made by the indo-Norivegian Fisheries Project in 1955. The project concluded that motorization of the traditional planked canoe (*vallam*), although technically feasible, was not economically viable at that time. The Indo-Belgium Fisheries Project during 1970-73 made an attempt to motorize Log rafts (*kattumaram*) in the Kanyakumari district of Tamil Nadu with 25 hp outboard motors. This project failed mainly due to the selection of a too costly outboard motor and problems of engine service.

In 1981-82, an FAO project investigated the possibility of improving the sailing performance by introducing a new plywood craft (*Fishing Craft Development in Kerala*. BOBP/WP/25, Madras, 1984). Although the sailing performance was much improved, fishing trials showed that favourable sailing wind was only available 50 per cent of the time. Usually sail could be used when going fishing in the evening, while the return during the night had to be made with the help of oars.

The plywood canoes were then fitted with 7 hp outboard motors which resulted in complete abandonment of the sail. The data collected over a one-year period indicated that although the outboard motors increased the landings, the income per crew member was not increased. The report recommended a cautious approach in motorization and the **use** of 4 hp outboard motors on the canoes.

From 1982, however, the motorization of traditional craft started in earnest. The fishermen appreciated the speed obtained with the 7 hp outboard motors and would not consider any smaller engines. Some of the canoes are now fitted with outboard motors of 15 hp and the larger *thanguvallams* with motors up to 40 hp.

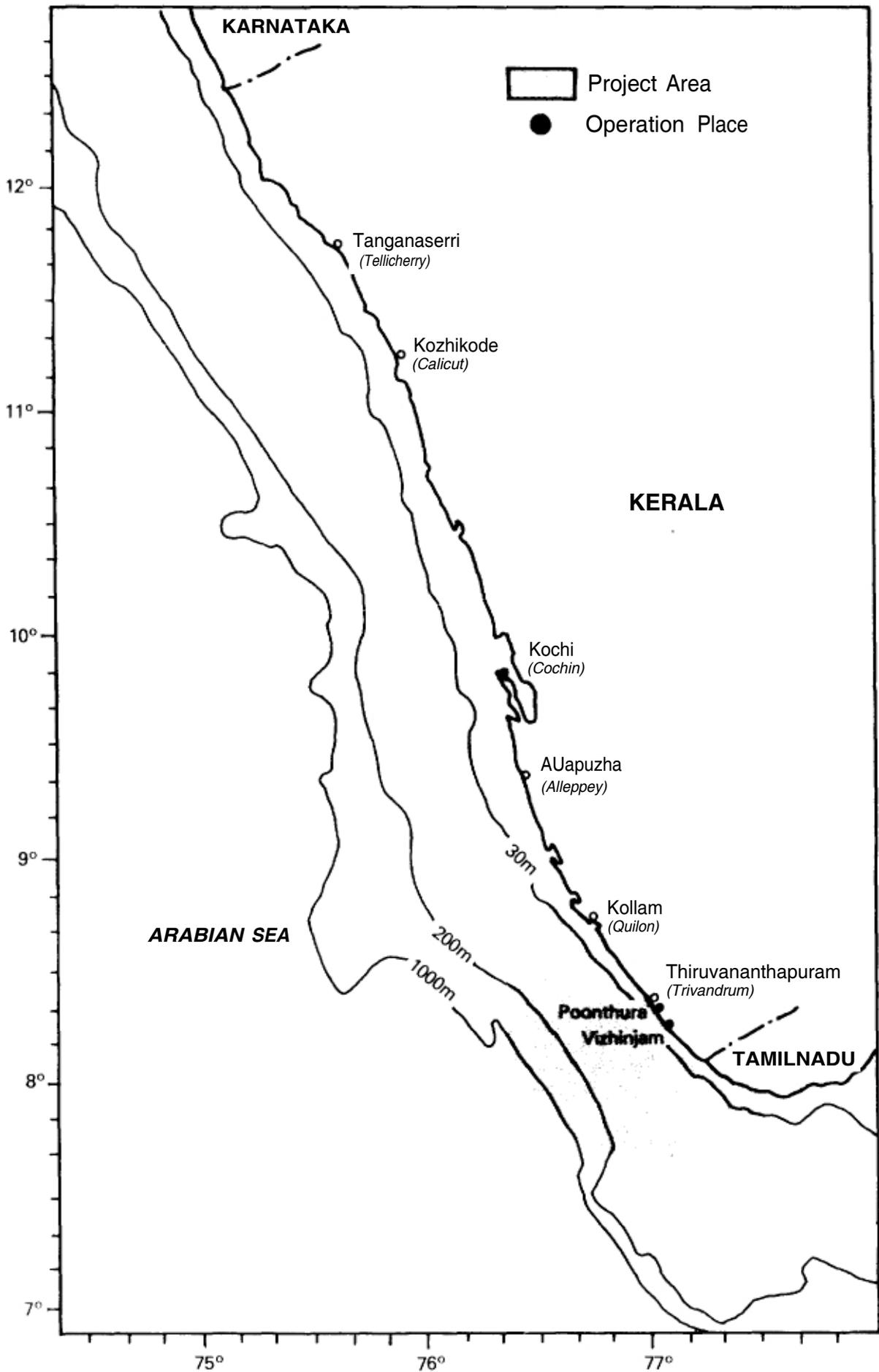
Attempts in 1980-82 to introduce diesel outboard motors made in India by one manufacturer failed because of the difficulty of achieving the same speed as with the kerosene outboard motors. There were also problems with the reliability.

In 1981, the Kottar Social Service Society (KSSS) in Kanyakumari District, Tamil Nadu, started a boat building project in cooperation with the Intermediate Technology Development Group (ITDG). A method for building plywood boats called 'stitch and glue' was introduced. Initial trials with a twin hull craft was a failure, but a plywood *canoe*, the *ply-vallam*, modelled along the lines of the traditional canoes, gained acceptance by the fishermen. The *ply-vallam* was intended for sailing, but the fishermen soon found out that it gave higher speed than the traditional planked canoes when fitted with a 7 hp outboard motor and the *ply-vallam* rapidly increased in popularity; the original concept of a non-motorized, sailing *ply-vallam* had no appeal.

Construction of the *ply-vallam*, and the decked model called *kotturkat*, is done in several boatyards in Kerala operated by the South Indian Federation of Fishermen's Societies (SIFFS) and in a few private boatyards. More than a thousand plywood canoes have been built since the project started in 1982.

In 1984, the Government of India requested FAO assistance to implement a project to test different types of craft that might be suitable for the Kerala fishery. The project was approved by \_\_\_\_\_ in late 1988 under its Technical Cooperation Programme (TCP).

Fig. 2. Map of the project area



## 2. OBJECTIVES AND APPROACH

The original project objective, formulated in 1984, was to increase the production of motorized fishing craft in Kerala State and to train the local fishermen in their use. At the inception of the project in November 1988 the objectives were sharpened and redefined as **introduction of new types of cost effective motorized fishing craft and training of local fishermen in their use.**

The preconditions for success in introducing diesel powered canoes in Kerala are:

- Introduction of the diesel boat, initially, in a limited area;
- A diesel engine installation with a proven reliability;
- Availability of a trained mechanic;
- Availability of spare parts; and
- Training of fishermen in day-to-day use and maintenance.

Considering the high degree of motorization of small fishing craft at the start of the project, one of the approaches had to be based on exploitation of resources outside the reach of the traditional canoes (*vallam* and *thanguvallam*) and log raft (*kattumaram*). This, it was decided, would be possible, by using an IND-20 type of beach-landing craft employing large mesh driftnet, drift longlines and trolling lines for tuna, shark and billfish species in the range of about 30 nautical miles from the shore. The IND-20 had been developed by BOBP as a beachlanding craft for the east coast of India and more than two hundred of these craft are in use in Andhra Pradesh and Orissa, mainly for large mesh driftnet fishing. To reach fishing areas about 30 nautical miles from the shore, a running time of about five hours would be required, and experience from the east coast showed that for such prolonged operations a watercooled diesel engine was preferable. The project therefore undertook to install a watercooled diesel engine of 9 hp in one of the existing IND-20 boats already available with MATSYAFED and to use this boat to determine the feasibility of fishing further offshore.

The IND-20, made of FRP, had been developed for the moderate to heavy surf conditions prevailing on the east coast and was felt to be unnecessarily expensive for the Kerala conditions. It was, therefore, decided to test a lighter, cheaper craft with the same fishing capacity as the IND-20 upto a distance of about 30 nautical miles. The model was called IND-27 and was a 9.5 m long canoe built of marine plywood, powered with a 9 hp watercooled engine fitted with a reverse/reduction gearbox and a propeller in a tunnel to permit beachlanding.

The other approach was to demonstrate a suitable design and good construction practices of new canoes as replacements of planked canoes or alternatives to the ply-vallams for inshore fisheries upto about 15 nautical miles. The resulting prototype was the IND-26, a canoe 8.5 m long and powered with a 7 hp kerosene outboard motor. The most common fishing gear for such a craft would be small mesh driftnet and hook-and-lines.

During the course of the project, as experience was gained, it was decided to introduce a third prototype, the IND-28, a 9.0 m canoe based on the IND-26 design, but equipped with an inboard diesel engine with a liftable propeller and rudder.

For construction of the prototypes, MATSYAFED selected a private boatyard in Vizhinjam and SIFFS in Trivandrum. The construction work was supervised by BOBP staff. Detailed records were kept on the quantity of materials utilized and this was to serve as a basis for a realistic costing of the craft. Labour costs for building the prototypes were, of course, higher than what could be expected during commercial production.

Due to the limited duration of the project, it was necessary to concentrate the fishing trials of the new craft to one area of Kerala. MATSYAFED selected Vizhinjam harbour and the nearby Poonthura beach village in Trivandrum District (Figure 2, see facing page) as base for the trial fishing.

The government cooperating agency, MATSYAFED, provided two full-time staff members to supervise fishing craft operation and for data collection, and financed the construction of the prototype craft.

FAO provided a short term consultant in Naval Architecture and other BOBP staff for supervision of construction of prototype craft and of fishing trials.

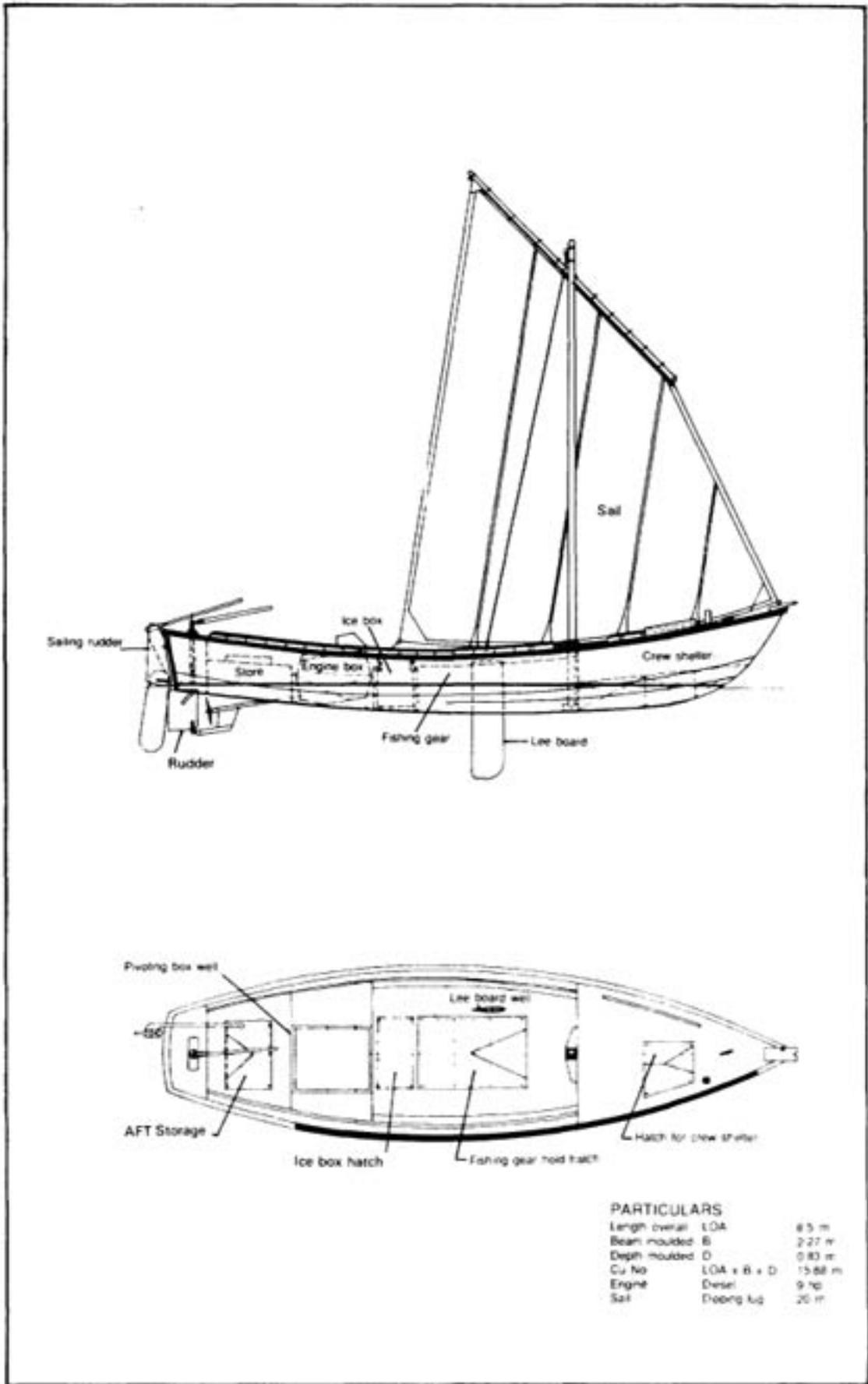


Fig. 3. IND-20: General arrangement