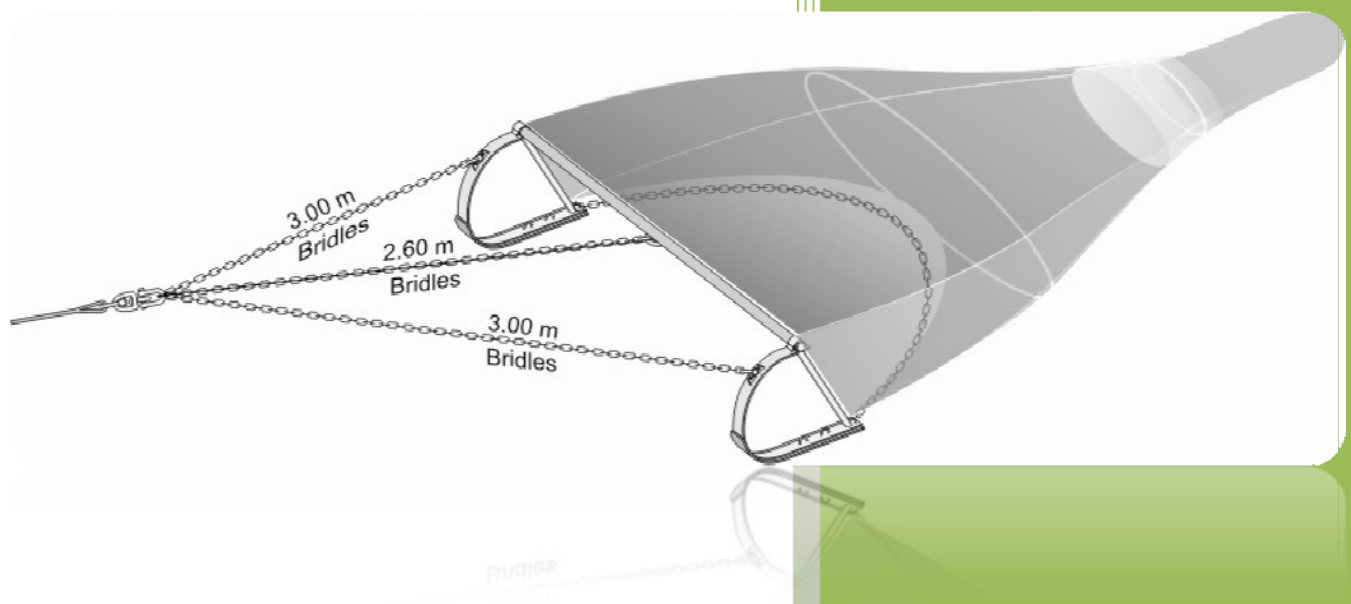


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## Standard Operating Procedures of **DEEP SEA BEAMTRAWL**



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SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER

**TD/RES 113**

## Standard Operating Procedures Deep Sea Beam Trawl

### 1) Definition of Beam Trawl:

Beam trawl net is a type of bottom trawl net. The target catches of beam trawl is coastal shrimp. The beam trawl fishing has been recorded of the operation in Thailand since 1957. It is the prototype of other bottom trawls in the Thailand. Thai fishermen always spread operated the small beam trawl along the coastal fishing ground of Thailand. The fishing boat is 6-8 m. length equipped with 7-8 horse power outboard engines in the few decades. Now a day, fishermen in the inner and central part of the Gulf of Thailand, Samutsakorn and Chumporn provinces, have enlarged their fishing boat to be 14-18 m. with 200-300 horse power inboard engines. Only fishermen in the Southern part of the Gulf of Thailand still have operated the conventional small scale of beam trawl

Beam trawls are one type of fishing gear designed for use on the sea bed. A beam trawl consists of a cone-shaped body ending in a bag or cod end, which retains the catch. In these trawls the horizontal opening of the net is provided by a beam, made of wood or metal. The vertically opening is provided by two hoop-like trawl heads/shoes mostly made from steel. No hydrodynamic forces are needed to keep a beam trawl open.

While fishing for flatfish the beam trawl is often equipped with tickler chains to disturb the fish from the seabed. For operations on very rough fishing grounds they can be equipped with chain matrices. Chain matrices are rigged between the beam and the ground rope and prevent boulders/stones from being caught by the trawl. Shrimp beam trawls are not so heavy and have smaller mesh sizes. A bobbin of ground rope with rubber bobbins keeps the shrimp beam trawl in contact with the bottom and gives flatfish the opportunity to escape.

### 2) Deep Sea Beam Trawl for MV SEAFDEC2

SEAFDEC design of deep sea beam trawl gear and its net were developed and modified from the fisherman in the Northern part and Northeast of the European water. The design is suitable for M.V. SEAFDEC 2 and other research vessels for deep sea fauna samplings in particularly deep sea shrimps and bottom fishes.

Figure 1 shows the details of net. Head rope and ground ropes are made from Z-twist Polypropylene rope, diameter 12 mm. Length of head rope is 2 m. and ground rope length is 4.40 m. The wing parts and square part are made from polyethylene net, twine size 380d/21 and mesh size is 38 mm. Belly part is composed from polyethylene net, twine size 380d/18 mesh size is 38 mm and twine size 380d/18 mesh size 25 mm respectively. The cod end piece is made from polyethylene net, twine size 380d/18 with mesh size 25 mm. There are not any lacing lines on the both side of net. Cover net at the cod end is made from polyethylene net, twine size 700d/30. 44 pieces of diameter 6 mm STT hoop sinkers

are attached at the ground rope and tickler chains 9-10 kg in weight. Head line is attached with beam by tied cords. Chain matrices are rigged between the beam are 3.3 m in length and 9 mm of diameter.

Towing warp is duty heavy chains diameter 9 mm, 3 m length. Details of the deep sea beam trawl design, construction and chain arrangements and its operation are in Figure 2 and 3. The net of Beam trawl were designed and modified for two size of frame in 2 m. and 4 m. respectively. (Figure 4)

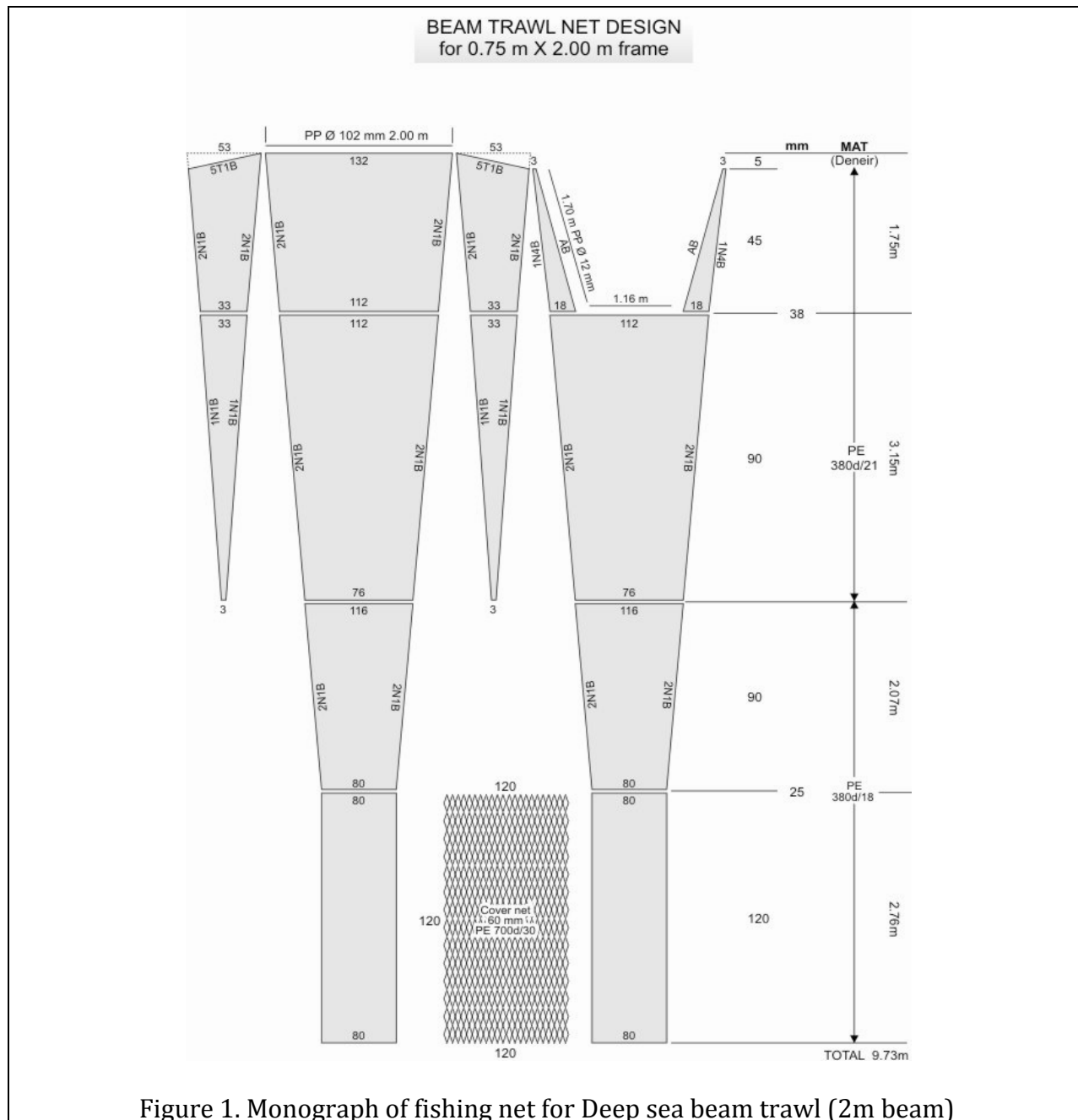


Figure 1. Monograph of fishing net for Deep sea beam trawl (2m beam)

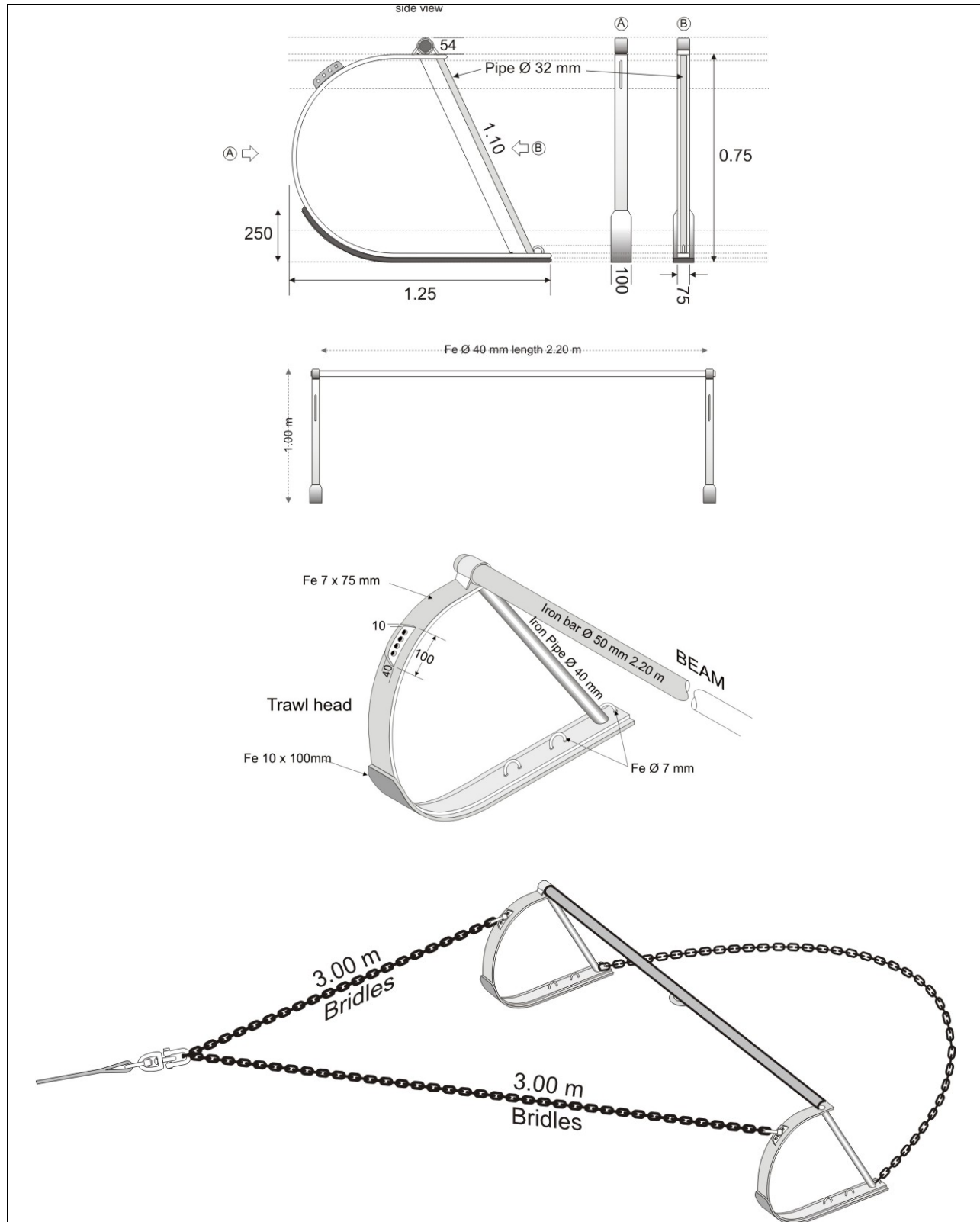
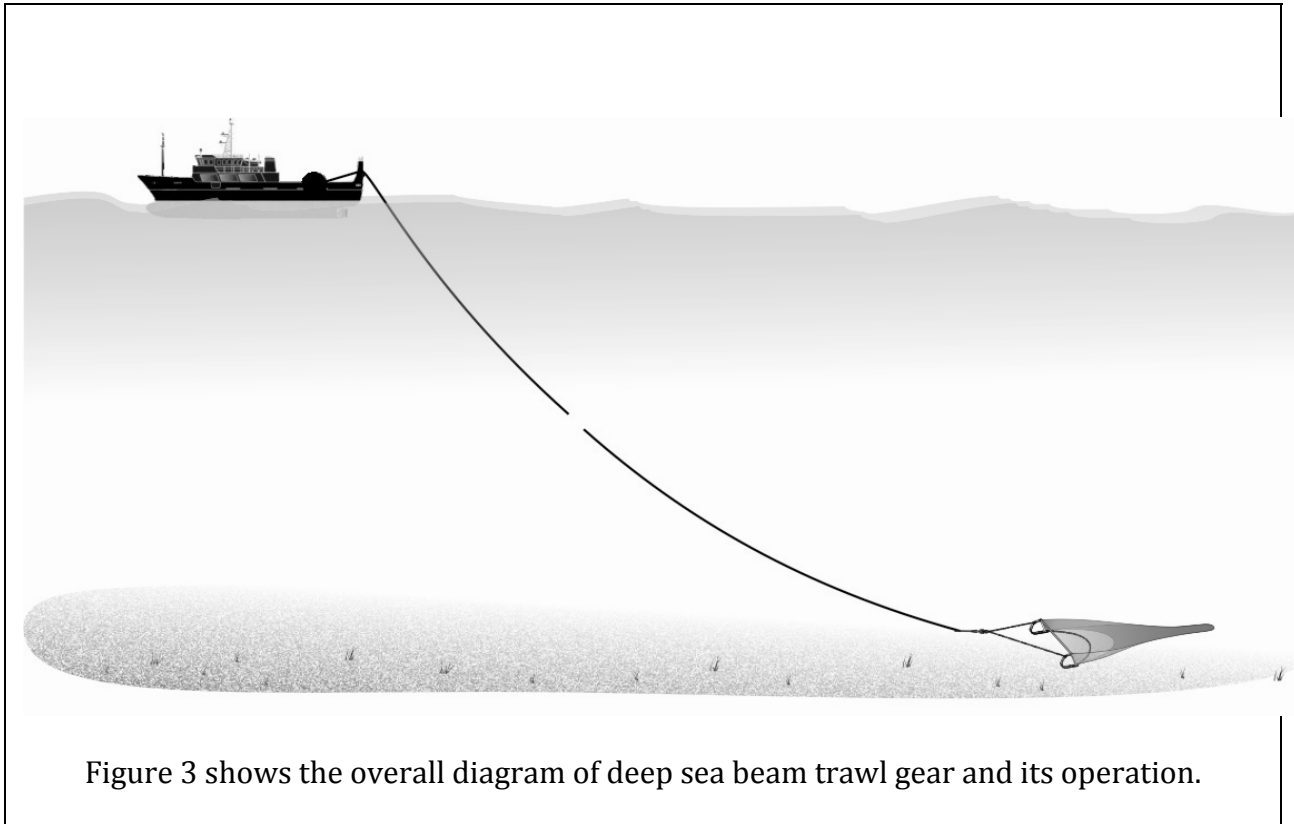


Figure 2. Design of the Deep sea beam trawl and towing chain arrangements





### 3) Operation

#### **Fishing operation preparation:**

Bottom condition is checked before start fishing operation by using essential fishing finder or echo sounder and essential information of weather and oceanographic condition are collected.

#### **Towing time:**

1 hour or shall be designed whilst the process of research survey planning.

#### **Number of the operation on a Mapping grid:**

The number of operation for resources survey is designed whilst the process of research survey planning. 1 operation or 2 operations or the number of operation on a grid is depended on research activities and designed whilst the process of research survey planning.

**Period of trawl fishing operation:**

Daytime or Daytime and night-time of if daytime and night-time is not any significant condition for survey, period of trawling shall be designed whilst the process of research survey planning.

**Depth of operation:**

The maximum depth is not using fish finder or echo sounder, recommended to record characteristic of bottom topography from the starting position to finishing position of the operation.

**Speed of operation:**

Optimum towing speed of beam trawl should be 3-4 knots. Because the sea bottom is soft muddy, ground rope was dragged and easily to sunk under the soft muddy fishing ground, high towing speed make the ground rope rise up at the surface of sea bottom, and be able to reduce the damage of the trawl net. Fast towing speed can extends the sweeping area and catch quantity is able to be increase.

**Towing direction:**

Towing shall be straight direction and recommend to avoid changing of towing direction except the towing direction is obstructed by some objects. Record the details of towing direction and time consuming of each direction

**Warp length:**

Warp length is released 1.5 – 2.5 times of the sea depth. The warp length is recorded when the brake of trawl winch is fastened and warp length is measured by the unit of meter (m) and recommend not to adjust towing warp during fishing operation except for the malfunction of gear of operation is occurred and warp length is measured by checking warp counter meter, compare with the length marker on the towing warp.

**Information recording:**

The recording of Starting fishing time: start recording the towing time when trawl net reaches at the sea bottom (If depth sensor: Scanmar or other is fixed at the trawl net) or start recording the towing time when the brake of trawl winch is fastened (if depth sensor: Scanmar or other is not fixed at the trawl net).

The recording of Finishing fishing time: recording the fishing of towing time when trawl net is lifted from the sea bottom (If depth sensor: Scanmar or other is fixed at the

trawl net) or recording the finishing towing time when start hauling the trawl warp (If depth sensor: scanmar or other is not fixed at the trawl net).

The recording of fishing position: Fishing position shall be recorded by using the GPS (Global Positioning System) or an equally accurate navigation system for position measurement and Position recording by unit of Latitude and Longitude.

The recording of Start fishing position: Recording the starting position when trawl net reaches at the sea bottom (If depth sensor: Scanmar or other is fixed at the trawl net) or recording the starting position when the brake of trawl winch is fastened (If depth sensor: Scanmar or other is not fixed at the trawl net).

The recording of finishing fishing position: Recording of finishing position when trawl net is lifted from the sea bottom. (If depth sensor: Scanmar or other is fixed at the trawl net) or recording the finishing position when start hauling the trawl warp. (If depth sensor: Scanmar or other is not fixed at the trawl net).

## **Gear malfunction**

If the malfunctioning of gear or operation is occurred trawl fishing operation should be cancelled and re-operate in the same area. Record the malfunction of the gear or operation into the Fishing logsheet.

## **Reference**

- 1: <http://www.fao.org/fishery/geartype/305>
2. Aussanee Munprasit, Isara Chanrachkij, Pratakphol Prajakjitt, and Anurak Loog- ong. 2007 Priliminary Experiment on Beam Trawl Fishing Operation. TD/RES 105 Samut Prakan: SEAFDEC/TD, 25 pp
3. SEAFDEC/TD. 2004 Standard Operating Procedures for M.V.SEAFDEC 2 (Revised edition). Research Division, Training Department/SEAFDEC,Thailand. 93 pp



Developing Process:



Fishing trials of Beam Trawl on M.V. SEAFDEC, Deck arrangement



Picture from underwater camera  
,view of beam and the  
Trickle chain view



Fishing trials of Beam Trawl on MV  
SEAFDEC2, Trawl net part.



