AN ACOUSTIC EQUIPMENTS

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1.ECHO-SOUNDER

2.SONAR

3.NET-SOUNDER

ECHO-SOUNDER

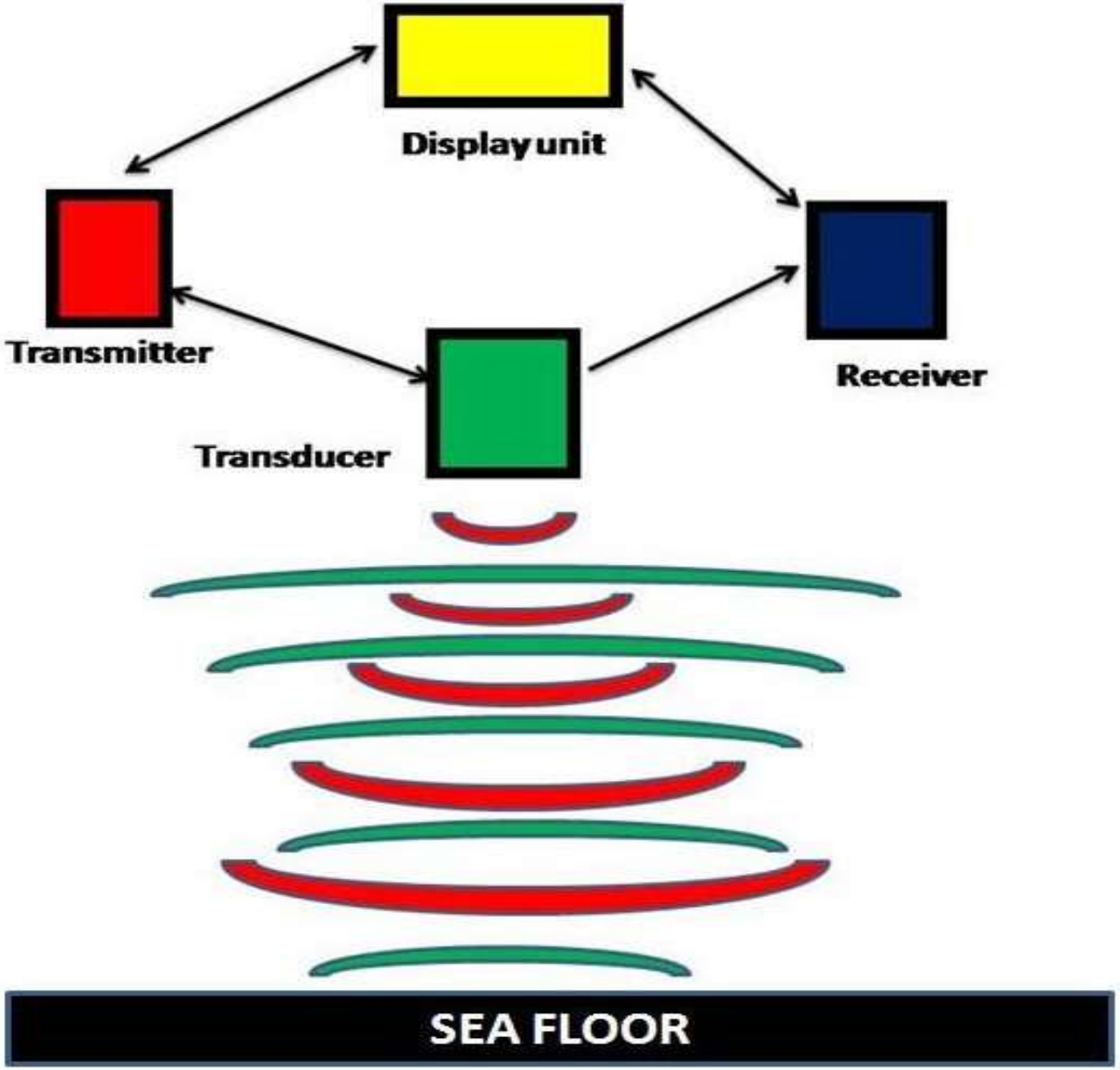
INTRODUCTION

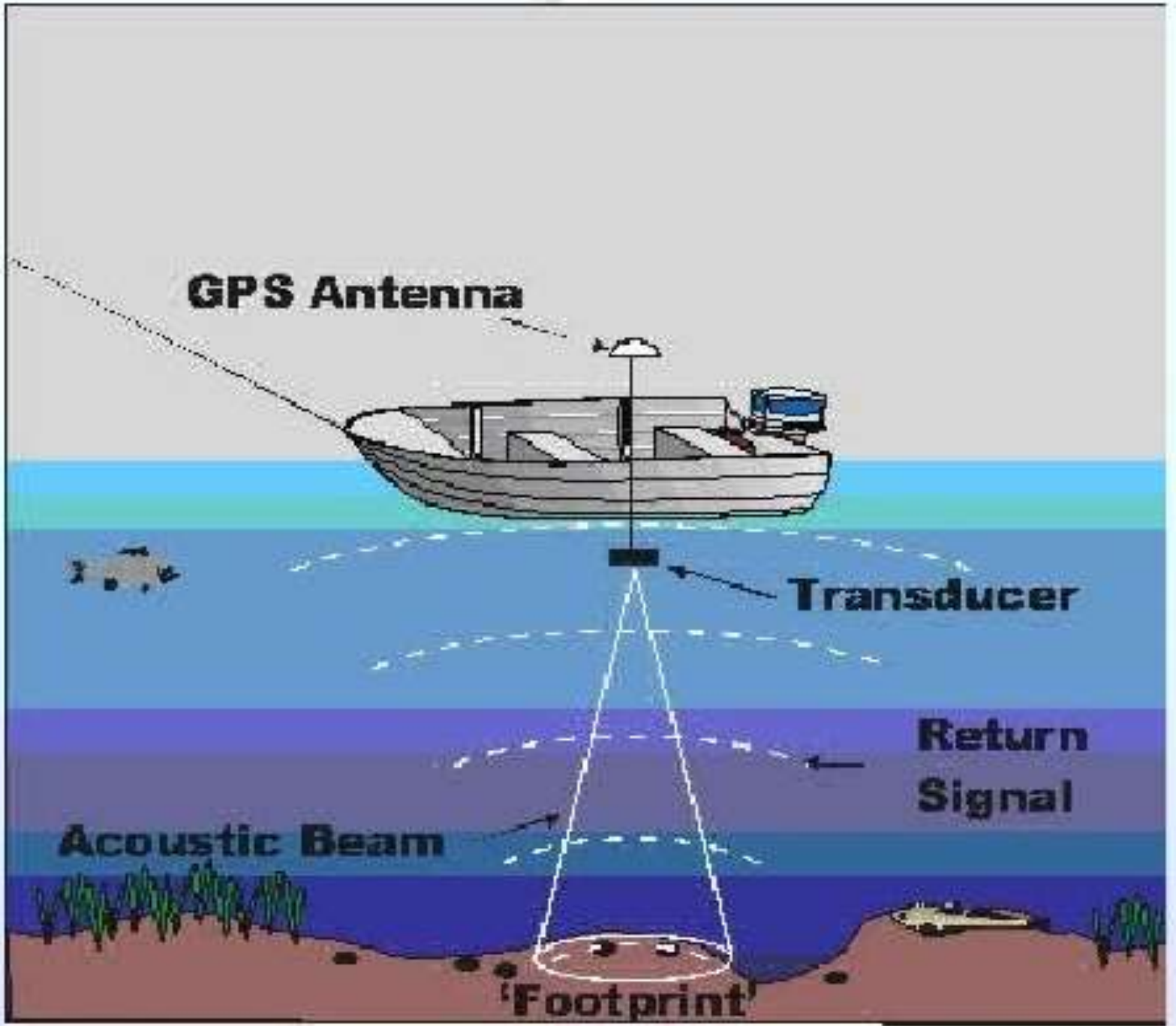
- Echo-sounder is primary acoustic equipment used for navigation and for fish finding purposes.
- It works on the principle of sound wave propagation in water.
- The echo-sounder produces both soft and hard copy indicating fish shoals, water depth and contour of the sea bottom

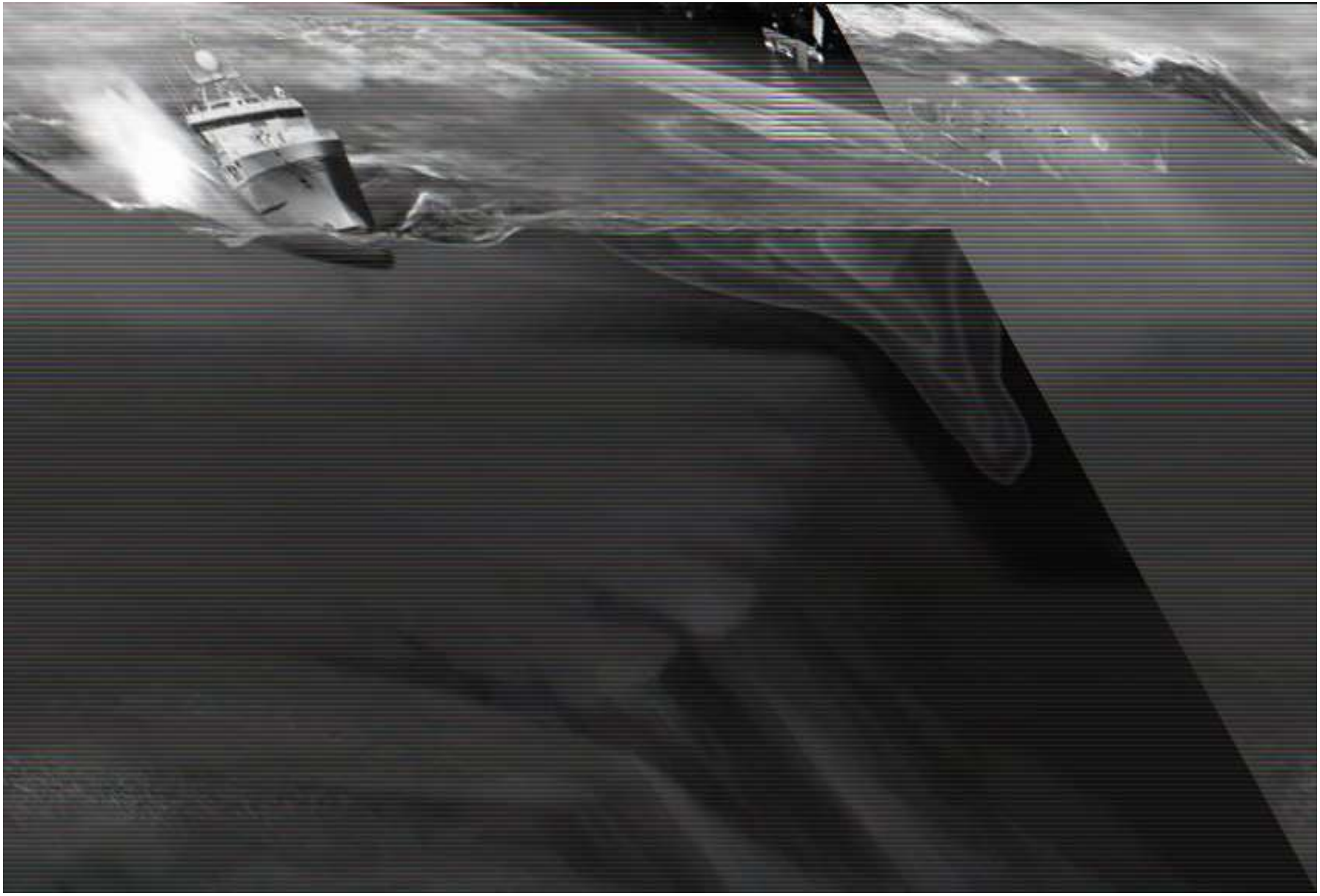
Parts of an echo-sounder

The echo-sounder have major four parts:

1. Transmitter
2. Transducer
3. Receiver
4. Recorder or Display unit


Display unit
Transmitter
Receiver
Transducer
SEA FLOOR


GPS Antenna
Transducer
Return
Signal
Acoustic Beam
'Footprint'



TRANSMITTER

- The transmitter generates an electrical pulse at particular frequency.
- Pulse gets produced in pulse former part of transmitter and this part also determine the length of pulse.
- After generation of pulse it get amplified by power amplifier of transmitter before it reach to transducer.

PULSE FORMER

OSCILLATOR

POWER AMPLIFIER

TRANSDUCER

TRANSDUCER

- Transducer receives electrical energy from transmitter and then transform into sound energy.
- It receive echo –sound and convert it into electrical energy.
- An additional function of transducer is to concentrate the sound energy which is emitted as a beam.
- beam width determines directivity of sound wave. The shape and size of transducer affect beam width.

RECEIVER

- Receiver receives electrical energy from transducer and then amplifies it.

- After amplification of electrical energy the amplified electrical energy get transmitted to the recorder or display unit.

RECORDER OR DISPLAY UNIT

- This unit record and display the observed information.

It is of two types:

1. Paper recorder / Paper display unit
2. Video recorder / Video display unit

1. PAPER DISPLAY UNIT

- This recorder provides hard copy of collected information.
- It measures the time gap between transmission of sound pulses and reception of the echoes.
- In this recorder a stylus moves over a paper at a certain uniform speed.
- The paper has mark of certain depth range such as 0 – 50 m, 0 – 100 m, 0 – 250 m etc.
- The change in depth range takes place due to change in stylus speed.

2. VIDEO DISPLAY UNIT

- This recorder is best for detailed study and identification of echoes and is well suited for the recognition of fish echoes close to the bottom.
- This unit does not have any mechanical movement because there is no routine paper and stylus required.
- Video display recorder cannot make hard copy but it can store huge amount of data for future purpose.


DS 1068-1
DBS STC
0
20
40
60
80
100
58.5м
N 31 59.381'
E118 18.901'
1:30:45
MENU|EXIT
▲RANGE▼
▲ COLOR BAR ▼
▲SPEED▼
▲ MODE ▼
▲ AUTO RANGE ▼
▲ STC ▼
▲ GAIN ▼

CONTROL UNIT OF ECHO-SOUNDER

1. ON – OFF Switch
2. Depth range knob
3. Pulse knob
4. Gain knob
5. White line
6. Paper speed

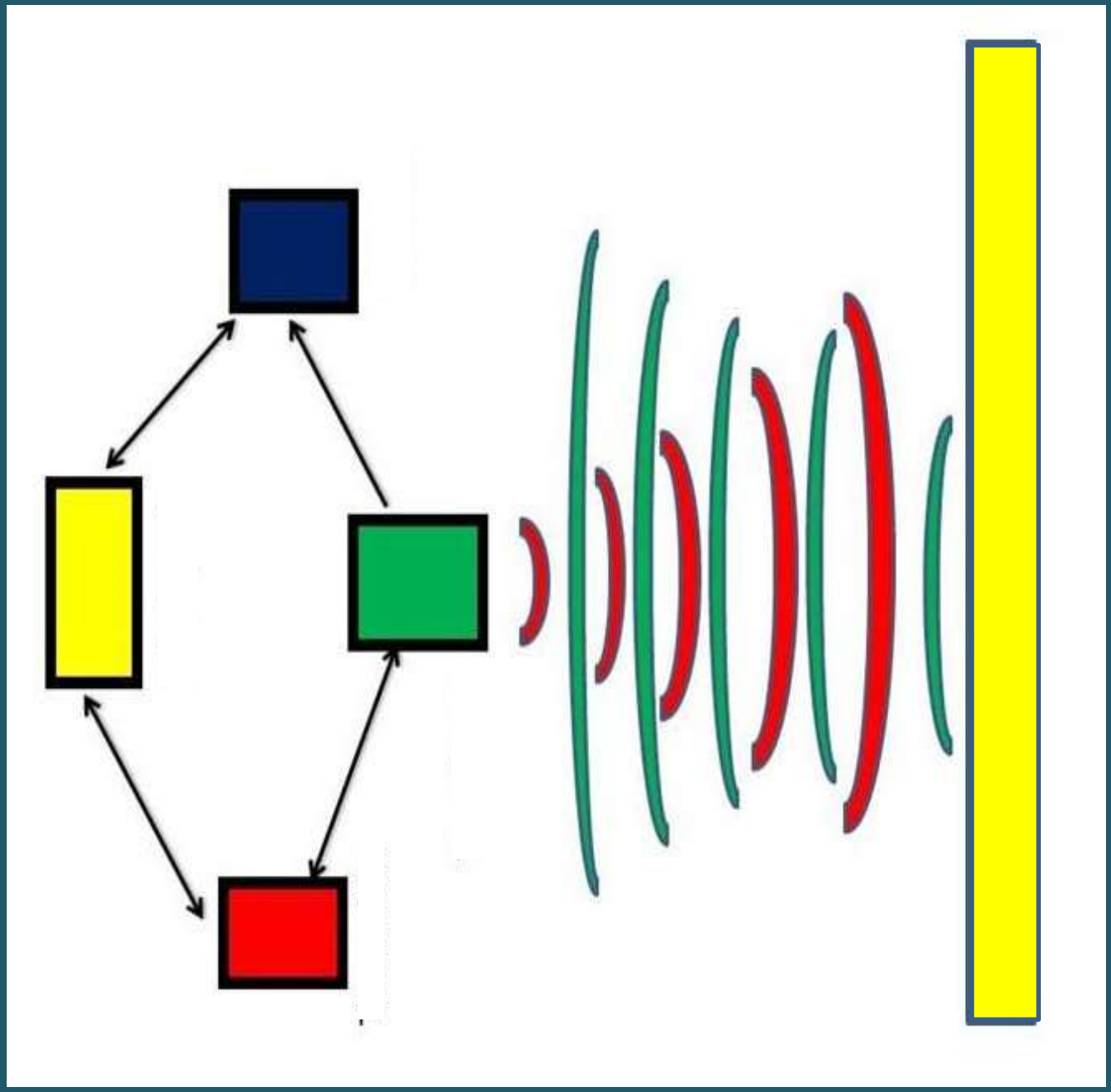
ERRORS OF ECHO-SOUNDER

1. Differences in velocity of propagation
2. Transmission line error
3. Aeration
4. Error due to false echo
5. Double echo


SONAR

SONAR

- It works on the principle of sound wave propagation in water and air both
- The transducer of SONAR installed at Crow Eye
- Crow Eye is the highest place of boat.
- Transducer moves in 360 Degree



FUNCTIONS

1. Find depth of water
2. Find the objects available in their vicinity.
3. Calculate distance between two objects horizontally.
4. Identify the size and nature of object.
5. Helps to navigate the vessel in night condition also

NET-SOUNDER

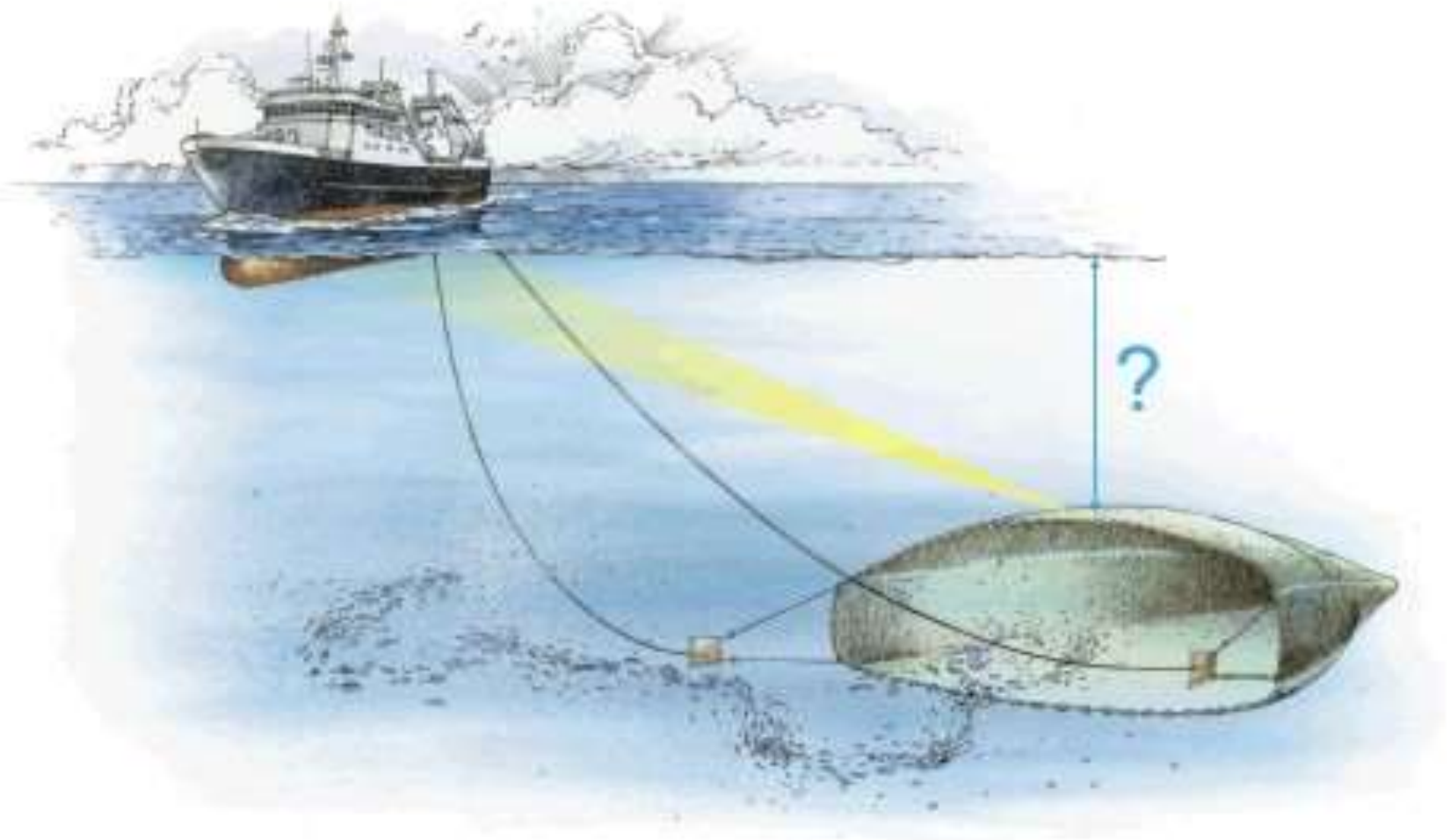
NET-SOUNDER

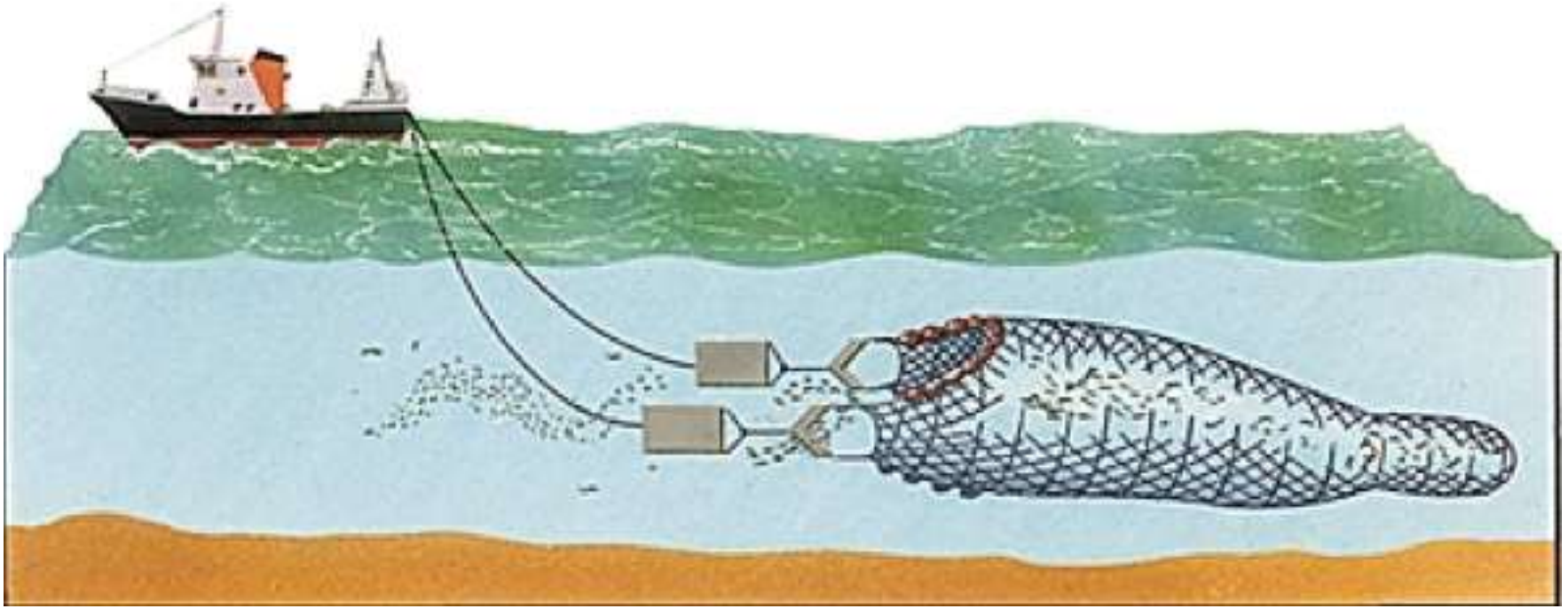
- Works on the principle of sound wave propagation in water.
- Helps to calculate depth
- Used with Trawl net only
- Transducer installed on Head rope & body of the net.
- Irritate the bottom dwelling organisms to come – up and hence they get caught in the net.
- It display the quantity and species of organisms available in cod end.

Two Types:-

1. With cable – Have only one transducer at head rope of the net
2. Without cable – Have two transducer:-

- At Keel
- On head rope of the net





THANKS

QUESTIONS PLEASE