The “HDTV” on HYPER DOLPHIN

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2. Explanation of HDTV
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   - How to use
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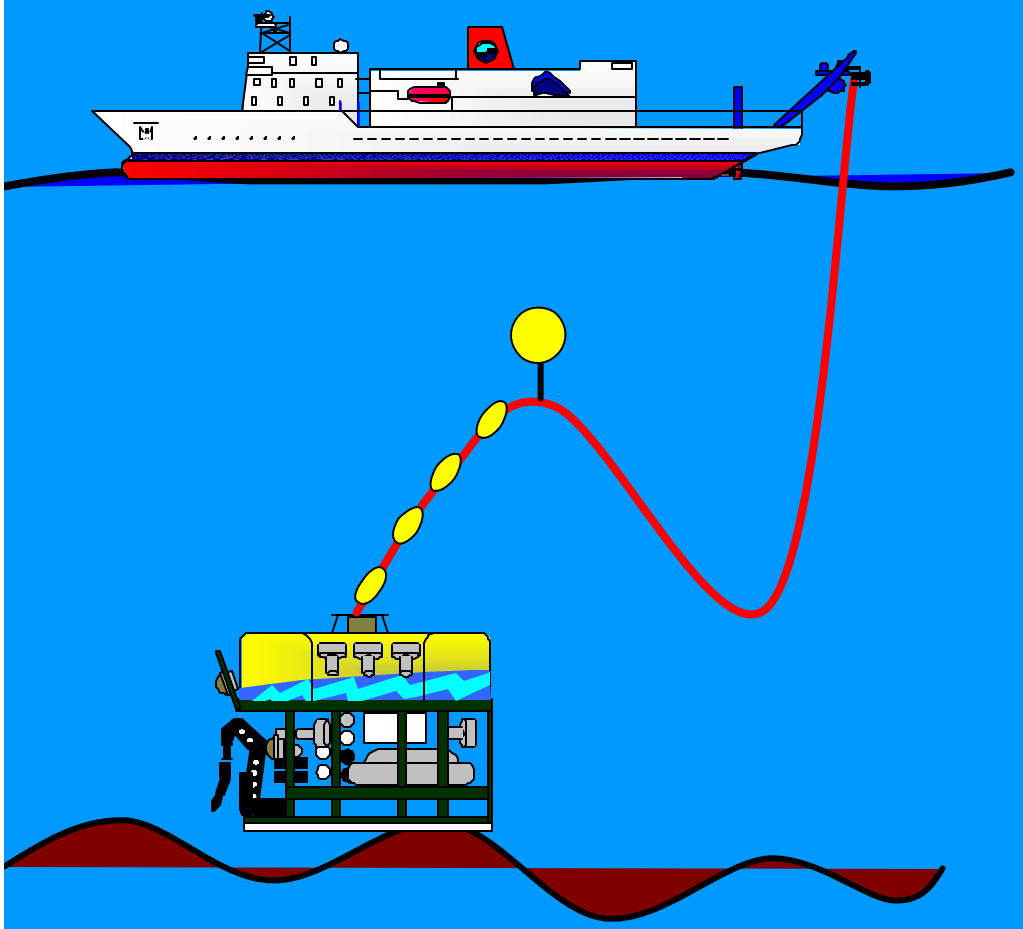
Component



Control van

Winch

On deck

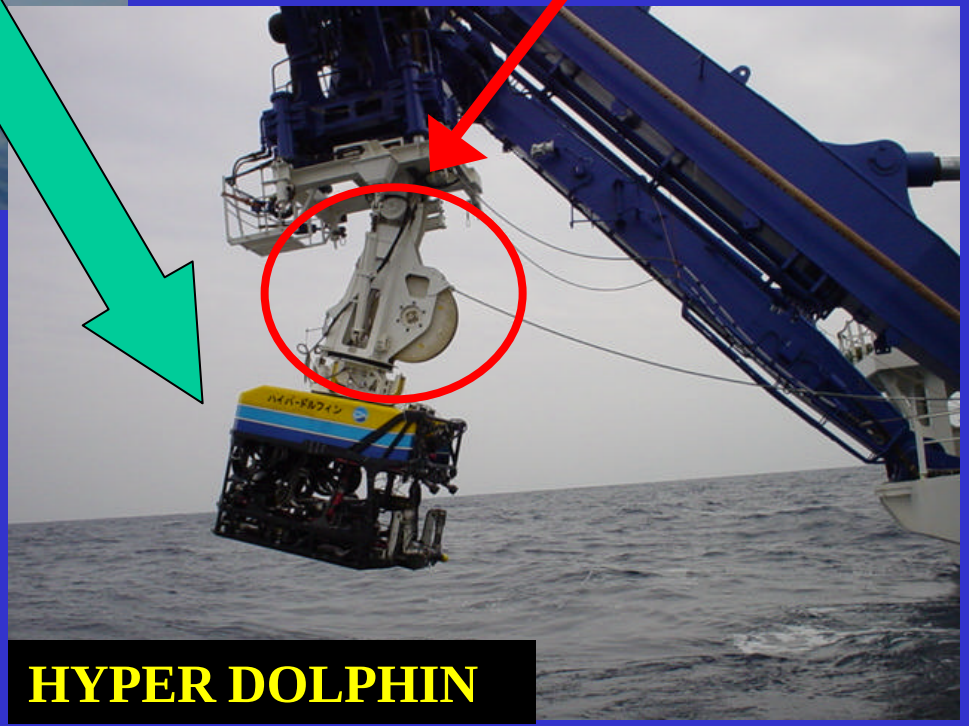
R/V ; NATSUSIMA (Mother ship)

SHINKAI2000

Docking equipment

1980~2000
DSV ‘SHINKAI2000’

2001~now
Hyper Dolphin



HYPER DOLPHIN

Vehicle

Dimensions	3.0 (L)×2.0 (W) ×2.3 (H) m
Weight	3800 Kg (air)
Depth capability	3000 m
Remarks	Connected by armored cable

- Manufacturer : I.S.E (in Canada)
- 2001.~ until now ： 600 dives

<Major instruments>

- Super HARP High definition color TV camera (1) ?HDTV
- CCD color TV camera (1)
- Digital still camera (1)
- 400W HMI (5)
- Master-Slave manipulator (2)
- CTD/DO

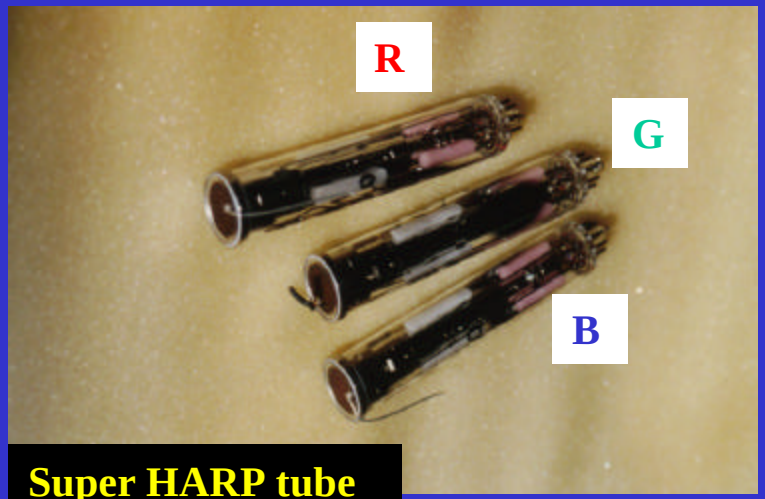
Control Van

- 20 ft. container
- 6 PDP (50 inch)
- 5 scientist seats

HDTV

Ultra sensitive
super HARP tube : R.G.B

Camera head



Super HARP tube

Dimensions (Camera head)	640mm (L) 216mmf
Dimensions (HARP tube)	105mm (L) 18mmf
Weight	36kg (air) 14kg (water)
Focus range	30cm~ 8
Zoom range	×5
Transmission	Optical fiber WDM(1.5Gbps)

Custom-made in JAPAN

Advantage

Advantage point

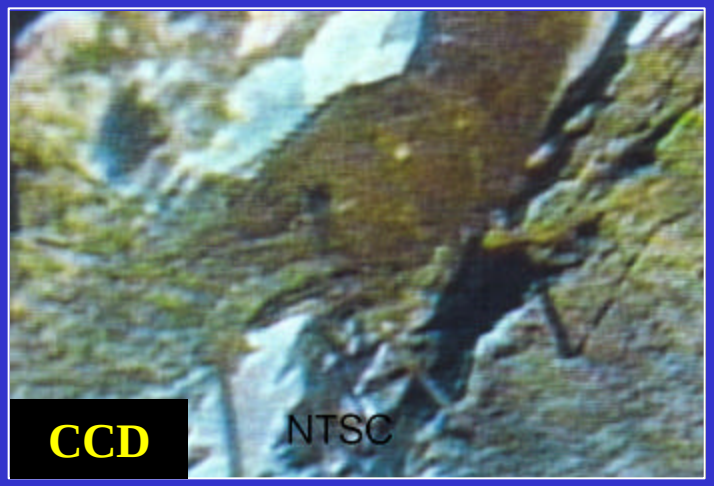
- High quality
- High sensitivity
  - ? ×20 CCD camera
  - ? No increase the noise
- High level blue color
  - ? Looking long distance

	Aspect ratio	Resolution (TV line)	Resolution (pixels)
NTSC	4 : 3	525	⇩
HDTV	16 : 9	1125	6 times

Wide

Zoom

Comparison ; CCD vs HDTV



Resolution

VS

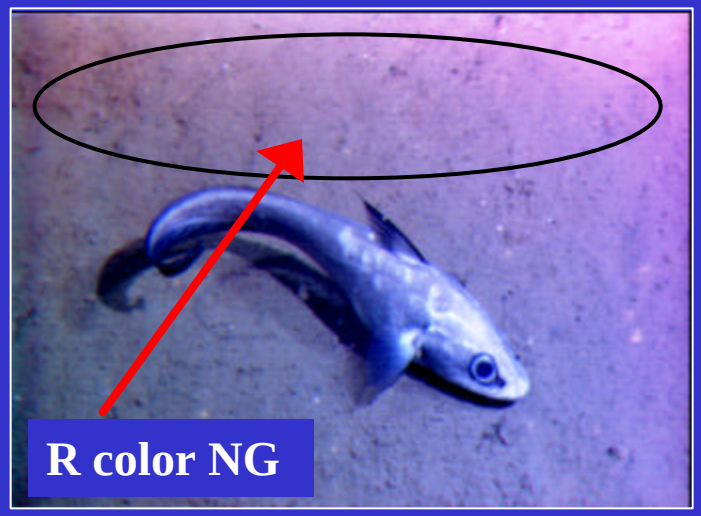
Sensitivity

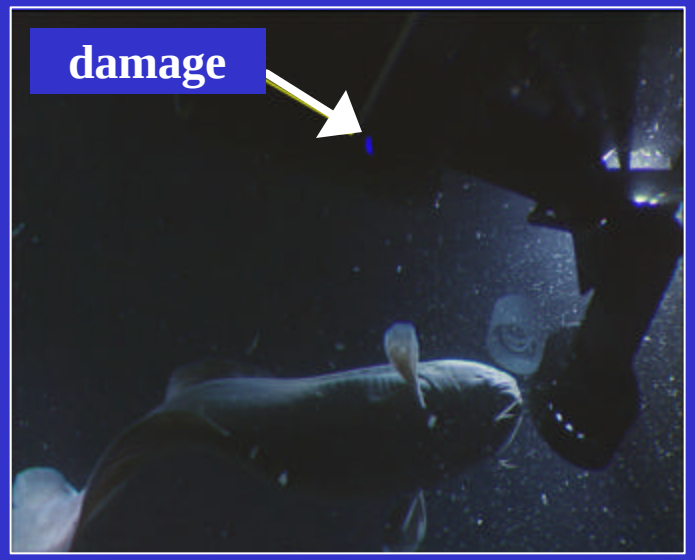
VS

Improvement of HDTV

Weak point

- **Influence of magnetic field**
  - ? No corresponding R,G,B colors
- **Glass tube damage**
  - ? Breakable
  - ? Vibration
- **Big & Heavy (Compared to CCD type)**
  - ? Complex mechanism
- **Expensiveness**
  - ? All HDTV system custom-made
  - ? PDP monitor (16:9 wide type)
  - ? VTR
  - ? Maintenance cost





How to use ; Mode select

1. High sensitive mode

2. Standard mode

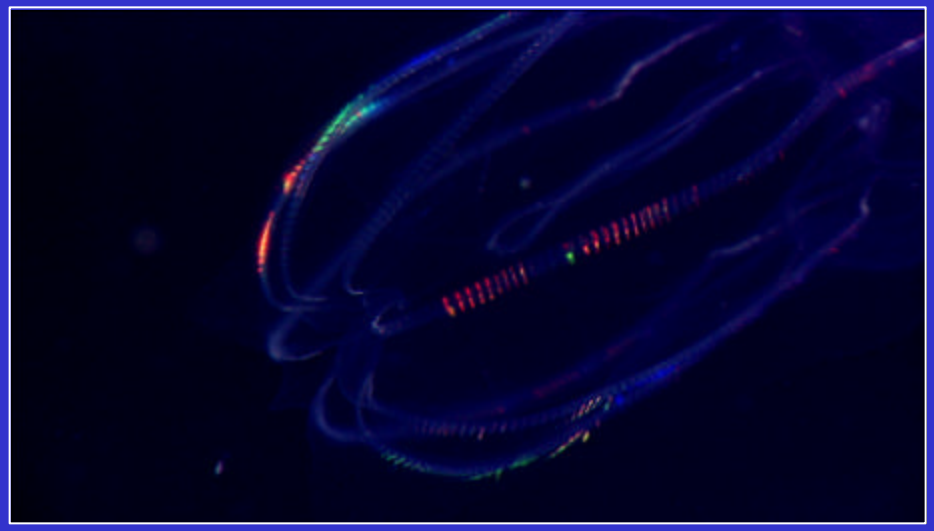
3. Focus mode

How to use ;

1. High sensitive mode

Camera setting	· Sens.: ×20 (MAX) · Iris : open
Best situation	· Wide-ranging search · Bioluminescence
Remarks	Difficult for focus to match

Camera controller

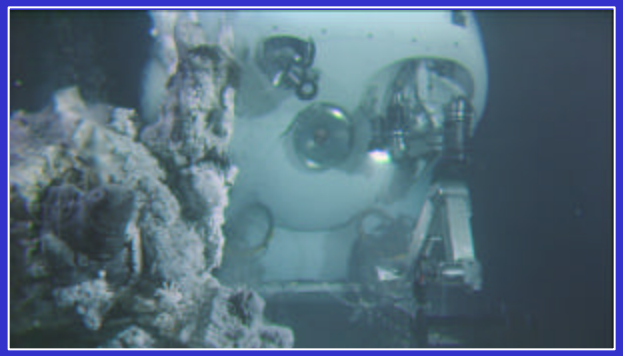


How to use ;

2. Standard mode

Camera setting	· Sens.: ×10 · Iris : neutral
Best situation	· Vehicle sitting down · In all cases
Remarks	· Perspective · Dynamic & High quality

Camera controller

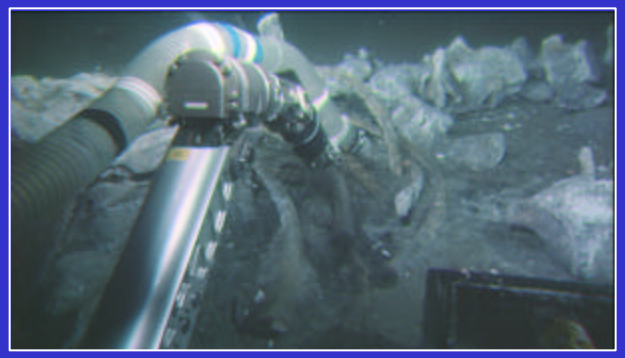


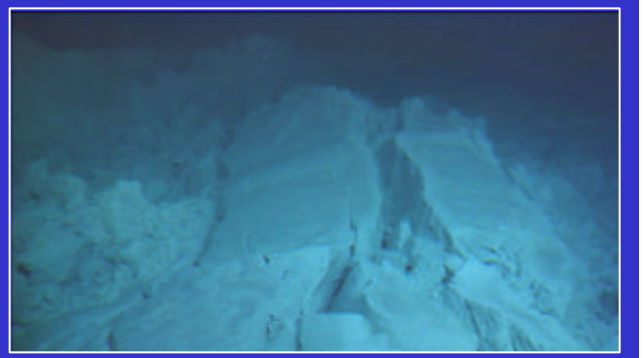
How to use ;

3. Focus mode

Camera setting	· Sens.: ×10 · Iris : Close
Best situation	· Manipulator works · Geographical features · Vehicle & target moving
Remarks	· Flat pictures · Focus to match anywhere

Camera controller





Hydrothermal Vent

Rota Island (Marianas)

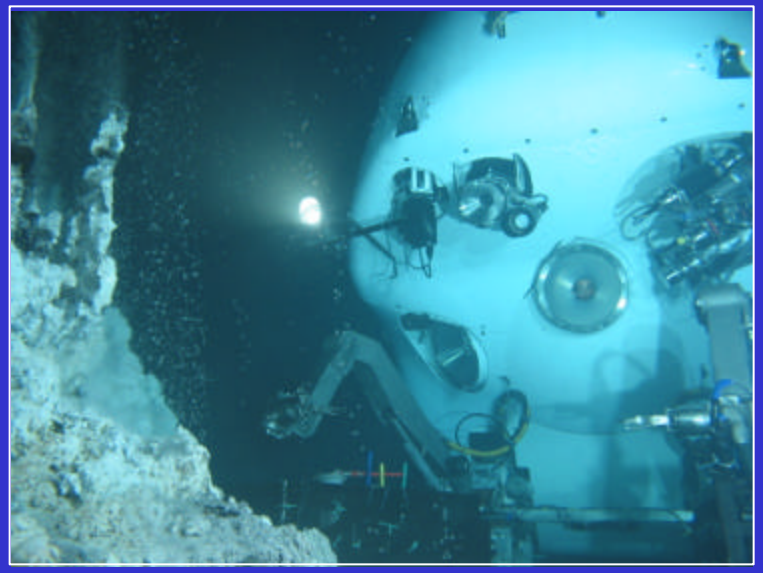
Dive with SHINKAI 6500

Conclusion

- High sensitive mode
- Standard mode
- Focus mode

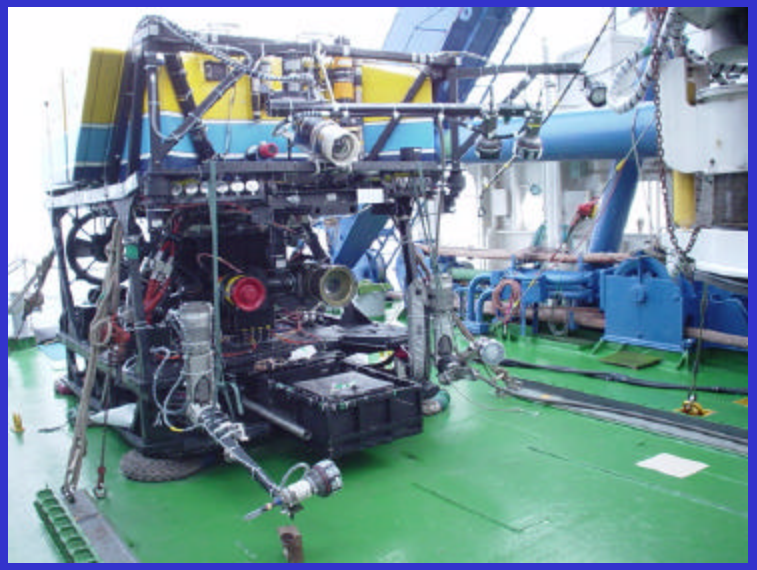
→ Possible to flexibly choice!!

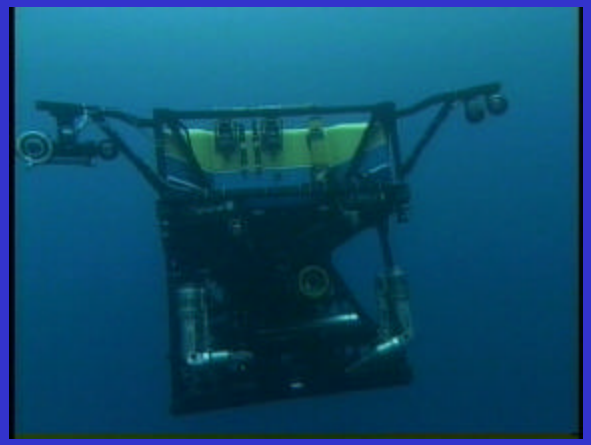
Enhance the efficient operation of dive

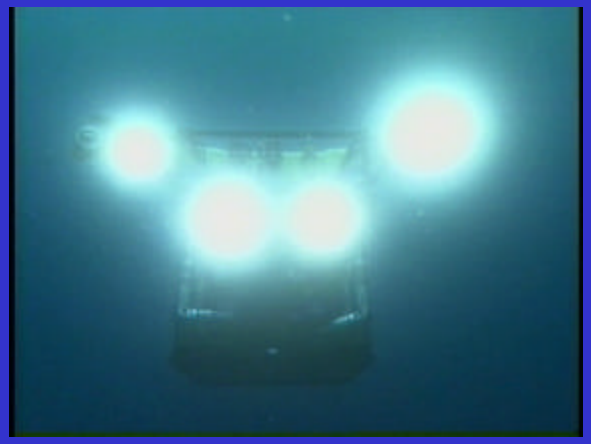



Thank you for kind attention.

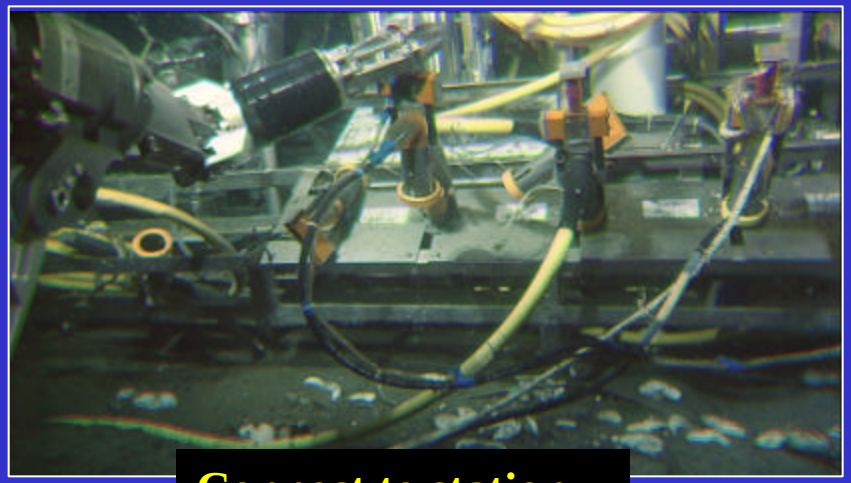
Lighting



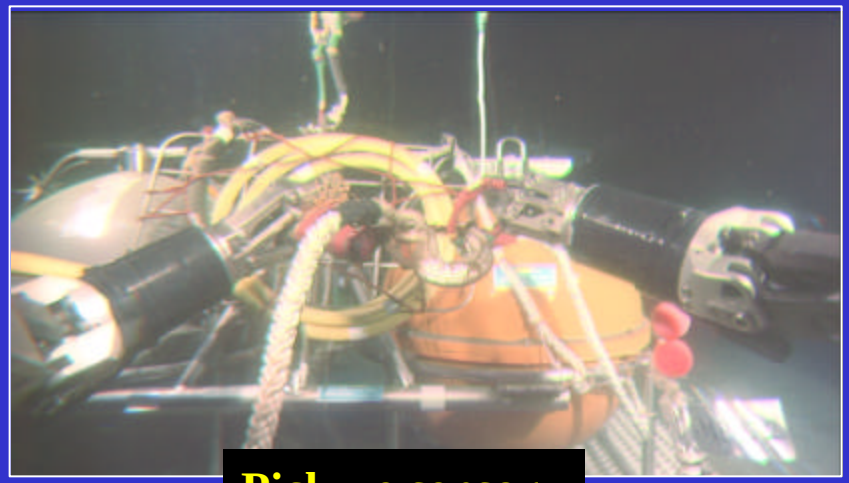




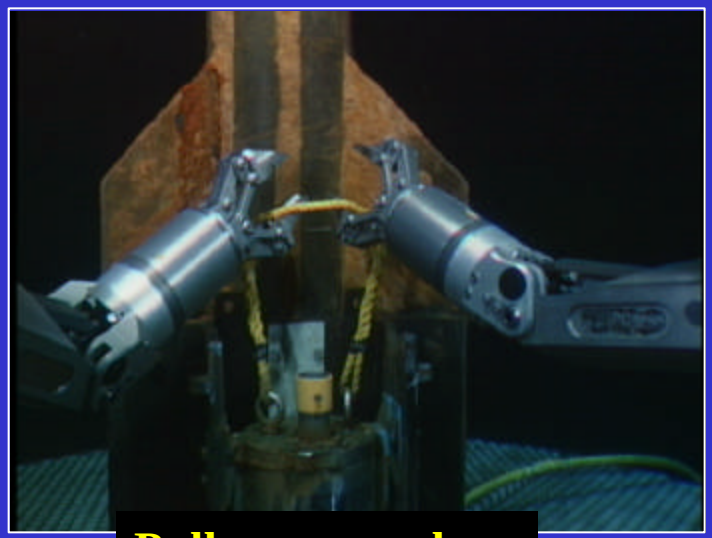
Other Works



Connect to station



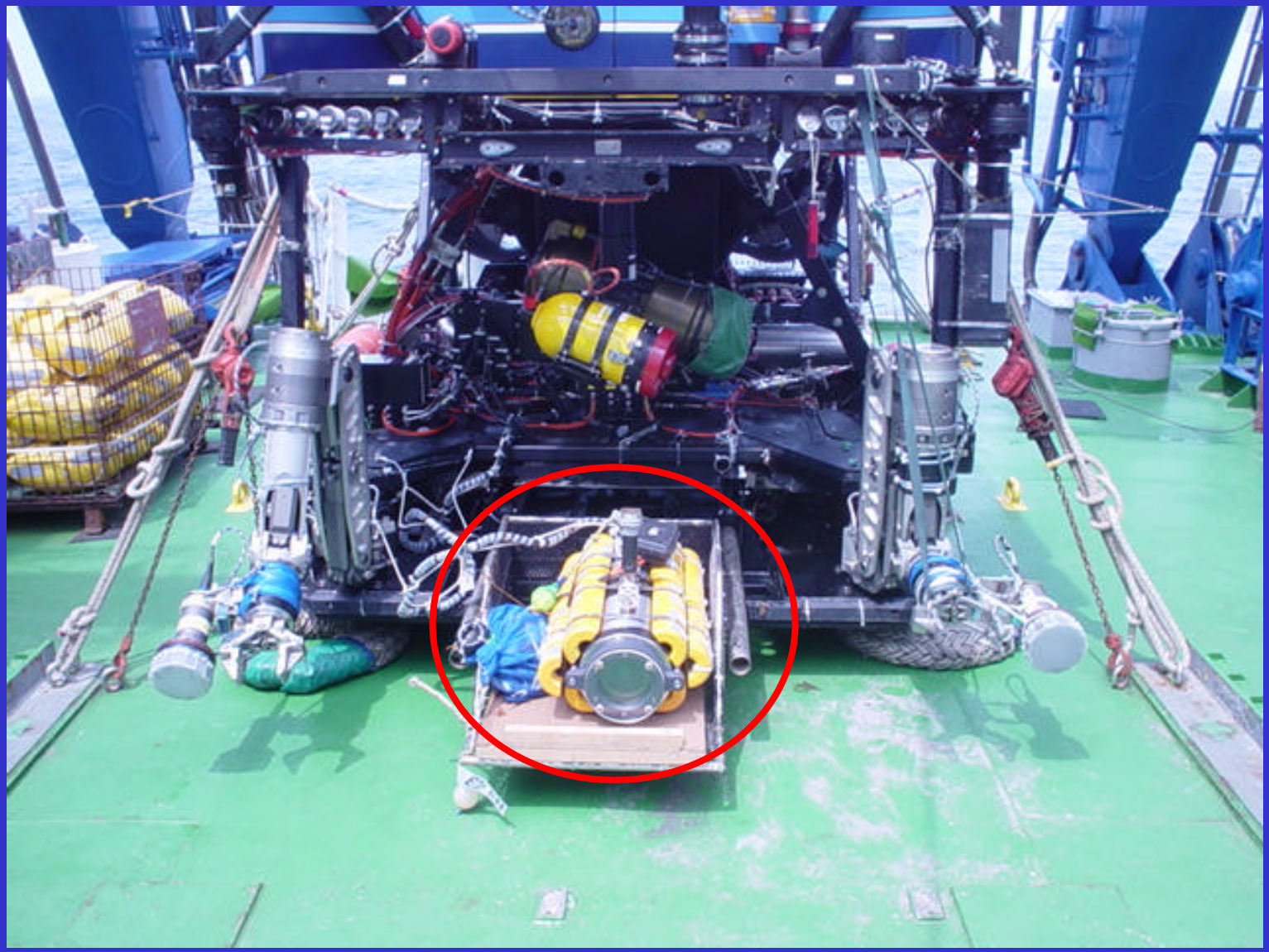
Pick up sensor



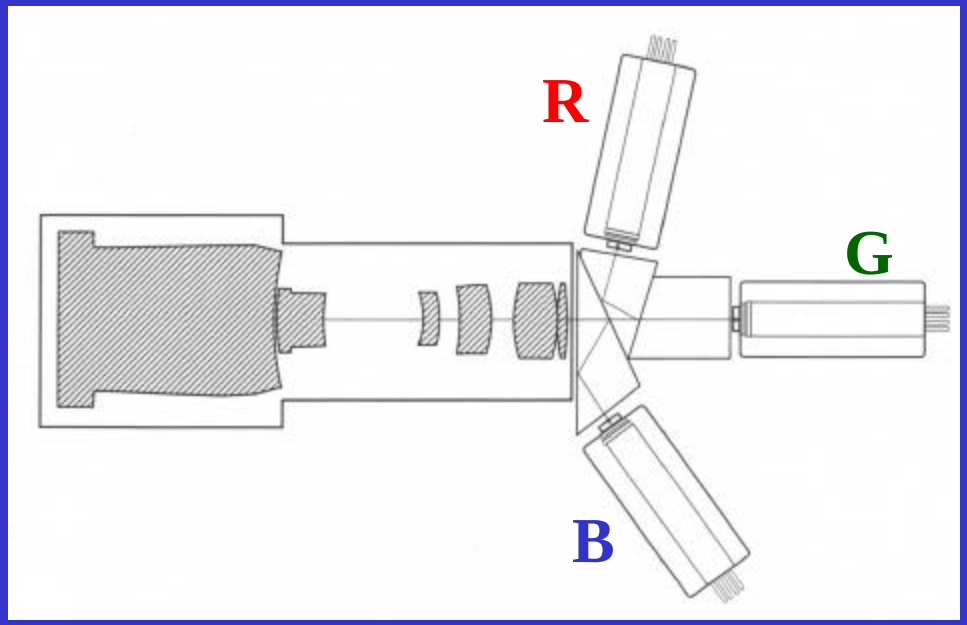
Pull out recorder

Wreck ship

CCD type HDTV (payload)



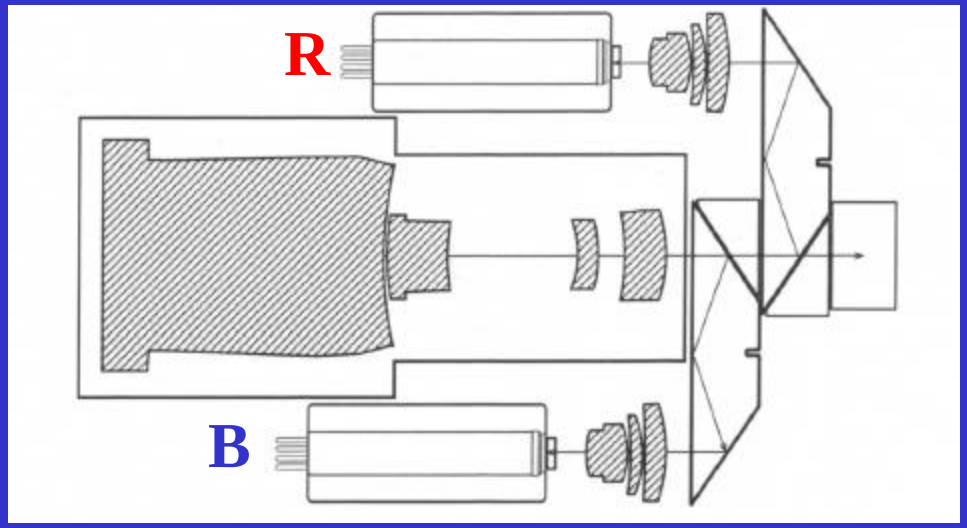
Prism reflection (tube type)



Another camera
(Standard type)

Tube ; Squarely

Housing ; big

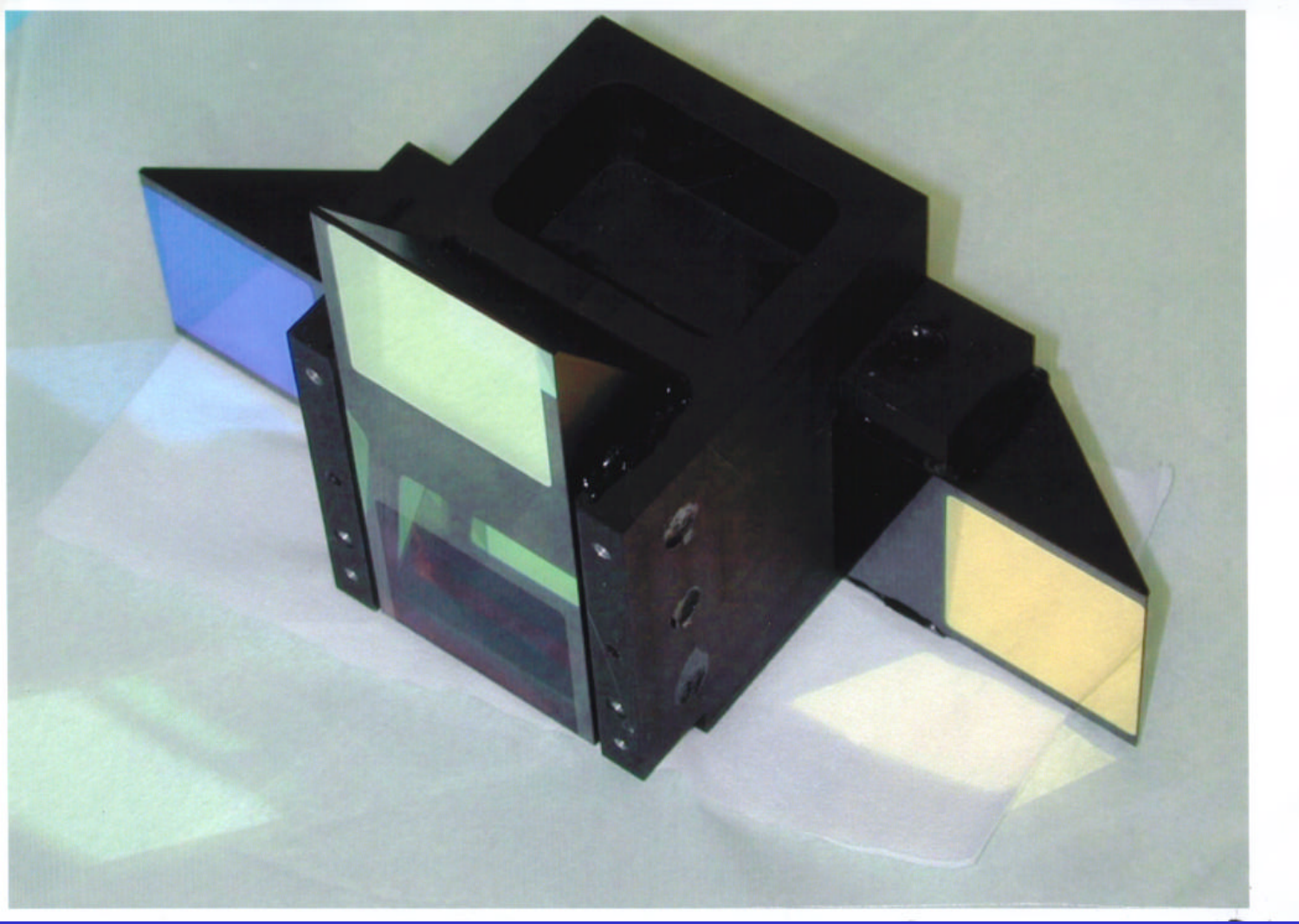


Our HDTV

Tube ; Horizontally

Housing ; small

Prism reflection



Camera Inner head