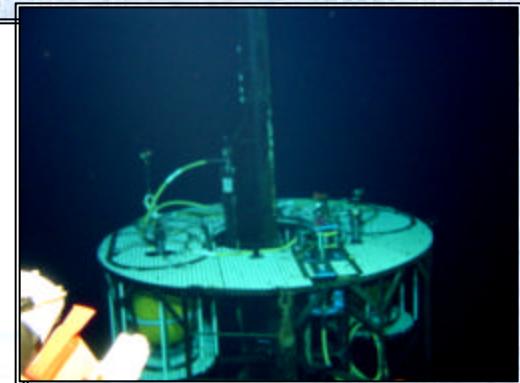
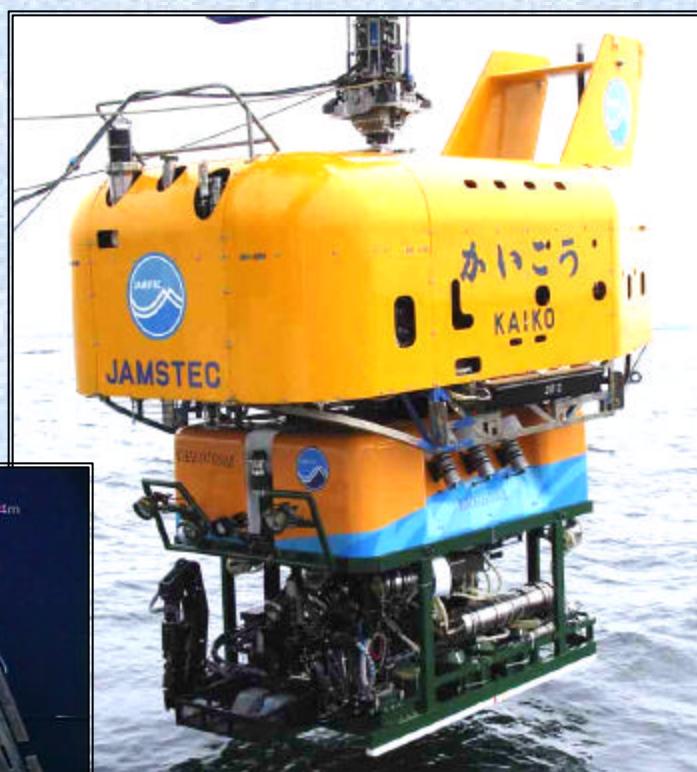


The first year of KAIKO7000...



Nippon Marin Enterprises, Ltd

CONTENTS

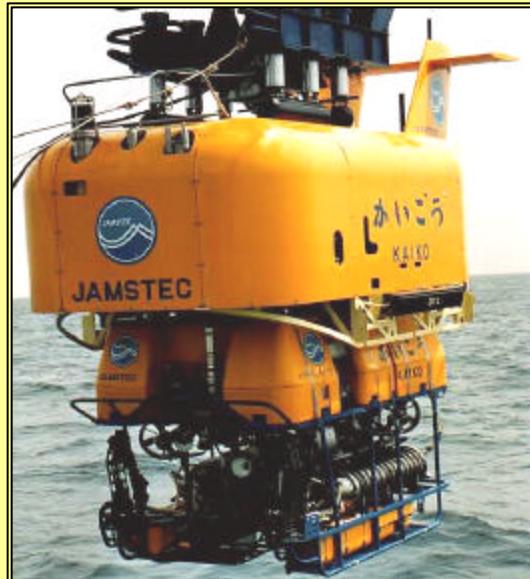
- The brief history about process of the production of "KAIK07000..."
- Operation of first year.
- Conclusion.



Nippon Marin Enterprises, Ltd

The brief history about process of the production of "KAIKO7000..

The process which became the .KAIKO7000.. .

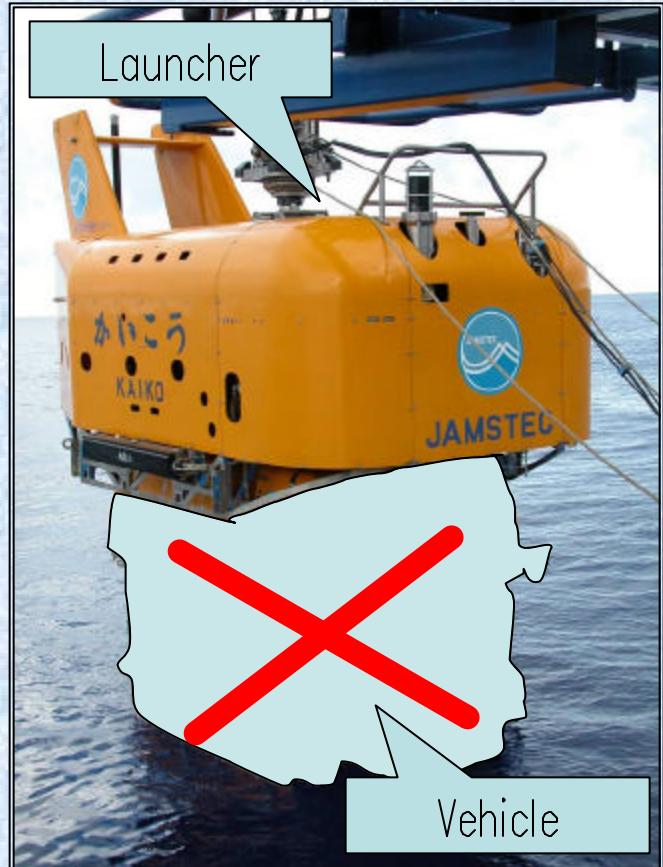


KAIKO

KAIKO7000

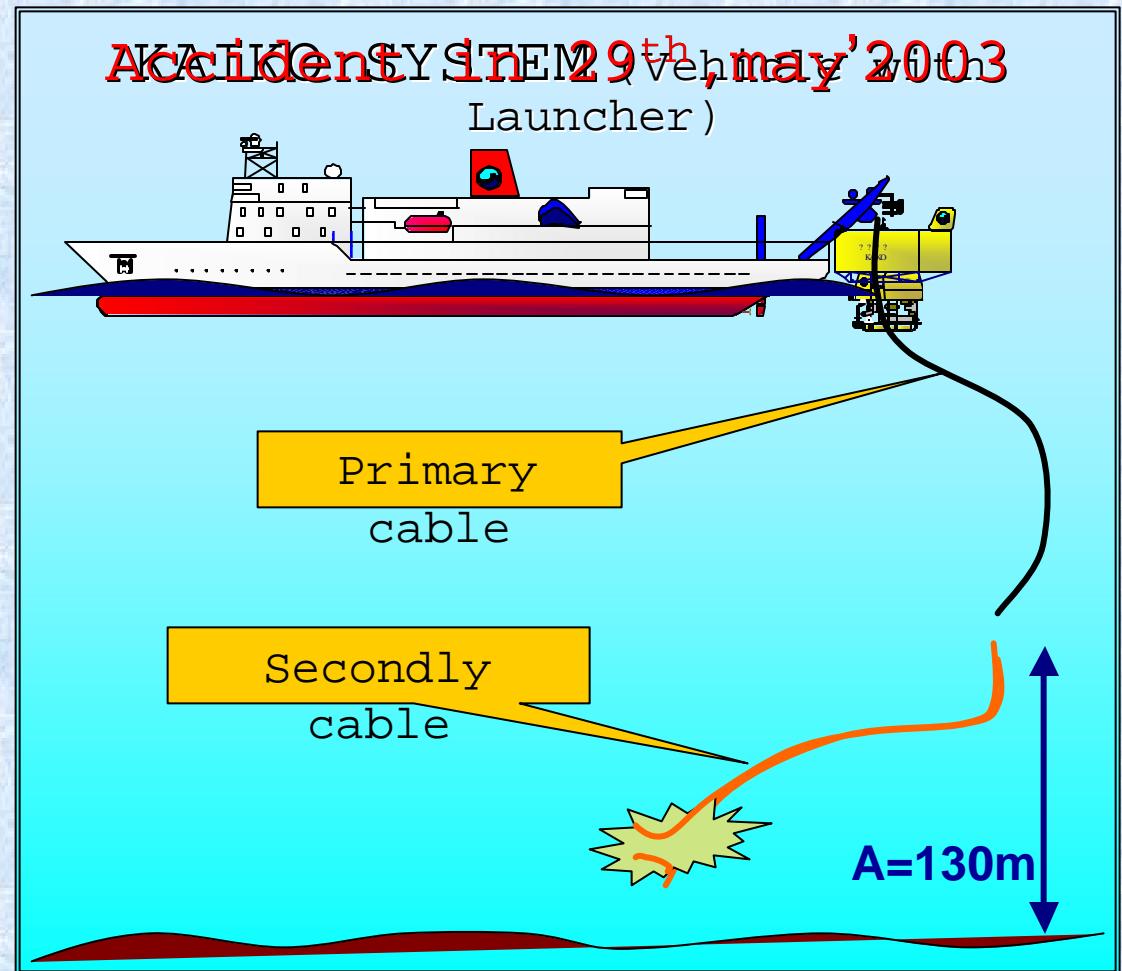
KAIKO7000.

The brief history about process of the production of "KAIKO7000..



11000m class ROV

KAIKO



Nippon Marin Enterprises, Ltd

The brief history about process of the production of "KAIKO7000..

7000m class UROV



“KAIKO7000” was born!

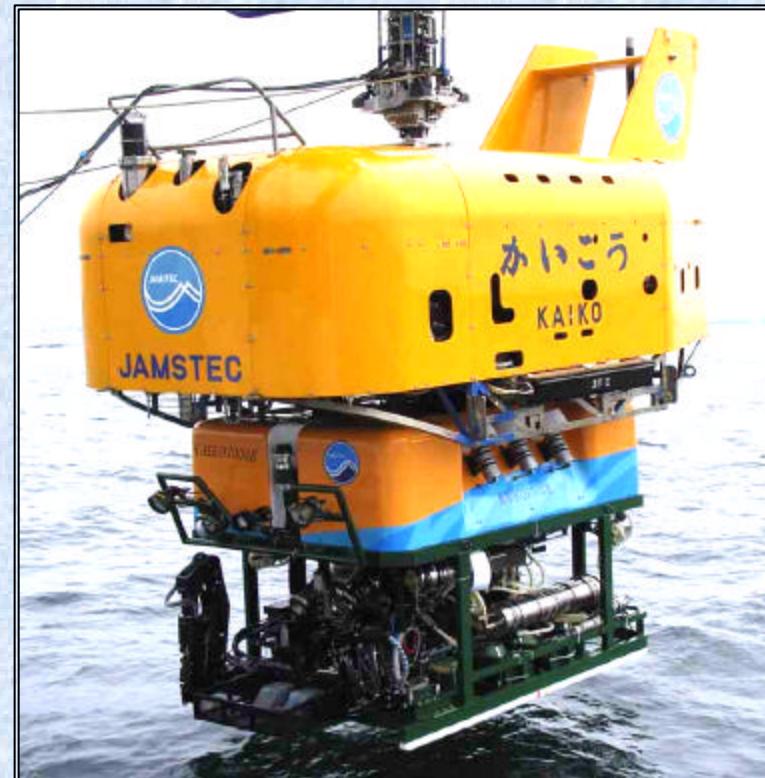
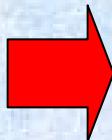
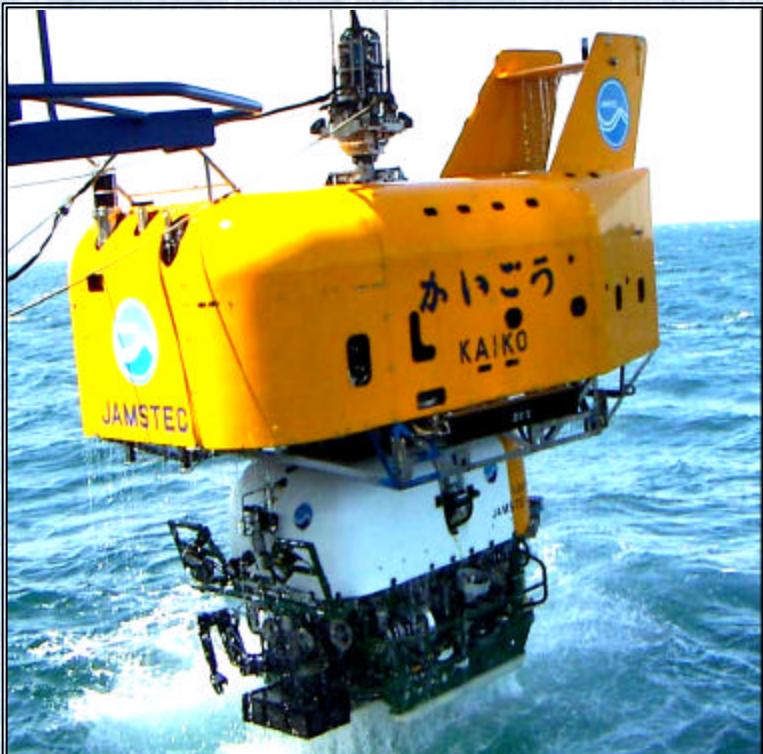


UROV was modified to be combined to the launcher.



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The brief history about process of the production of "KAIKO7000..



“KAIKO7000” had some improvement points.

“KAIKO7000.” was born again!!

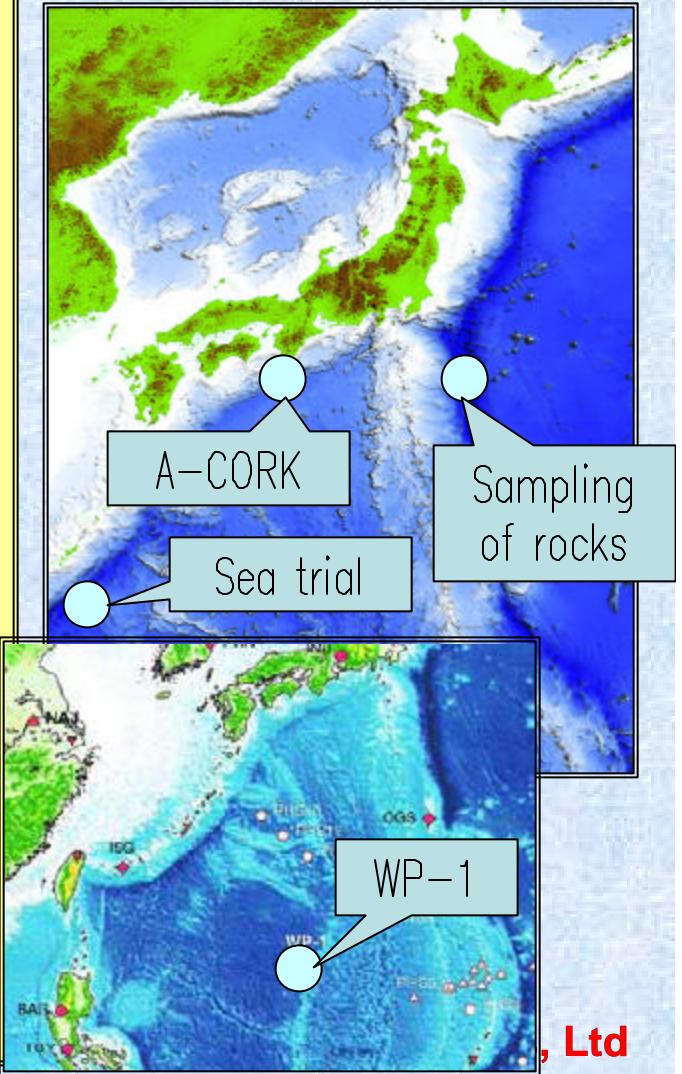


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Operation of first year

The topics in first year

- Made the record of maximum depth 7334m in sea trial.
- Data recovered from two instruments installed in the borehole.
 - .WP-1 : seismometer in below the sea bottom.
 - .A-CORK :Sampling of pore water from borehole.
- Sampling of rocks by separated towing mode in large area



, Ltd

Operation of first year

.KAIKO7000.. did make the record of maximum depth

- Day of dive : 5th.may.'2006
- Sea area : Ryukyu trench(24° 30.00'N.127° 20.00'E)
- Record of maximum depth : 7334m

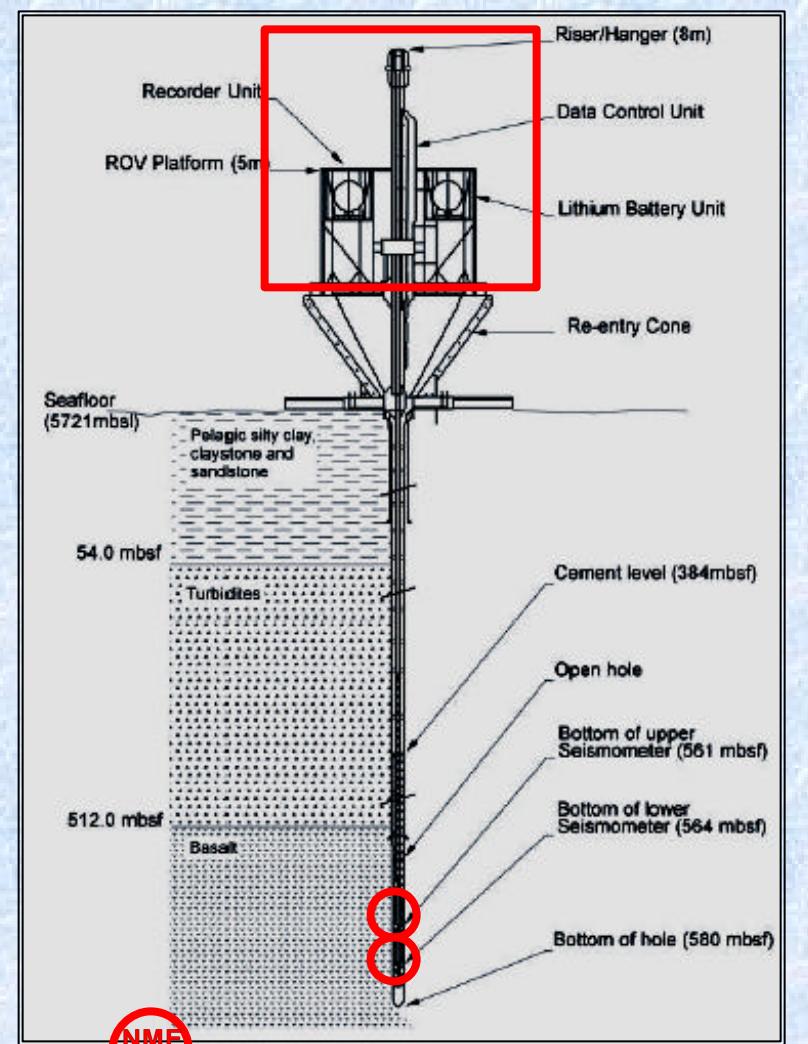
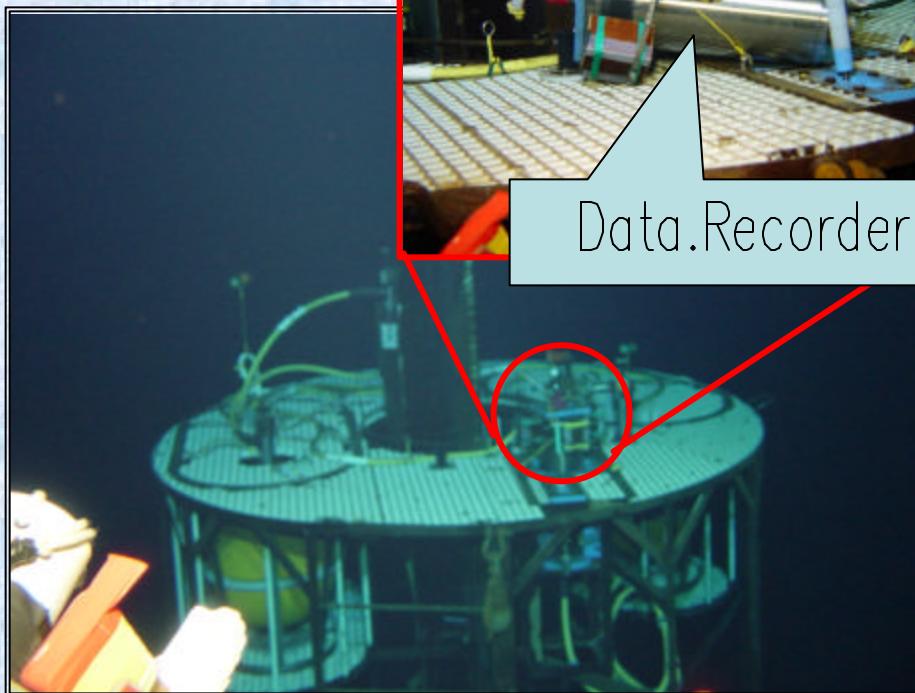


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Operation of first year

Data recovery from borehole

(1)WP-1



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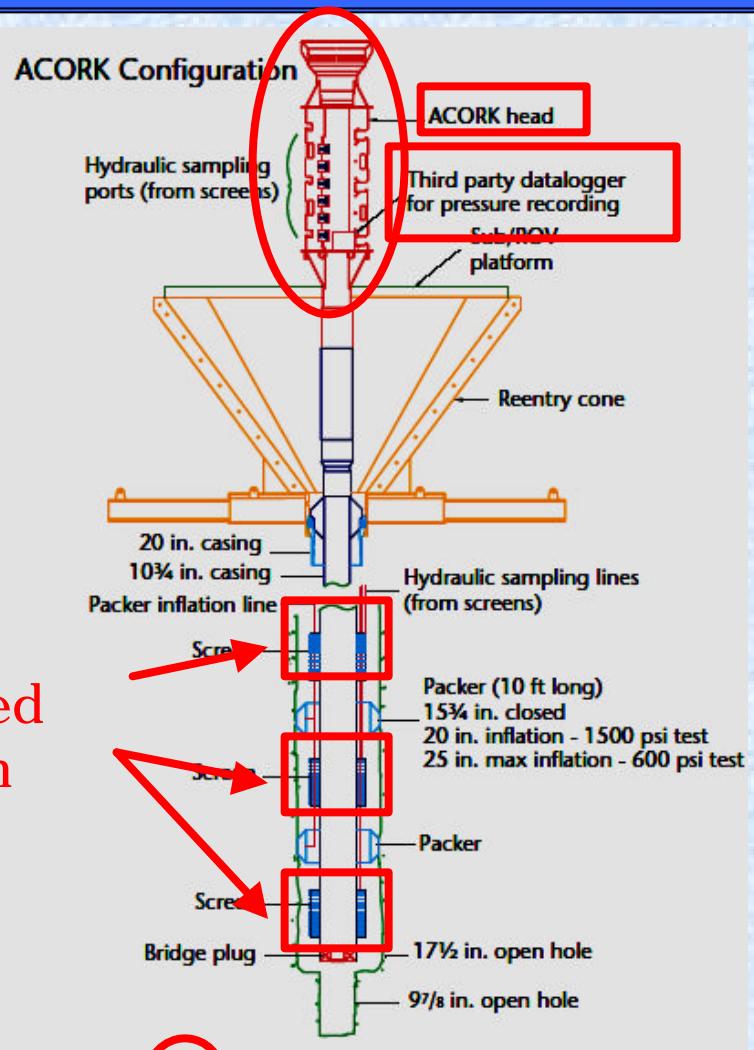
Operation of first year

Data recovery from borehole

(2)A-CORK



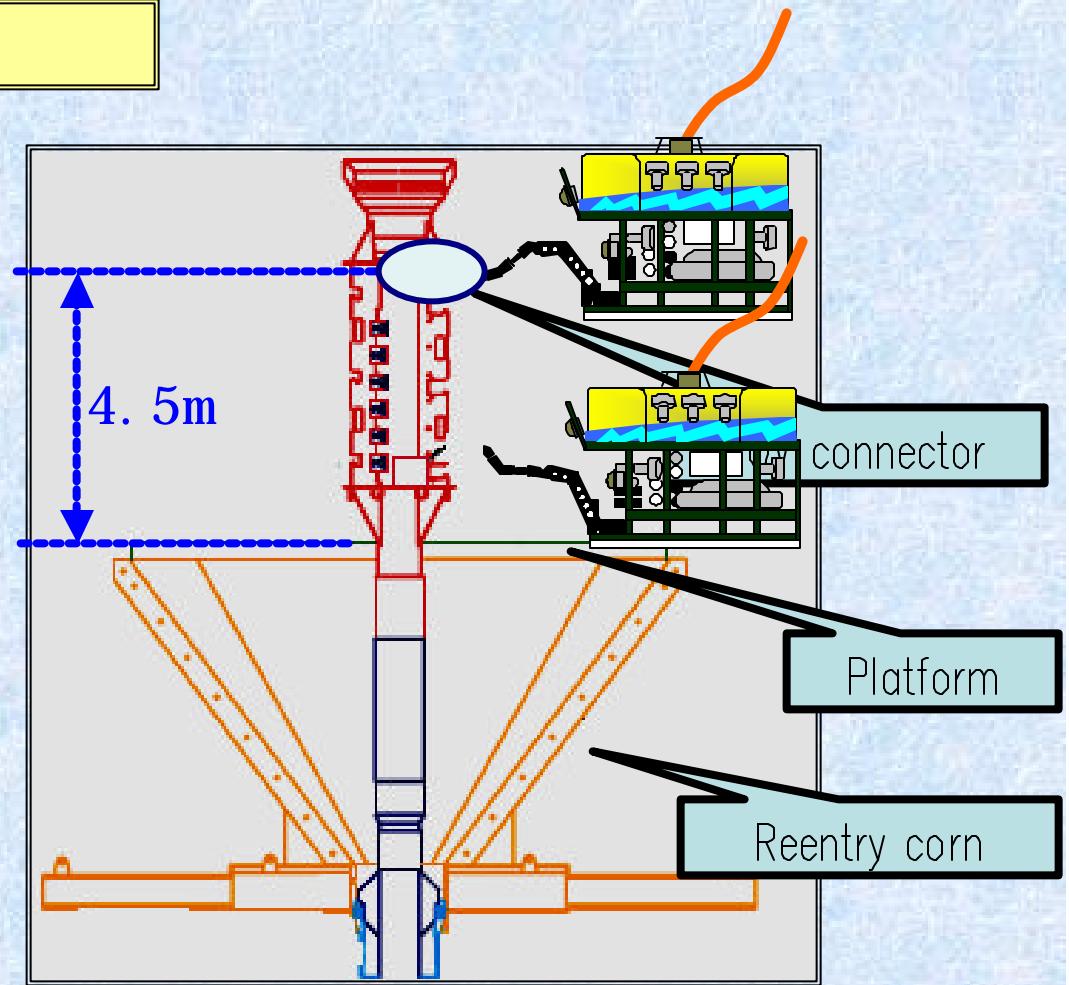
Isolated section



Operation of first year

Data recovery from borehole

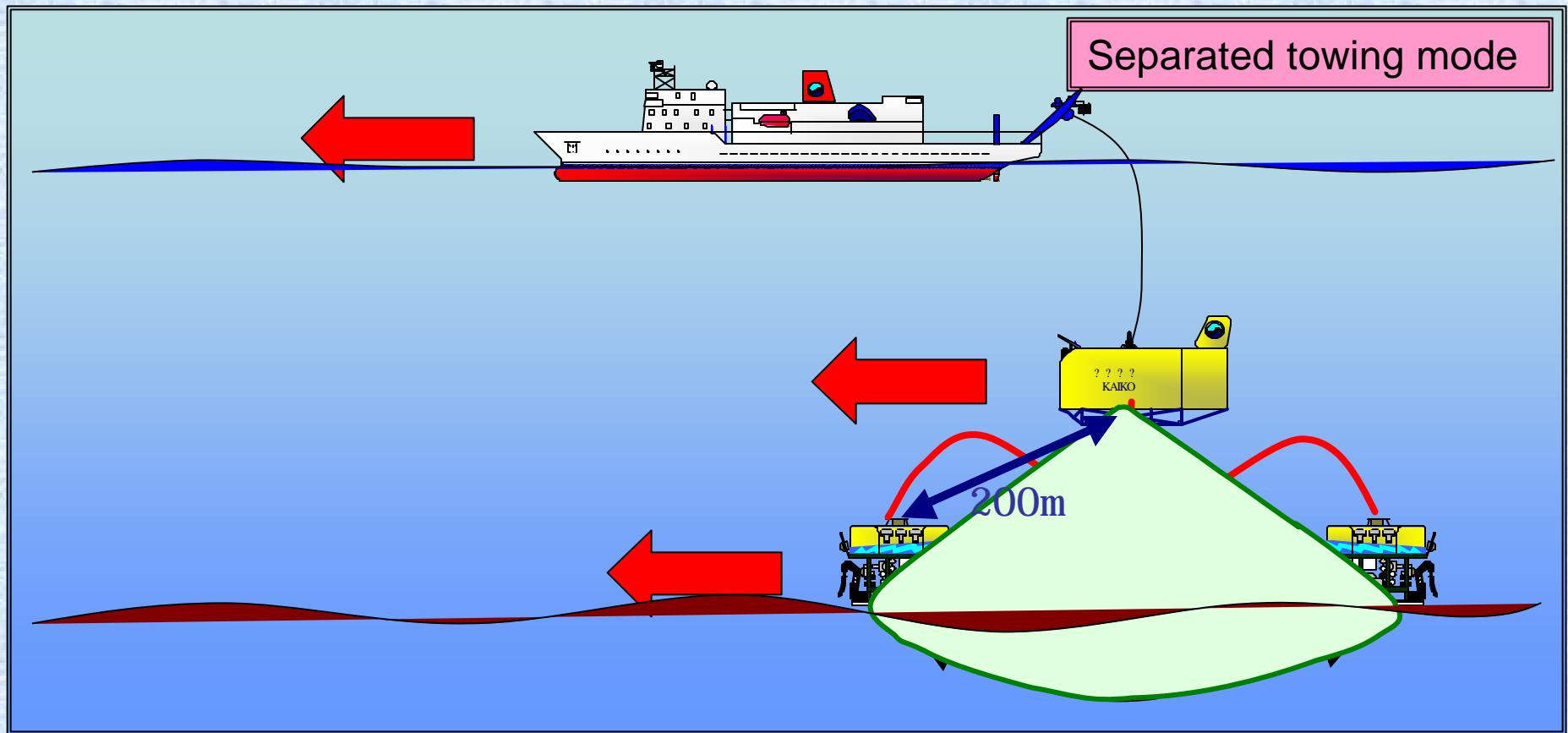
(2)A-CORK



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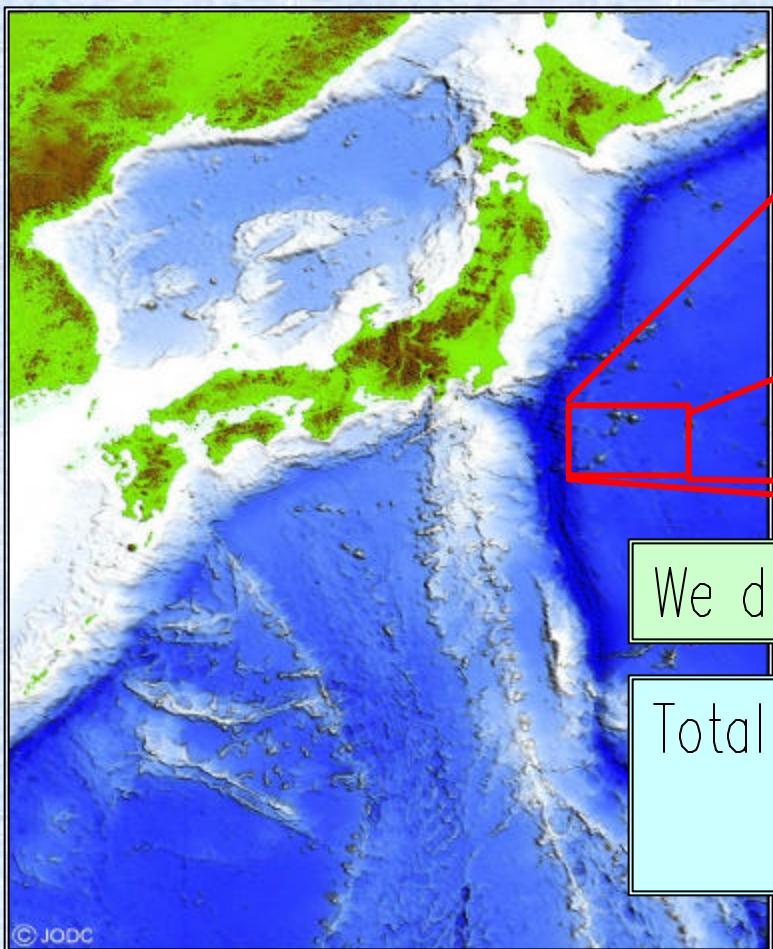
Operation of first year

Sampling rocks by separated towing mode in large area



Operation of first year

Sampling of rocks by separated towing mode in large area



Takuyo daisan
seamount

Depth
5200m.5000m

Mogi seamount

Depth
7000m.6300m

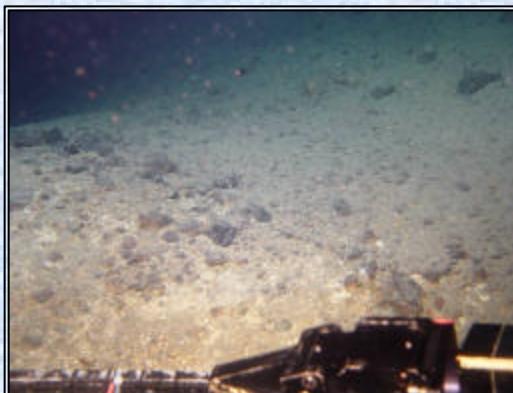
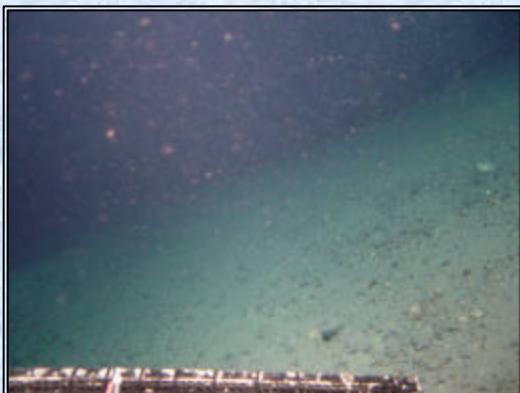
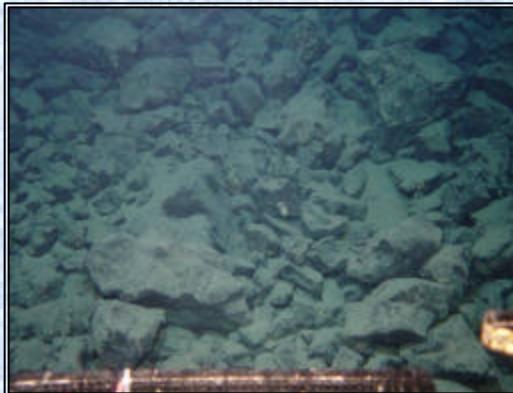
We did make 3 dives in these seamounts.

Total distance which ran is 2.7km .

.Time in the bottom : 8:00.

Operation of first year

Sampling rocks by separated towing mode in large area



Nippon Marin Enterprises, Ltd

Conclusions

We found new improvement points in these operations.

...The power supply for thrusters is unstable.

...New manipulator's operativity is worse than expectation.

...View area of a T.V. is narrow.

We will do our best for more high quality operations.



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The brief history about process to the product of “KAIKO7000..”

“KAIKO7000” had some serious problems.



Problems of “KAIKO7000”

- The lack of thrust for maneuvering the vehicle.
- The lack of buoyancy.
- The ability of manipulator was bad.

The brief history about process to the product of "KAIKO7000..."

In this spring



Modification

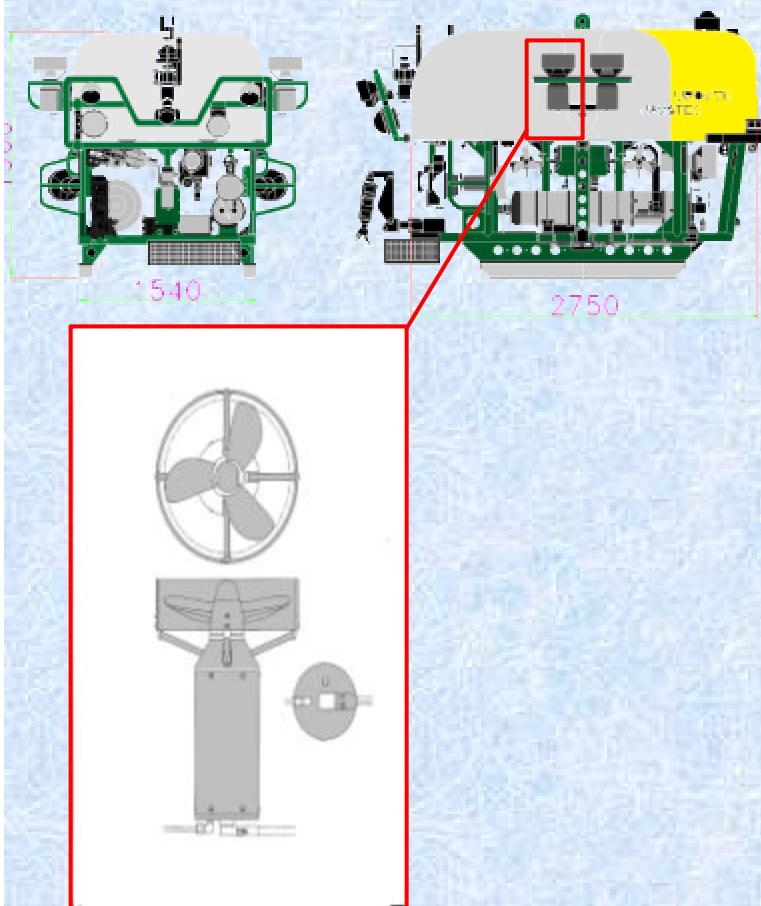
- Frame exchange and syntacticfoam was added.
- The form of propeller was changed. And Thrust was strengthened.
- One more manipulator with high performance was added.



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The brief history about process to the product of "KAIK07000..

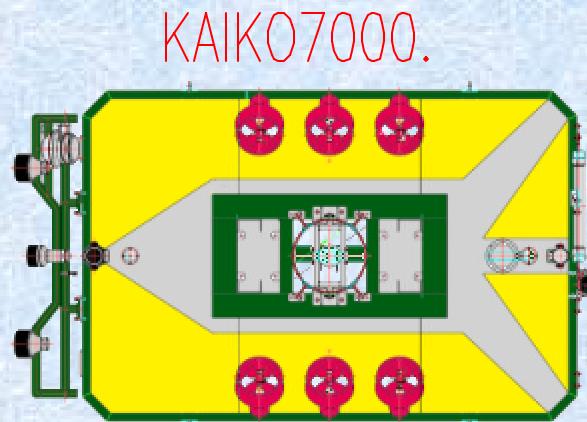
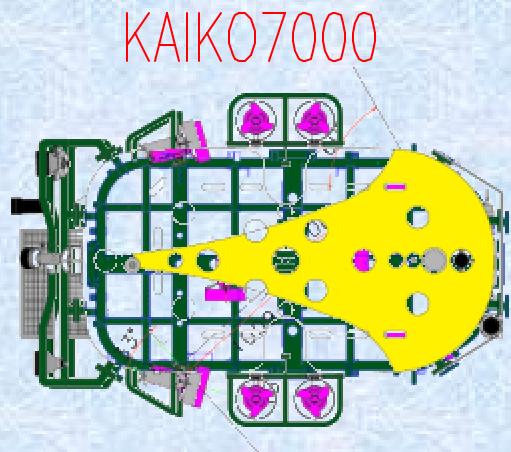
The lack of thrust for maneuvering the vehicle.



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The brief history about process to the product of "KAIK07000..

The lack of thrust for maneuvering the vehicle.



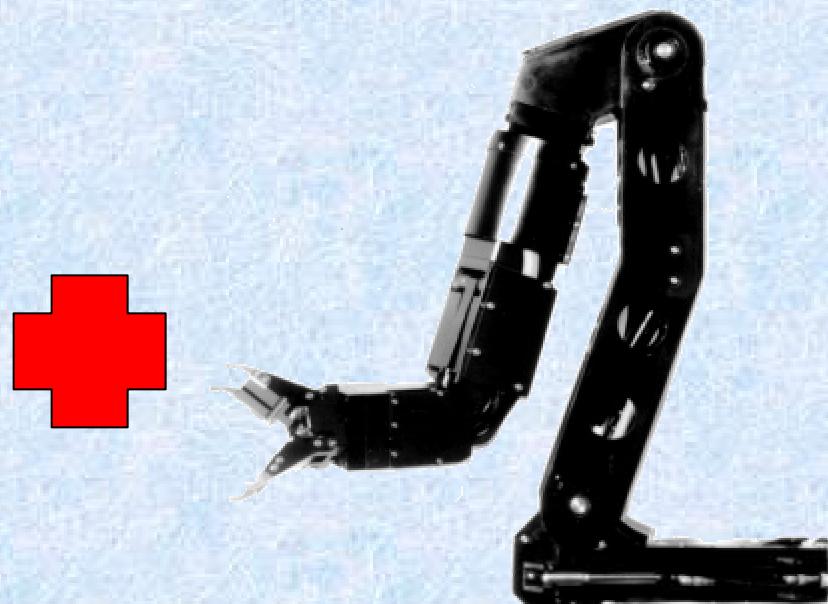
AHEAD	72.74kg	103.92kg
Lateral	37kg	50kg
Turn	37.18kgm	105.66kgm
vertical	36kg	121.24kg

The brief history about process to the product of “KAIK07000..

The ability of manipulator was bad.



HLK-HD6B
Made by HYDRO-LEK



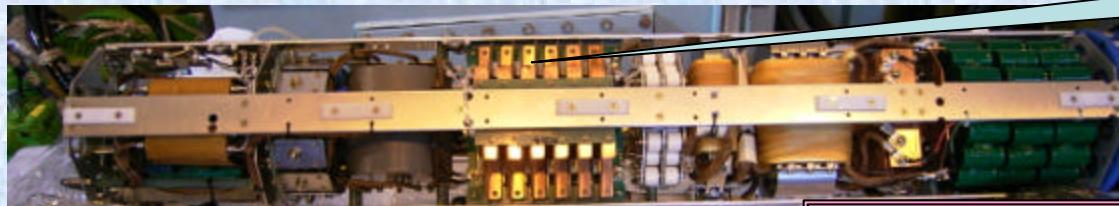
RT7
Made by CSIP



The new problem

The power supply for thrusters is unstable.

The High Frequency Transformer



IGBT board

Broken by the rapid thermal change

We planned 2 way to improve this problem.

.The high frequency transformer is changed to a coil transformer. And, it is using a rectifier together.

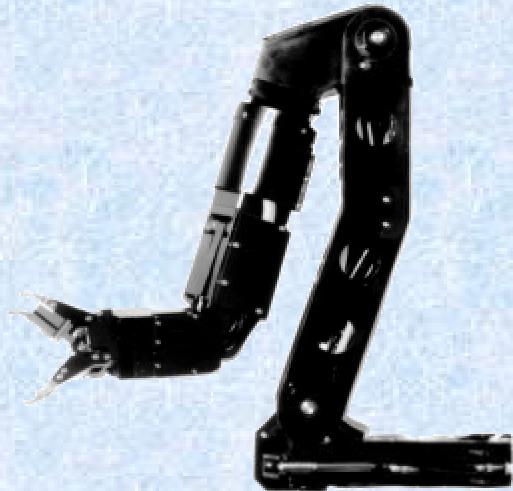
.A churning machine is installed in the high frequency transformer, and the difference of temperature in a bottle is mitigated.



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The new problem

New manipulator's operativity is worse than expectation.



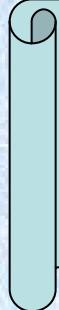
RT7 is not specification which it is used in deeper than 6000m.

In the deep depth

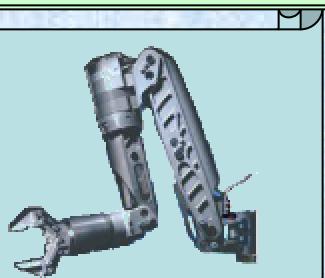
.Oil leak

. A gap of potentiometer

. An excessive time lag of operation .



We are carrying out a plan to change to other manipulators.

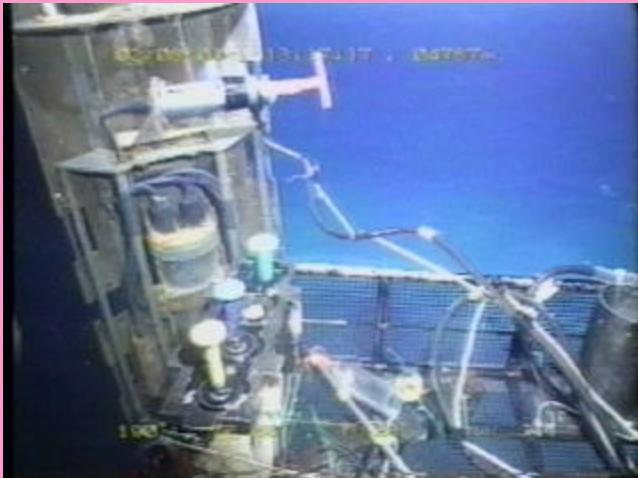


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The new problem

View area of a T.V. is narrow.

View of original “KAIKO”



View of original “KAIKO7000.”



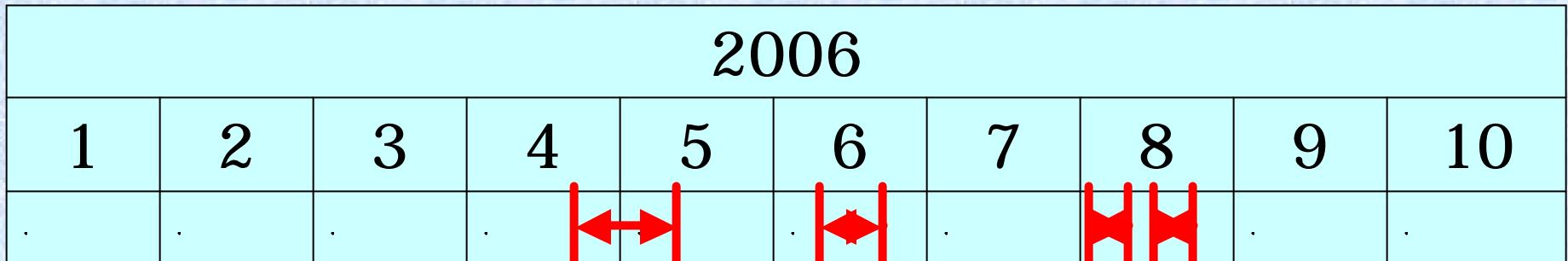
Now, We are selecting the TV camera which view area is large .



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About the Operation of first year



Cruise result in this year

Cruise_?	Purpose	Period	Contents
KR06-04	Sea Trial	22 nd Apr. 9 th Mar	
KR06-06	13 th Jun. 24 th Jun	
KR06-09	10 th Aug. 15 th Aug	
KR06-10	21 st Aug. 26 th Aug	



? ?

...
....	..1540mm ...2750mm ...1960mm ...2.9t	..2000mm ...3000mm ...2125mm ...3.5t2.....2..... 7./.....2.....
.....	(.)6./....	(.).7./..... (.).6./....
.....	30kg	50kg	
....	...4. ...4. ...2.	...4. ...6.	

? ?

??	???????	?????7000?	?????7000??
???????	11,000m	7,000m	7,000m
? ? ?	3.1L, 2.0W, 2.3H (m)	2.8L, 1.8W, 2.0H (m)	3.0L, 2.0W, 2.1H (m)
?????	5.5 ton	2.9 ton	3.5 ton
???	F-B:4.9kW(4) V:5.2kW(3)	F-B:0.8kW(4) R-L:0.8kW(2) V:0.8kW(4)	F-B:0.8kW(4) V:0.8kW(6)
TV???	Color: 3(panorama) 3-CCD color: 1 B/W: 1	Color: 2(P/T) 3-CCD color: 1 B/W: 1	Color: 2(P/T) 3-CCD color: 1 B/W: 1
???????	Optical (1)	Digital, 5M pixel (1)	Digital, 5M pixel (1)
?????????	7 function Both hands M-S control Lift capacity:25kg	6 function One hand Rate control Lift capacity: 40kg	R:7 /L:6 function Both hand R:M-S/L:Rate control Lift capacity: 40kg
???????	50kg	30kg	50kg
???	Halogen: 500W (5) HID: 400W (2)	Halogen: 500W(2)/ 250W(1) HID: 400W (2)	Halogen: 500W(2)/ 250W(1) HID: 400W (2)
CTD	-	SBE-49(1)	SBE-49(1)

???????

7K?????????

• ??(?????)

...724...

.....

.....

.....

HYDRO-LEK...HLK-HD6B...

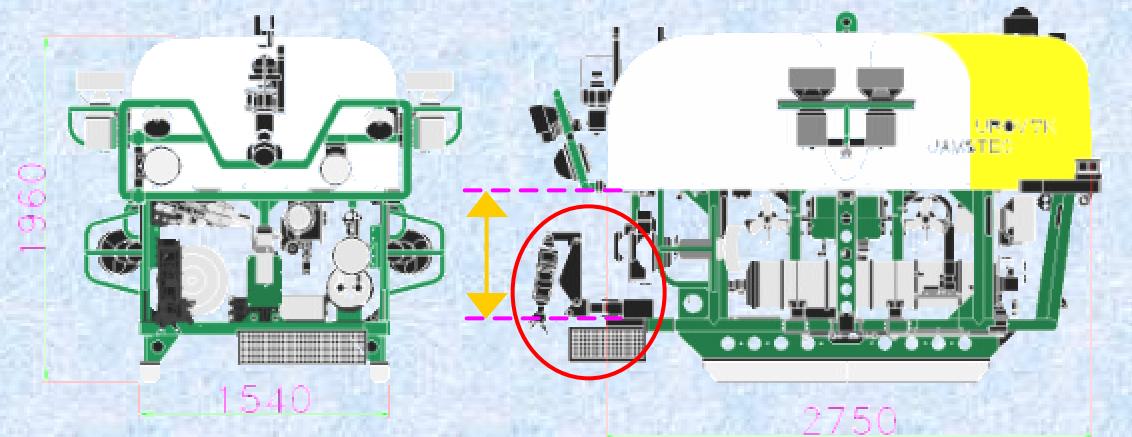
.....ON/OFF..

.....30kg

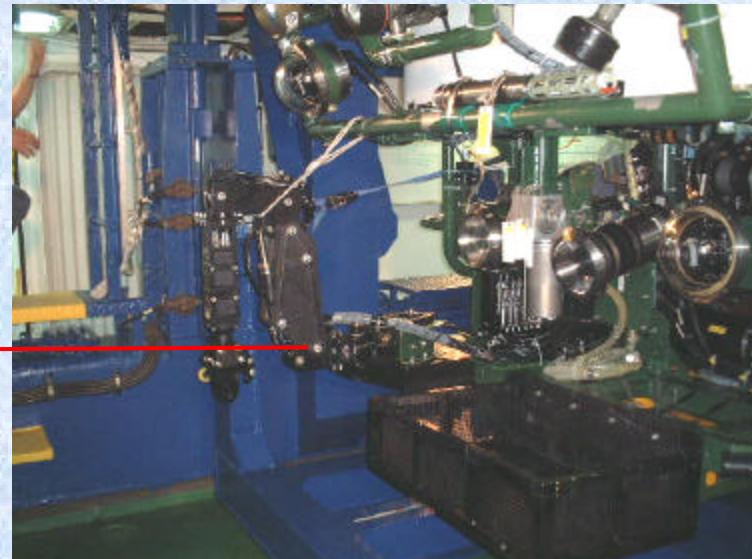
.....

.....

HYDRO.LEAK.



1130mm



?????????????

?????????

• ????????????

• ????????

• ???(??)

• ??

• ????

(???????)

	SHILLING ORION	ROBOPRPBE			PERRY	CSIP
		GRIP	RAPTOR	PREDATOR	TA40	RT7
						
FULL REACH	1531mm	1289mm	1639mm	2013mm	2000mm	1627mm
LIFT	250..	45..	91..	91..	210..	80..
DEPTH	6500.	3000.	3000.	3000.	.	Unlimited
WEIGHT	54kg.38kg.	59kg(41kg)	73kg(44kg.	81kg(51kg.	98kg(65kg)	60kg(38kg)
Minimum SUPPLY	5.7L/min	11L/min	19L/min		9L/min	4.5L/min
Pressure	105.210kg/cm ²		140.210kg/cm ²		210kg/cm ²	170kg/cm ² .max.
..	.	X	X	X	X	?

?????????????

?????????

• ????????????

• ????????

• ???(??)

• ??

• ????

(???????)

	SHILLING ORION	ROBOPRPBE			PERRY TA40	CSIP RT7
FULL .REACH	1531mm	1289mm	1639mm	2013mm	2000mm	1627mm
LIFT	250..	45..	91..	91..	210..	80..
DEPTH	6500.	3000.	3000.	3000.	.	Unlimited
WEIGHT	54kg.38kg.	59kg(41kg)	73kg(44kg.	81kg(51kg.	98kg(65kg)	60kg(38kg)
Minimum SUPPLY	5.7L/min	11L/min	19L/min		9L/min	4.5L/min
Pressure	105.210kg/cm ²		140.210kg/cm ²		210kg/cm ²	170kg/cm ² .max.
..	.	X	X	X	X	?

????????????(HPU)???

????????

• ???

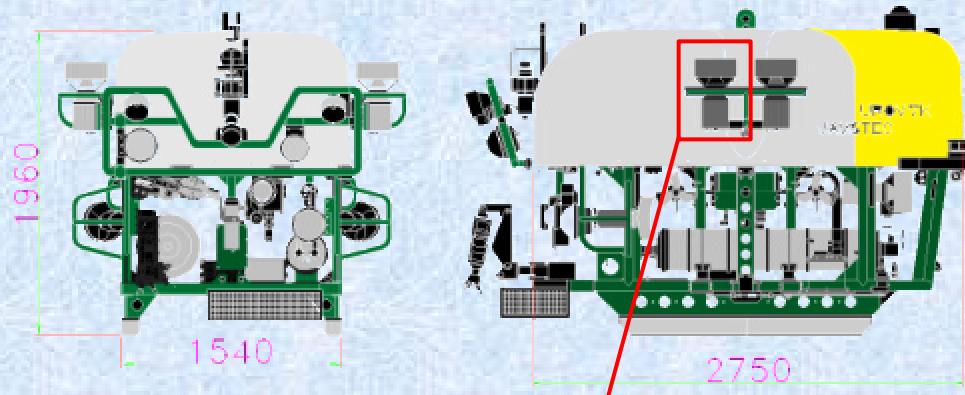
• ??

• ???

	Hydrovision Curvetech	Deep Sea Systems SEA.MAX.HPU	Technadyne MODEL 224
			 Dimensions: Width: 255mm Depth: 130mm
Horse power	11.5HP(8.5kW)	2HP(1.4kW)	2HP(5kW)
INPUT	3000VAC 3F	240VAC 3F	100.110VDC
OUTPUT	143.204kgf/cm ²	105kgf/cm ²	175kgf/cm ² (max)
	40L/min(max)	7.6L/min	10.5L/min(max)
WEIGHT	110kg(83kg)	.	8kg(5kg)
..	.	X	?

7K?????

????

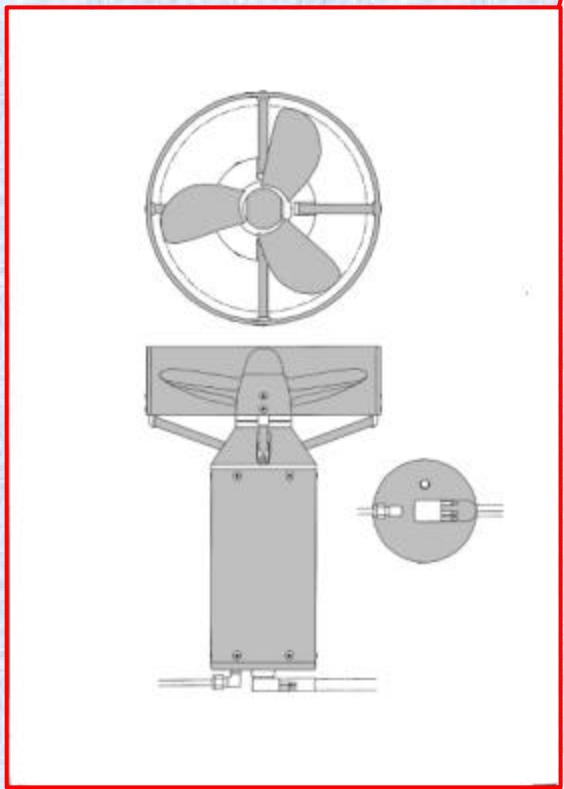


.800W

.3000.....1.4.750...

....20.....

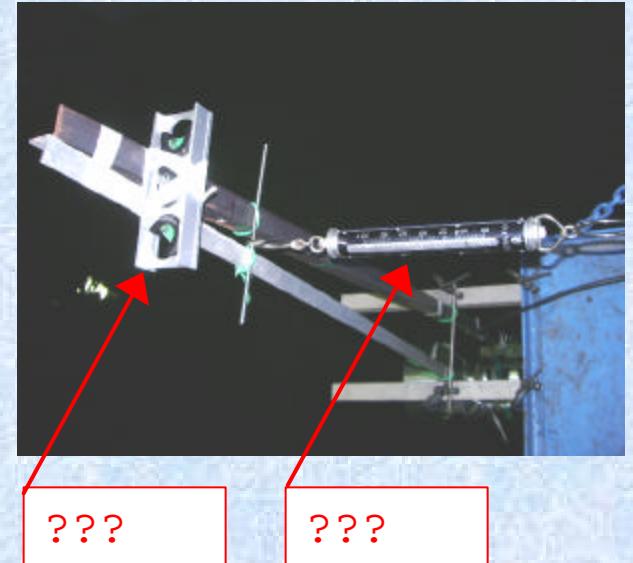
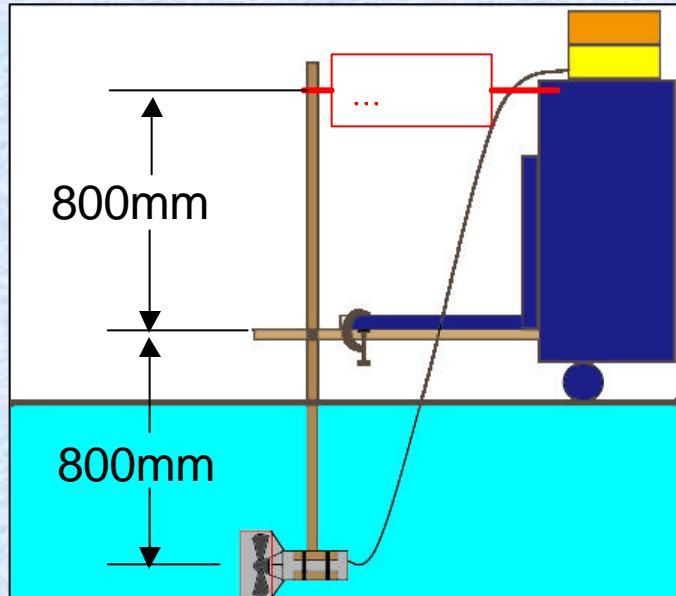
.....



.....

?????????

????

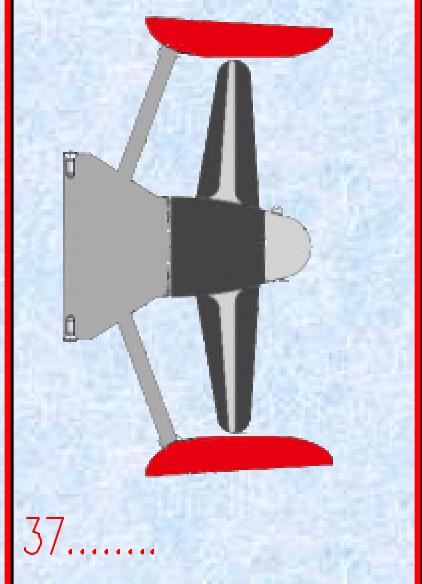


??	13~14kg	18.5kg	18.5kg
??	8.5~9kg	10.5kg	9.5~10kg

?????

????

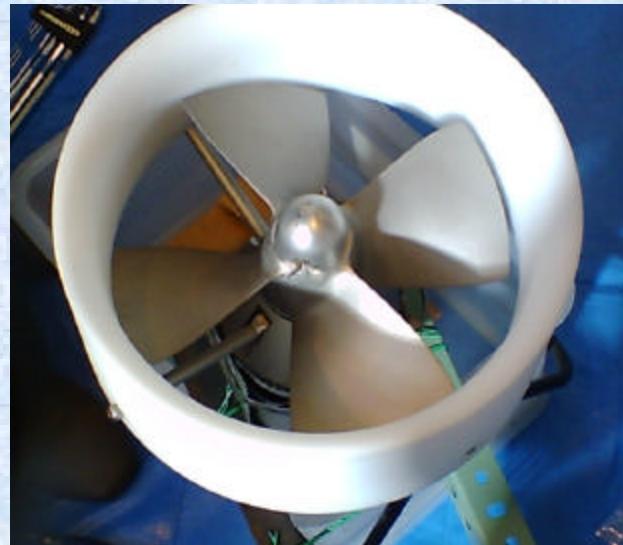
??	3	4	4
??(??)	33.5 kg	31.9 kg	31.2 kg
??(??)	-	19.3 kg	25.6 kg



37.....

37?????????????????????????

????

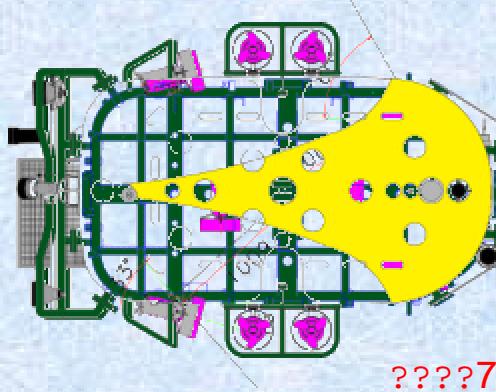
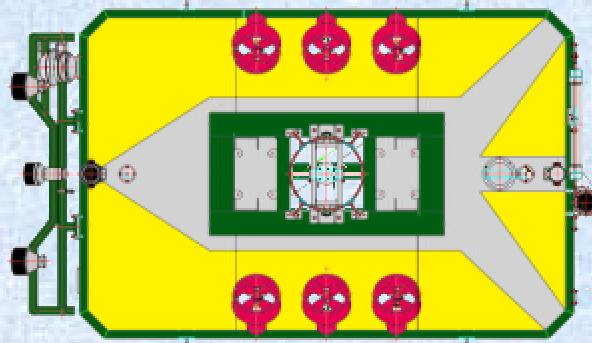


37

??	13~14kg	18.5kg	30kg
??	8.5~9kg	9.5~10kg	20kg

????? (? ?)

????

		
	????7000	????7000?
??	<ul style="list-style-type: none"> · 72.74kg (??) · 24.09kg/m² (???) · 52.33kg/m² (?????????) 	<ul style="list-style-type: none"> · 103.92kg · 24.39kg/m² · 57.73kg/m²
??(??)	<ul style="list-style-type: none"> · 37kg(18kg) · 6.86kg/m² (3.34kg/m²) · 14.92kg/m² (7.26kg/m²) 	<ul style="list-style-type: none"> · 50kg · 7.82kg/m² · 18.52kg/m²
?? (???)	<ul style="list-style-type: none"> · 37.18kgm(???) 	<ul style="list-style-type: none"> · 105.66kgm(???)
?? (??)	<ul style="list-style-type: none"> · 36kg(74kg) · 8.49kg/m² (17.45kg/m²) 	<ul style="list-style-type: none"> · 121.24kg(138.56kg) · 20.21kg/m²(23.09kg/m²)