

MIRAI MR00-K01 Expendable Bathythermograph (XBT)

Last Modified: 2019-09-28

[ReadMe](#) [Observation Data](#) [Data Format](#)

Cruise ID: [MR00-K01](#)

Expendable Bathythermograph (XBT): Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

Observation Items: Depth, Temperature

Science Keywords:

OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE

Cruise Report

http://www.godac.jamstec.go.jp/catalog/data/doc_catalog/media/MR00-K01_all.pdf

For Using Data

Principal Investigator

Data Management Office

Use Constraints

See [Terms and Conditions](#) about constrain of use.

Data Citation

See [Terms and Conditions](#) about data citation.

Instrument

Instrument:

Expendable bathythermograph (XBT) (

- MR11-E02)



Overview

Using XBT (eXpendable Bathy Thermograph) system, the vertical distribution of water temperature is observed during free fall of its probe part in the seawater. On board, the analogue signal is converted to the temperature by data processor and the data is stored in PC. Depth data is calculated from the elapsed time.

System

(1) Launcher

Hand launcher

Manufacturer : Sippican, Inc.

Operation area : Rear upper deck

Automatic launcher

Manufacturer : Tsurumi Seiki Co., LTD.

Location : Port side of rear upper deck (4m from the sea level). The control panel is installed in the investigation room.

(2) Converter

Manufacturer : Tsurumi Seiki Co., LTD.

Location : Investigation room

Sampling rate : 50 msec

(3) XBT probe specifications

Probe Type	TSK T-5	TSK T-6	TSK T-7	TSK T-10
Temperature range [deg-C]	-2 to 35			
Temperature accuracy [deg-C]	+/- 0.2			
Temperature resolution [deg-C]	0.01			
Measurement depth [m]	1830	460	760	300
Depth accuracy [m]	5 or +/- 2% of depth; whichever is larger			
Maximum elapsed time [sec]	291	73	123	48
Rated ship speed [knot]	6	15	15	10

Since XBT carries no pressure sensor, we need to estimate depth from the elapsed time. The fall-rate equation is as follows.

$$Z = at + 10E^{-3} * bt^2$$

Where Z(m) is the depth and t(sec) is the elapsed time.

In addition, coefficients of the fall-rate equation are different by probe types.

Probe Type	TSK T-5	TSK T-6	TSK T-7	TSK T-10
Coefficient-a	6.828	6.691	6.691	6.301
Coefficient-b	-1.82	-2.25	-2.25	-2.16

* Coefficients listed above are supplied by Sippican, Inc. in USA

The list of an XBT type used in each cast is as follows.

Cast name	Probe Serial No.	Probe Type	Launcher	Converter
200001070526	-	T-7	-	MK-30N
200001070722	-	T-7	-	MK-30N
200001071120	-	T-7	-	MK-30N
200001072005	-	T-7	-	MK-30N
200001072234	-	T-7	-	MK-30N
200001080256	-	T-7	-	MK-30N
200001081454	-	T-7	-	MK-30N
200001081656	-	T-7	-	MK-30N
200001082054	-	T-7	-	MK-30N
200001091203	-	T-7	-	MK-30N
200001091513	-	T-7	-	MK-30N
200001091833	-	T-7	-	MK-30N
200001092153	-	T-7	-	MK-30N
200001101211	-	T-7	-	MK-30N
200001101626	-	T-7	-	MK-30N
200001101831	-	T-7	-	MK-30N
200001110016	-	T-7	-	MK-30N
200001110507	-	T-7	-	MK-30N
200001110749	-	T-7	-	MK-30N
200001111113	-	T-7	-	MK-30N
200001111526	-	T-7	-	MK-30N
200001112310	-	T-7	-	MK-30N
200001120615	-	T-7	-	MK-30N
200001120916	-	T-7	-	MK-30N
200001121355	-	T-7	-	MK-30N
200001121659	-	T-7	-	MK-30N
200001122005	-	T-7	-	MK-30N
200001122308	-	T-7	-	MK-30N
200001131113	-	T-7	-	MK-30N
200001131457	-	T-7	-	MK-30N
200001131836	-	T-7	-	MK-30N
200001132217	-	T-7	-	MK-30N
200001140215	-	T-7	-	MK-30N
200001140629	-	T-7	-	MK-30N
200001141109	-	T-7	-	MK-30N
200001180210	-	T-7	-	MK-30N
200001180504	-	T-7	-	MK-30N
200001180751	-	T-7	-	MK-30N
200001181023	-	T-7	-	MK-30N
200001181442	-	T-7	-	MK-30N
200001181906	-	T-7	-	MK-30N
200001182358	-	T-7	-	MK-30N
200001190450	-	T-7	-	MK-30N
200001190918	-	T-7	-	MK-30N
200001192100	-	T-7	-	MK-30N
200001192310	-	T-7	-	MK-30N
200001200138	-	T-7	-	MK-30N
200001200405	-	T-7	-	MK-30N
200001201029	-	T-7	-	MK-30N
200001201215	-	T-7	-	MK-30N
200001201406	-	T-7	-	MK-30N
200001201550	-	T-7	-	MK-30N
200001201730	-	T-7	-	MK-30N
200001201905	-	T-7	-	MK-30N
200001202034	-	T-7	-	MK-30N
200001202203	-	T-7	-	MK-30N
200001202338	-	T-7	-	MK-30N
200001210117	-	T-7	-	MK-30N
200001210257	-	T-7	-	MK-30N
200001210447	-	T-7	-	MK-30N
200001210640	-	T-7	-	MK-30N
200001210832	-	T-7	-	MK-30N
200001231552	-	T-7	-	MK-30N
200001232047	-	T-7	-	MK-30N
200001240128	-	T-7	-	MK-30N
200001240625	-	T-7	-	MK-30N
200001241126	-	T-7	-	MK-30N
200001241613	-	T-7	-	MK-30N
200001241850	-	T-7	-	MK-30N
200001242124	-	T-7	-	MK-30N
200001242351	-	T-7	-	MK-30N
200001251105	-	T-7	-	MK-30N
200001270042	-	T-7	-	MK-30N

Cruise No.	Probe Serial No.	Probe Type	Launcher	Converter
200001270917	-	T-7	-	MK-30N
200001271345	-	T-7	-	MK-30N
200001271758	-	T-7	-	MK-30N
200001281130	-	T-7	-	MK-30N
200001281520	-	T-7	-	MK-30N
200001281910	-	T-7	-	MK-30N
200001282254	-	T-7	-	MK-30N
200001290249	-	T-7	-	MK-30N
200001310003	-	T-7	-	MK-30N
200001310402	-	T-7	-	MK-30N
200001310854	-	T-7	-	MK-30N
200001311357	-	T-7	-	MK-30N
200001311919	-	T-7	-	MK-30N
200002010105	-	T-7	-	MK-30N
200002010707	-	T-7	-	MK-30N
200002011258	-	T-7	-	MK-30N
200002011743	-	T-7	-	MK-30N
200002012242	-	T-7	-	MK-30N
200002020332	-	T-7	-	MK-30N
200002020851	-	T-7	-	MK-30N
200002041425	-	T-7	-	MK-30N
200002041731	-	T-7	-	MK-30N
200002050259	-	T-7	-	MK-30N
200002050606	-	T-7	-	MK-30N
200002050919	-	T-7	-	MK-30N
200002051229	-	T-7	-	MK-30N
200002051534	-	T-7	-	MK-30N
200002051833	-	T-7	-	MK-30N

Data processing

(1) For sensor's stability, values of less than 1 m for temperature are replaced by missing values, respectively, based on manufacturer's recommendation.

(2) Quality control

QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure.

- 1) The gradient check of adjacent depth data
- 2) The broad range check set up at given ocean space and depth

Please see the site of NODC of the following link for quality control procedure in detail.

[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

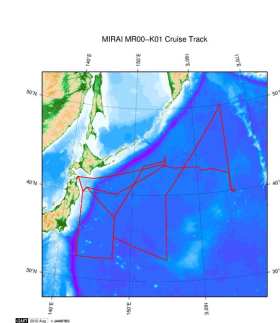
In addition, an abnormal value is identified by a visual check, and the data after visual QC is released.

Note

(1) It is reported that T-5 probes produced by Tsurumi Seiki Co. Ltd. (TSK T-5 probes) have a fall-rate bias. Please see the following about publication policy of XBT fall-rate bias correction data.

[Publication policy of XBT fall-rate bias correction data](#)

Related Information



[Enlarge Image](#)

MR00-K01

Ship Name: MIRAI
Period: 2000-01-05 - 2000-02-06
Chief Scientist: Makio Honda (JAMSTEC)
Project Name: [Station KEO, Station KNOT]

Update History

2019-09-28	An observation data was registered.
2017-06-29	An observation data was registered.
2014-07-12	An observation data was registered.
2014-02-20	An observation data was registered.
2012-12-25	An observation data was registered.

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SHINKAI 2000
SHINKAI 6500
DEEP TOW
HYPER-DOLPHIN
URASHIMA
YOKOSUKA DEEP TOW
6K Camera DEEP TOW
6K Sonar DEEP TOW

Go to a Cruise Information

Cruise ID:

Go to a Dive Information

Dive ID:

KM-ROV
POWER GRAB SAMPLER
(SHELL)
POWER GRAB SAMPLER
(CLOW)
BMS

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MIRAI MR00-K01 Expendable Bathythermograph (XBT)

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Cruise ID: [MR00-K01](#)

Expendable Bathythermograph (XBT): Processed (DMO)-QCed

Data Policy: [JAMSTEC](#)

XBT DMO

Each data file contains one line header (meta data) followed by data lines for each cast.

The number of data lines are recorded in the header.

Header part

No.	Column	Content	Format	Remarks
1	1	Header ID	a1	fixed as '#'
2	3 - 6	Data ID	a4	XBT
3	8 - 22	Cruise ID	a15	
4	33 - 40	Date	i8	YYYYMMDD (UTC)
5	42 - 45	Time	i4	hhmm (UTC)
6	47 - 55	Latitude	i2,a1,f5.2,a1	dd-mm.mmN(S)
7	57 - 66	Longitude	i3,a1,f5.2,a1	ddd-mm.mmE(W)
8	68 - 71	Number of data lines	i4	
9	72 - 73	Terminator	-	CR+LF

Data part

No.	Column	Content	Unit	Format	Remarks
1	1 - 11	Depth	m	f11.1	
2	12 - 22	Temperature	deg-C	f11.2	ITS-90
3	45 - 55	Flag	-	i11	1 - 7 : space 8 : flag of depth 9 : flag of temperature 10 - 11 : space * reference : Definition of Quality Control Flags
4	56 - 57	Terminator	-	-	CR+LF

Each contents of the data part is stored in 11 bytes.

Missing value is presented by '-5', and error value is presented by '-9'.

Definition of Quality Control Flags

1. Depth Flags

- 0 - accepted value
- 1 - error in recorded depth (same or less than previous depth)
- 2 - density inversion

2. Observed Level Flags

- N - missing value
- 0 - accepted value
- 1 - range outlier (outside of broad range check)
- 2 - failed inversion check
- 3 - failed gradient check
- 4 - zero anomaly
- 5 - failed combined gradient and inversion checks
- 6 - failed range and inversion checks
- 7 - failed range and gradient checks
- 8 - failed range and zero anomaly checks
- 9 - failed range and combined gradient and inversion checks
- A - failed visual check

* Range and gradient check is performed to XBT data.

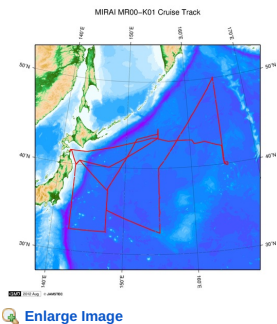
QCed data were added flag according to the NODC (National Oceanographic Data Center) quality control procedure, additionally visually checked. Please see the site of NODC of the following link for quality control procedure.

[QUALITY CONTROL AND PROCESSING OF HISTORICAL OCEANOGRAPHIC TEMPERATURE, SALINITY, AND OXYGEN DATA](#)

Sample Program

[ex_read2.f](#)

Related Information



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 YOKOSUKA
 MIRAI
 KAIREI
 CHIKYU
 KAIMEI
 SHINSEI MARU
 HAKUHO MARU

Information of the Submersibles

KAIKO
 SHINKAI 2000
 SHINKAI 6500
 DEEP TOW
 HYPER-DOLPHIN
 URASHIMA
 YOKOSUKA DEEP TOW
 6K Camera DEEP TOW
 6K Sonar DEEP TOW
 KM-ROV
 POWER GRAB SAMPLER (SHELL)
 POWER GRAB SAMPLER (CLOW)
 BMS

Go to a Cruise Information

Cruise ID:

Go to a Dive Information

Dive ID:

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MIRAI MR00-K01 Expendable Bathythermograph (XBT)

Last Modified: 2019-09-28

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Cruise ID: **MR00-K01**

Expendable Bathythermograph (XBT): Processed (DMO)-QCed

Data Policy: **JAMSTEC**

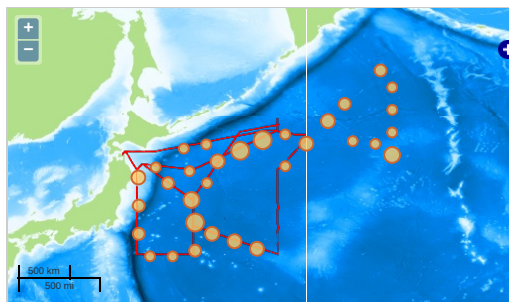
Observation Items: Depth, Temperature

Science Keywords:

OCEANS > OCEAN TEMPERATURE > WATER TEMPERATURE

Observation Map

1. Clicking the icon displays a balloon with observation information.
2. Then click the observation name, figures will be displayed.

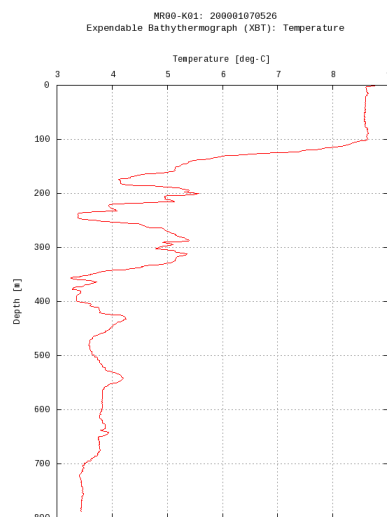


— ... Observation Line — ... Navigation ● ... Observation, Dive Point, Hole

Imagery reproduced from ...

Figures

200001070526










































Only values evaluated as "good" : all flags are 0" are plotted in profiles.
Please see Format Page for the definition of quality flags.



Data List

[Add to Basket](#)

☐ File names

☐ 200001070526.dat
☐ 200001070722.dat
☐ 200001071120.dat
☐ 200001072005.dat
☐ 200001072234.dat
☐ 200001080256.dat
☐ 200001081454.dat
☐ 200001081656.dat
☐ 200001082054.dat
☐ 200001091203.dat
☐ 200001091513.dat
☐ 200001091833.dat
☐ 200001092153.dat
☐ 200001101211.dat
☐ 200001101626.dat
☐ 200001101831.dat
☐ 200001110016.dat
☐ 200001110507.dat
☐ 200001110749.dat

	2000011113.dat
	200001111526.dat
	200001112310.dat
	200001120615.dat
	200001120916.dat
	200001121355.dat
	200001121659.dat
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	200001281910.dat
	200001282254.dat
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	200001310402.dat
	200001310854.dat
	200001311357.dat
	200001311919.dat
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	200002012242.dat
	200002020332.dat
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	200002041425.dat
	200002041731.dat
	200002050259.dat
	200002050606.dat
	200002050919.dat
	200002051229.dat
	200002051534.dat

 20000133.dat
 ex_read2.f (Sample Program)

- Observation List
The list of observation is shown as follows.

Observation	Time and Date	Lat. [°]	Lon. [°]
200001070526	2000-01-07 05:24	39.4985	142.4683
200001070722	2000-01-07 07:19	38.9988	142.4815
200001071120	2000-01-07 11:17	37.9990	142.4978
200001072005	2000-01-07 20:01	36.9993	142.4996
200001072234	2000-01-07 22:31	36.4993	142.5023
200001080256	2000-01-08 02:53	35.4981	142.4995
200001081454	2000-01-08 14:52	34.4990	142.5003
200001081656	2000-01-08 16:52	34.0100	142.5003
200001082054	2000-01-08 20:50	32.9990	142.5000
200001091203	2000-01-09 12:01	32.5013	143.5011
200001091513	2000-01-09 15:10	32.4965	144.5010
200001091833	2000-01-09 18:29	32.4965	145.5016
200001092153	2000-01-09 21:50	32.5005	146.5045
200001101211	2000-01-10 12:08	33.0015	147.4966
200001101626	2000-01-10 16:23	34.0006	147.5016
200001101831	2000-01-10 18:28	34.5001	147.4931
200001110016	2000-01-11 00:13	35.5003	147.5015
200001110507	2000-01-11 05:04	36.5093	147.5110
200001110749	2000-01-11 07:47	37.0001	147.5006
200001111113	2000-01-11 11:10	37.4993	147.1798
200001111526	2000-01-11 15:23	38.0000	146.4821
200001112310	2000-01-11 23:07	39.0001	145.0954
200001120615	2000-01-12 06:13	40.0003	143.6966
200001120916	2000-01-12 09:12	40.4990	142.9990
200001121355	2000-01-12 13:53	40.3938	144.0020
200001121659	2000-01-12 16:55	40.2785	145.0016
200001122005	2000-01-12 20:01	40.1650	146.0016
200001122308	2000-01-12 23:06	40.0570	147.0020
200001131113	2000-01-13 11:11	40.4781	148.5011
200001131457	2000-01-13 14:53	40.9293	149.5015
200001131836	2000-01-13 18:32	41.4050	150.5013
200001132217	2000-01-13 22:12	41.8711	151.5006
200001140215	2000-01-14 02:12	42.3366	152.5013
200001140629	2000-01-14 06:27	42.8141	153.5006
200001141109	2000-01-14 11:07	43.2736	154.5011
200001180210	2000-01-18 02:08	43.8056	153.9981
200001180504	2000-01-18 05:01	43.6130	152.9935
200001180751	2000-01-18 07:49	43.4316	151.9988
200001181023	2000-01-18 10:20	42.9993	151.3893
200001181442	2000-01-18 14:39	41.9966	150.6935
200001181906	2000-01-18 19:03	41.0001	150.0151
200001182358	2000-01-18 23:55	40.0001	149.2723
200001190450	2000-01-19 04:46	38.9998	148.5546
200001190918	2000-01-19 09:16	37.9995	147.8563
200001192100	2000-01-19 20:58	36.9995	147.4908
200001192310	2000-01-19 23:07	36.5013	147.5190
200001200138	2000-01-20 01:36	36.0008	147.5103
200001200405	2000-01-20 04:03	35.5000	147.4983
200001201029	2000-01-20 10:26	34.8420	148.0008
200001201215	2000-01-20 12:12	34.6791	148.5006
200001201406	2000-01-20 14:01	34.4966	149.0003
200001201550	2000-01-20 15:47	34.3271	149.5003
200001201730	2000-01-20 17:27	34.1576	150.0003
200001201905	2000-01-20 19:03	33.9936	150.5003
200001202034	2000-01-20 20:31	33.8381	150.9998
200001202203	2000-01-20 22:01	33.6718	151.5000
200001202338	2000-01-20 23:36	33.4975	152.0001
200001210117	2000-01-21 01:15	33.3338	152.5010
200001210257	2000-01-21 02:54	33.1674	152.9995
200001210447	2000-01-21 04:44	32.9946	153.5001
200001210640	2000-01-21 06:37	32.8198	154.0003
200001210832	2000-01-21 08:30	32.6708	154.5004
200001231552	2000-01-23 15:49	40.5001	155.5036
200001232047	2000-01-23 20:44	41.5193	156.4738
200001240128	2000-01-24 01:26	42.5005	157.3830
200001240625	2000-01-24 06:23	43.5008	158.2883
200001241126	2000-01-24 11:24	44.5038	159.2970
200001241613	2000-01-24 16:10	45.5040	160.2769
200001241850	2000-01-24 18:48	46.0293	160.7840
200001242124	2000-01-24 21:21	46.5303	161.3271
200001242351	2000-01-24 23:48	47.0090	161.8150
200001251105	2000-01-25 11:02	49.0031	163.9703
200001270042	2000-01-27 00:40	49.4995	165.0100
200001270453	2000-01-27 04:50	48.5000	165.0141
200001270917	2000-01-27 09:14	47.4996	165.0018
200001271345	2000-01-27 13:42	46.4996	165.0058
200001271758	2000-01-27 17:55	45.4995	165.0050

Observation	Time and Date	Lat. (°)	Lon. (°)
200001281130	2000-01-28 11:28	44.4890	165.0025
200001281520	2000-01-28 15:18	43.4996	164.9990
200001281910	2000-01-28 19:08	42.4998	164.9910
200001282254	2000-01-28 22:51	41.5000	165.0008
200001290249	2000-01-29 02:47	40.4996	165.0011
200001310003	2000-01-31 00:01	40.5006	164.9376
200001310402	2000-01-31 03:59	41.5013	164.9258
200001310854	2000-01-31 08:51	42.2223	164.4988
200001311357	2000-01-31 13:54	42.4798	163.4996
200001311919	2000-01-31 19:16	42.7625	162.5004
200002010105	2000-02-01 01:03	42.7265	161.4998
200002010707	2000-02-01 07:04	42.9120	160.5004
200002011258	2000-02-01 12:56	43.1445	159.4990
200002011743	2000-02-01 17:40	43.1490	158.5004
200002012242	2000-02-01 22:40	43.1355	157.5006
200002020332	2000-02-02 03:29	43.1361	156.5003
200002020851	2000-02-02 08:48	43.3173	155.5003
200002041425	2000-02-04 14:22	43.5010	154.5004
200002041731	2000-02-04 17:28	43.3936	153.5006
200002050259	2000-02-05 02:57	42.8343	150.4988
200002050606	2000-02-05 06:04	42.6366	149.5001
200002050919	2000-02-05 09:16	42.4298	148.4985
200002051229	2000-02-05 12:26	42.2314	147.4956
200002051534	2000-02-05 15:29	42.0625	146.4975
200002051833	2000-02-05 18:30	41.8856	145.4986

Related Information



MIRAI MR00-K01 Cruise Track

MR00-K01
Ship Name: MIRAI
Period: 2000-01-05 - 2000-02-06
Chief Scientist: Makio Honda (JAMSTEC)
Project Name: [Station KEO, Station KNOT]

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Update History

2019-09-28	An observation data was registerd.
2017-06-29	An observation data was registerd.
2014-07-12	An observation data was registerd.
2014-02-20	An observation data was registerd.
2012-12-25	An observation data was registerd.

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Data Tree

Detailed Search

Information of the Ships

NATSUSHIMA

KAIYO

YOKOSUKA

MIRAI

KAIREI

CHIKYU

KAIMEI

SHINSEI MARU

HAKUHO MARU

Information of the Submersibles

KAIKO

SHINKAI 2000

SHINKAI 6500

DEEP TOW

HYPER-DOLPHIN

URASHIMA

YOKOSUKA DEEP TOW

6K Camera DEEP TOW

6K Sonar DEEP TOW

KM-ROV

POWER GRAB SAMPLER (SHELL)

POWER GRAB SAMPLER (GLOW)

BMS

Go to a Cruise Information


Cruise ID:

Go

Go to a Dive Information

Dive ID:

Go

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